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CALIFORNIA CODE OF REGULATIONS

Title 17. Public Health

Division 1. Department of Health Services
Chapter 5. Sanitation
Subchapter 4. Radiation
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Subchapter 4.6. Requirements for Land Disposal of Radioactive Waste
Subchapter 4.7. Nuclear Medicine Technology

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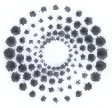
Title 10. Energy
Chapter 1. Nuclear Regulatory Commission
Part 20. Standards for Protection Against Radiation



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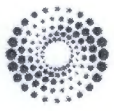

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TITLE 17. PUBLIC HEALTH

NOMENCLATURE CROSS–REFERENCE

(NOTE: Effective April 1, 1990, the Office of Administrative Law authorized the renaming of the hierarchical headings used within the Titles of the *California Code of Regulations*. Until the agencies implement these changes in their regulations, use the following Cross–Reference Table for the new organizational headings used in this Title.)

OLD HIERARCHY	REVISED HIERARCHY
Part	Division
Chapter	Chapter
Subchapter	Subchapter
Group	Group
Subgroup	Subgroup
Article	Article
Part	Subarticle
Section	Section

CODE OF FEDERAL REGULATIONS

Title 10. Energy

Chapter 1. Nuclear Regulatory Commission

Part 20. Standards for Protection Against Radiation

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Editor's Note

The following regulations on "Standards for Protection Against Radiation" are from the January 1, 2013, version of the *Code of Federal Regulations (CFR),* Title 10, Chapter 1, Part 20.

The 2013 version of *CFR* regulations is the version referenced by the California Department of Health Services in their radiation regulations appearing in Title 17 of the *California Code of Regulations (CCR).*

Section 30253, subsection (a) of Title 17 of the *California Code of Regulations* reads as follows:

> **§ 30253. Standards for Protection Against Radiation.**
> (a) The regulations governing standards for protection against radiation in title 10, Code of Federal Regulations, part 20, (10 CFR 20) sections 20.1001 through 20.2402 and Appendices A through G (January 1, 2013) are hereby incorporated by reference with the following exceptions: . . . .

Title 10. Energy

Chapter 1. Nuclear Regulatory Commission

Part 20. Standards for Protection Against Radiation

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Part 20. Standards for Protection Against Radiation

AUTHORITY: Secs. 53, 63, 65, 81, 103, 104, 161, 182, 186, 68 Stat. 930, 933, 935, 936, 937, 948, 953, 955, as amended, sec. 1701, 106 Stat. 2951, 2952, 2953 (42 U.S.C. 2073, 2093, 2095, 2111, 2133, 2134, 2201, 2232, 2236, 2297f), secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846); sec. 1704, 112 Stat. 2750 (44 U.S.C. 3504 note); sec. 651(e), Pub. L. 109–58, 119 Stat. 806–810 (42 U.S.C. 2014, 2021, 2021b, 2111).

Subpart A. General Provisions

SOURCE: 56 FR 23391, May 21, 1991, unless otherwise noted.

§ 20.1001. Purpose.

(a) The regulations in this part establish standards for protection against ionizing radiation resulting from activities conducted under licenses issued by the Nuclear Regulatory Commission. These regulations are issued under the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, as amended.

(b) It is the purpose of the regulations in this part to control the receipt, possession, use, transfer, and disposal of licensed material by any licensee in such a manner that the total dose to an individual (including doses resulting from licensed and unlicensed radioactive material and from radiation sources other than background radiation) does not exceed the standards for protection against radiation prescribed in the regulations in this part. However, nothing in this part shall be construed as limiting actions that may be necessary to protect health and safety.

§ 20.1002. Scope.

The regulations in this part apply to persons licensed by the Commission to receive, possess, use, transfer, or dispose of byproduct, source, or special nuclear material or to operate a production or utilization facility under Parts 30 through 36, 39, 40, 50, 52, 60, 61, 63, 70, or 72 of this chapter, and in accordance with 10 CFR 76.60 to persons required to obtain a certificate of compliance or an approved compliance plan under part 76 of this chapter. The limits in this part do not apply to doses due to background radiation, to exposure of patients to radiation for the purpose of medical diagnosis or therapy, to exposure from individuals administered radioactive material and released under § 35.75, or to exposure from voluntary participation in medical research programs.

[72 FR 49485, Aug. 28, 2007]

§ 20.1003. Definitions.

As used in this part:

Absorbed dose means the energy imparted by ionizing radiation per unit mass of irradiated material. The units of absorbed dose are the rad and the gray (Gy).

Accelerator–produced radioactive material means any material made radioactive by a particle accelerator.

Act means the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.), as amended.

Activity is the rate of disintegration (transformation) or decay of radioactive material. The units of activity are the curie (Ci) and the becquerel (Bq).

Adult means an individual 18 or more years of age.

Airborne radioactive material means radioactive material dispersed in the air in the form of dusts, fumes, particulates, mists, vapors, or gases.

Airborne radioactivity area means a room, enclosure, or area in which airborne radioactive materials, composed wholly or partly of licensed material, exist in concentrations—

(1) In excess of the derived air concentrations (DACs) specified in appendix B, to §§ 20.1001–20.2401, or

(2) To such a degree that an individual present in the area without respiratory protective equipment could exceed, during the hours an individual is present in a week, an intake of 0.6 percent of the annual limit on intake (ALI) or 12 DAC–hours.

Air–purifying respirator means a respirator with an air–purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air–purifying element.

ALARA (acronym for "as low as is reasonably achievable") means making every reasonable effort to maintain exposures to radiation as far below the dose limits in this part as is practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.

Annual limit on intake (ALI) means the derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by the reference man that would result in a committed effective dose equivalent of 5 rems (0.05 Sv) or a committed dose equivalent of 50 rems (0.5 Sv) to any individual organ or tissue. (ALI values for intake by ingestion and by inhalation of selected radionuclides are given in table 1, columns 1 and 2, of appendix B to §§ 20.1001–20.2401).

Assigned protection factor (APF) means the expected workplace level of respiratory protection that would be provided by a properly functioning respirator or a class of respirators to properly fitted and trained users. Operationally, the inhaled concentration can be estimated by dividing the ambient airborne concentration by the APF.

Atmosphere–supplying respirator means a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied–air respirators (SARs) and self–contained breathing apparatus (SCBA) units.

Background radiation means radiation from cosmic sources; naturally occurring radioactive material, including radon (except as a decay product of source or special nuclear material); and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the control of the licensee. *"Background radiation"* does not include radiation from source, byproduct, or special nuclear materials regulated by the Commission.

Bioassay (radiobioassay) means the determination of kinds, quantities or concentrations, and, in some cases, the locations of radioactive material in the human body, whether by direct measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed from the human body.

Byproduct material means—

(1) Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or using special nuclear material;

(2) The tailings or wastes produced by the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by

these solution extraction operations do not constitute "byproduct material" within this definition;

(3)(i) Any discrete source of radium–226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or

(ii) Any material that

(A) Has been made radioactive by use of a particle accelerator; and

(B) Is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and

(4) Any discrete source of naturally occurring radioactive material, other than source material, that—

(i) The Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium–226 to the public health and safety or the common defense and security; and

(ii) Before, on, or after August 8, 2005, is extracted or converted after extraction for use in a commercial, medical, or research activity.

Class (or *lung class* or *inhalation class*) means a classification scheme for inhaled material according to its rate of clearance from the pulmonary region of the lung. Materials are classified as D, W, or Y, which applies to a range of clearance half–times: for Class D (Days) of less than 10 days, for Class W (Weeks) from 10 to 100 days, and for Class Y (Years) of greater than 100 days.

Collective dose is the sum of the individual doses received in a given period of time by a specified population from exposure to a specified source of radiation.

Commission means the Nuclear Regulatory Commission or its duly authorized representatives.

Committed dose equivalent ($H_{T,50}$) means the dose equivalent to organs or tissues of reference (T) that will be received from an intake of radioactive material by an individual during the 50–year period following the intake.

Committed effective dose equivalent ($H_{E,50}$) is the sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues ($H_{E,50} = \Sigma\, w_T\, H_{T,50}$).

Constraint (dose constraint) means a value above which specified licensee actions are required.

Controlled area means an area, outside of a restricted area but inside the site boundary, access to which can be limited by the licensee for any reason.

Critical Group means the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances.

Declared pregnant woman means a woman who has voluntarily informed the licensee, in writing, of her pregnancy and the estimated date of conception. The declaration remains in effect until the declared pregnant woman withdraws the declaration in writing or is no longer pregnant.

Decommission means to remove a facility or site safely from service and reduce residual radioactivity to a level that permits—

(1) Release of the property for unrestricted use and termination of the license; or

(2) Release of the property under restricted conditions and the termination of the license.

Deep–dose equivalent (H_d), which applies to external whole–body exposure, is the dose equivalent at a tissue depth of 1 cm (1000 mg/cm^2).

Demand respirator means an atmosphere–supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

Department means the Department of Energy established by the Department of Energy Organization Act (Pub.L. 95–91, 91 Stat. 565, 42 U.S.C. 7101 et seq.) to the extent that the Department, or its duly authorized representatives, exercises functions formerly vested in the U.S. Atomic Energy Commission, its Chairman, members, officers, and components and transferred to the U.S. Energy Research and Development Administration and to the Administrator thereof pursuant to sections 104(b), (c), and (d) of the Energy Reorganization Act of 1974 (Pub.L. 93–438, 88 Stat. 1233 at 1237, 42 U.S.C. 5814) and retransferred to the Secretary of Energy pursuant to section 301(a) of the Department of Energy Organization Act (Pub.L. 95–91, 91 Stat 565 at 577–578, 42 U.S.C. 7151).

Derived air concentration (DAC) means the concentration of a given radionuclide in air which, if breathed by the reference man for a working year of 2,000 hours under conditions of light work (inhalation rate 1.2 cubic meters of air per hour), results in an intake of one ALI. DAC values are given in table 1, column 3, of appendix B to §§ 20.1001–20.2401.

Derived air concentration–hour (DAC–hour) is the product of the concentration of radioactive material in air (expressed as a fraction or multiple of the derived air concentration for each radionuclide) and the time of exposure to that radionuclide, in hours. A licensee may take 2,000 DAC–hours to represent one ALI, equivalent to a committed effective dose equivalent of 5 rems (0.05 Sv).

Discrete source means a radionuclide that has been processed so that its concentration within a material has been purposely increased for use for commercial, medical, or research activities.

Disposable respirator means a respirator for which maintenance is not intended and that is designed to be discarded after excessive breathing resistance, sorbent exhaustion, physical damage, or end–of–service–life renders it unsuitable for use. Examples of this type of respirator are a disposable half–mask respirator or a disposable escape–only self–contained breathing apparatus (SCBA).

Distinguishable from background means that the detectable concentration of a radionuclide is statistically different from the background concentration of that radionuclide in the vicinity of the site or, in the case of structures, in similar materials using adequate measurement technology, survey, and statistical techniques.

Dose or radiation dose is a generic term that means absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, or total effective dose equivalent, as defined in other paragraphs of this section.

Dose equivalent (H_T) means the product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest. The units of dose equivalent are the rem and sievert (Sv).

Dosimetry processor means an individual or organization that processes and evaluates individual monitoring equipment in order to determine the radiation dose delivered to the equipment.

Effective dose equivalent (H_E) is the sum of the products of the dose equivalent to the organ or tissue (H_T) and the weighting factors (w_T) applicable to each of the body organs or tissues that are irradiated ($H_E = \Sigma\, w_T\, H_T$).

Embryo/fetus means the developing human organism from conception until the time of birth.

Entrance or access point means any location through which an individual could gain access to radiation areas or to radioactive materials. This includes entry or exit portals of sufficient size to permit human entry, irrespective of their intended use.

Exposure means being exposed to ionizing radiation or to radioactive material.

External dose means that portion of the dose equivalent received from radiation sources outside the body.

Extremity means hand, elbow, arm below the elbow, foot, knee, or leg below the knee.

Filtering facepiece (dust mask) means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium, not equipped with elastomeric sealing surfaces and adjustable straps.

Fit factor means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

Generally applicable environmental radiation standards means standards issued by the Environmental Protection Agency (EPA) under the authority of the Atomic Energy Act of 1954, as amended, that impose limits on radiation exposures or levels, or concentrations or quantities of radioactive material, in the general environment outside the boundaries of locations under the control of persons possessing or using radioactive material.

Government agency means any executive department, commission, independent establishment, corporation wholly or partly owned by the United States of America, which is an instrumentality of the United States, or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the Government.

Gray [See § 20.1004].

Helmet means a rigid respiratory inlet covering that also provides head protection against impact and penetration.

High radiation area means an area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 0.1 rem (1 mSv) in 1 hour at 30 centimeters from the radiation source or 30 centimeters from any surface that the radiation penetrates.

Hood means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

Individual means any human being.

Individual monitoring means—

(1) The assessment of dose equivalent by the use of devices designed to be worn by an individual;

(2) The assessment of committed effective dose equivalent by bioassay (see Bioassay) or by determination of the time–weighted air concentrations to which an individual has been exposed, i.e., DAC–hours; or

(3) The assessment of dose equivalent by the use of survey data.

Individual monitoring devices (individual monitoring equipment) means devices designed to be worn by a single individual for the assessment of dose equivalent such as film badges, thermoluminescence dosimeters (TLDs), pocket ionization chambers, and personal ("lapel") air sampling devices.

Internal dose means that portion of the dose equivalent received from radioactive material taken into the body.

Lens dose equivalent (LDE) applies to the external exposure of the lens of the eye and is taken as the dose equivalent at a tissue depth of 0.3 centimeter (300 mg/cm^2).

License means a license issued under the regulations in parts 30 through 36, 39, 40, 50, 60, 61, 63, 70, or 72 of this chapter.

Licensed material means source material, special nuclear material, or byproduct material received, possessed, used, transferred or disposed of under a general or specific license issued by the Commission.

Licensee means the holder of a license.

Limits (dose limits) means the permissible upper bounds of radiation doses.

Loose–fitting facepiece means a respiratory inlet covering that is designed to form a partial seal with the face.

Lost or missing licensed material means licensed material whose location is unknown. It includes material that has been shipped but has not reached its destination and whose location cannot be readily traced in the transportation system.

Member of the public means any individual except when that individual is receiving an occupational dose.

Minor means an individual less than 18 years of age.

Monitoring (radiation monitoring, radiation protection monitoring) means the measurement of radiation levels, concentrations, surface area concentrations or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses.

Nationally tracked source is a sealed source containing a quantity equal to or greater than Category 1 or Category 2 levels of any radioactive material listed in Appendix E of this part. In this context a sealed source is defined as radioactive material that is sealed in a capsule or closely bonded, in a solid form and which is not exempt from regulatory control. It does not mean material encapsulated solely for disposal, or nuclear material contained in any fuel assembly, subassembly, fuel rod, or fuel pellet. Category 1 nationally tracked sources are those containing radioactive material at a quantity equal to or greater than the Category 1 threshold. Category 2 nationally tracked sources are those containing radioactive material at a quantity equal to or greater than the Category 2 threshold but less than the Category 1 threshold.

Negative pressure respirator (tight fitting) means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Nonstochastic effect means health effects, the severity of which varies with the dose and for which a threshold is believed to exist. Radiation–induced cataract formation is an example of a nonstochastic effect (also called a deterministic effect).

NRC means the Nuclear Regulatory Commission or its duly authorized representatives.

Occupational dose means the dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation or to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee or other person. Occupational dose does not include doses received from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released under § 35.75, from voluntary participation in medical research programs, or as a member of the public.

Particle accelerator means any machine capable of accelerating electrons, protons, deuterons, or other charged particles in a vacuum and of discharging the resultant particulate or other radiation into a medium at energies usually in excess of 1 megaelectron volt. For purposes of this definition, "accelerator" is an equivalent term.

Person means—

(1) Any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency other than the Commission or the Department of Energy (except that the Department shall be considered a person within the meaning of the regulations in 10 CFR chapter I to the extent that its facilities and activities are subject to the licensing and related regulatory authority of the Commission under section 202 of the Energy Reorganization Act of 1974 (88 Stat. 1244), the Uranium Mill Tailings Radiation Control Act of 1978 (92 Stat. 3021), the Nuclear Waste Policy Act of 1982 (96 Stat. 2201), and section 3(b)(2) of the Low–Level Radioactive Waste Policy Amendments Act of 1985 (99 Stat. 1842)), any State or any political subdivision of or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and

(2) Any legal successor, representative, agent, or agency of the foregoing.

Planned special exposure means an infrequent exposure to radiation, separate from and in addition to the annual dose limits.

Positive pressure respirator means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

Powered air–purifying respirator (PAPR) means an air–purifying respirator that uses a blower to force the ambient air through air–purifying elements to the inlet covering.

Pressure demand respirator means a positive pressure atmosphere–supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

Public dose means the dose received by a member of the public from exposure to radiation or to radioactive material released by a licensee, or to any other source of radiation under the control of a licensee. Public dose does not include occupational dose or doses received from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released under § 35.75, or from voluntary participation in medical research programs.

Qualitative fit test (QLFT) means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quality Factor (Q) means the modifying factor (listed in tables 1004(b).1 and 1004(b).2 of § 20.1004) that is used to derive dose equivalent from absorbed dose.

Quantitative fit test (QNFT) means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Quarter means a period of time equal to one–fourth of the year observed by the licensee (approximately 13 consecutive weeks), providing that the beginning of the first quarter in a year coincides with the starting date of the year and that no day is omitted or duplicated in consecutive quarters.

Rad (See § 20.1004).

Radiation (ionizing radiation) means alpha particles, beta particles, gamma rays, x–rays, neutrons, high–speed electrons, high–speed protons, and other particles capable of producing ions. Radiation, as used in this part, does not include non–ionizing radiation, such as radio– or microwaves, or visible, infrared, or ultraviolet light.

Radiation area means an area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.005 rem (0.05 mSv) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

Reference man means a hypothetical aggregation of human physical and physiological characteristics arrived at by international consensus. These characteristics may be used by researchers and public health workers to standardize results of experiments and to relate biological insult to a common base.

Rem (See § 20.1004).

Residual radioactivity means radioactivity in structures, materials, soils, groundwater, and other media at a site resulting from activities under the licensee's control. This includes radioactivity from all licensed and unlicensed sources used by the licensee, but excludes background radiation. It also includes radioactive materials remaining at the site as a result of routine or accidental releases of radioactive material at the site and previous burials at the site, even if those burials were made in accordance with the provisions of 10 CFR part 20.

Respiratory protective device means an apparatus, such as a respirator, used to reduce the individual's intake of airborne radioactive materials.

Restricted area means an area, access to which is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials. Restricted area does not include areas used as residential quarters, but separate rooms in a residential building may be set apart as a restricted area.

Sanitary sewerage means a system of public sewers for carrying off waste water and refuse, but excluding sewage treatment facilities, septic tanks, and leach fields owned or operated by the licensee.

Self–contained breathing apparatus (SCBA) means an atmosphere–supplying respirator for which the breathing air source is designed to be carried by the user.

Shallow–dose equivalent (H_s), which applies to the external exposure of the skin of the whole body or the skin of an extremity, is taken as the dose equivalent at a tissue depth of 0.007 centimeter (7 mg/cm^2).

Sievert[1] (See § 20.1004).

Site boundary means that line beyond which the land or property is not owned, leased, or otherwise controlled by the licensee.

Source material means—

(1) Uranium or thorium or any combination of uranium and thorium in any physical or chemical form; or

(2) Ores that contain, by weight, one–twentieth of 1 percent (0.05 percent), or more, of uranium, thorium, or any combination of uranium and thorium. Source material does not include special nuclear material.

Special nuclear material means—

(1) Plutonium, uranium–233, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the Commission, pursuant to the provisions of section 51 of the Act, determines to be special nuclear material, but does not include source material; or

(2) Any material artificially enriched by any of the foregoing but does not include source material.

Stochastic effects means health effects that occur randomly and for which the probability of the effect occurring, rather than its severity, is assumed to be a linear function of dose without threshold. Hereditary effects and cancer incidence are examples of stochastic effects.

Supplied–air respirator (SAR) or *airline respirator* means an atmosphere–supplying respirator for which the source of breathing air is not designed to be carried by the user.

Survey means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. When appropriate, such an evaluation includes a physical survey of the location of radioactive material and measurements or calculations of levels of radiation, or concentrations or quantities of radioactive material present.

Tight–fitting facepiece means a respiratory inlet covering that forms a complete seal with the face.

Total Effective Dose Equivalent (TEDE) means the sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

Unrestricted area means an area, access to which is neither limited nor controlled by the licensee.

Uranium fuel cycle means the operations of milling of uranium ore, chemical conversion of uranium, isotopic enrichment of uranium, fabrication of uranium fuel, generation of electricity by a light–water–cooled nuclear power plant using uranium fuel, and reprocessing of spent uranium fuel to the extent that these activities directly support the production of electrical power for public use. Uranium fuel cycle does not include mining operations, operations at waste disposal sites, transportation of radioactive material in support of these operations, and the reuse of recovered non–uranium special nuclear and byproduct materials from the cycle.

User seal check (fit check) means an action conducted by the respirator user to determine if the respirator is properly seated to the face. Examples include negative pressure check, positive pressure check, irritant smoke check, or isoamyl acetate check.

Very high radiation area means an area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of 500 rads (5 grays) in 1 hour at 1 meter from a radiation source or 1 meter from any surface that the radiation penetrates.

(NOTE: At very high doses received at high dose rates, units of absorbed dose (e.g., rads and grays) are appropriate, rather than units of dose equivalent (e.g., rems and sieverts)).

Waste means those low–level radioactive wastes containing source, special nuclear, or byproduct material that are acceptable for disposal in a land disposal facility. For the purposes of this definition, low–level radioactive waste means radioactive waste not classified as high–level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in paragraphs (2), (3), and (4) of the definition of Byproduct material set forth in this section.

Week means 7 consecutive days starting on Sunday.

Weighting factor, w_T, for an organ or tissue (T) is the proportion of the risk of stochastic effects resulting from irradiation of that organ or tissue to the total risk of stochastic effects when the whole body is irradiated uniformly. For calculating the effective dose equivalent, the values of w_T are:

ORGAN DOSE WEIGHTING FACTORS

Organ or Tissue	W_T
Gonads	0.25
Breast	0.15
Red bone marrow	0.12
Lung	0.12
Thyroid	0.03
Bone surfaces	0.03
Remainder	[1]0.30
Whole Body	[2]1.00

[1] 0.30 results from 0.06 for each of 5 "remainder" organs (excluding the skin and the lens of the eye) that receive the highest doses.

[2] For the purpose of weighting the external whole body dose (for adding it to the internal dose), a single weighting factor, $w_T = 1.0$, has been specified. The use of other weighting factors for external exposure will be approved on a case-by-case basis until such time as specific guidance is issued.

Whole body means, for purposes of external exposure, head, trunk (including male gonads), arms above the elbow, or legs above the knee.

Working level (WL) is any combination of short–lived radon daughters (for radon–222: polonium–218, lead–214, bismuth–214, and polonium–214; and for radon–220: polonium–216, lead–212, bismuth–212, and polonium–212) in 1 liter of air that will result in the ultimate emission of 1.3×10^5 MeV of potential alpha particle energy.

Working level month (WLM) means an exposure to 1 working level for 170 hours (2,000 working hours per year/12 months per year=approximately 170 hours per month).

Year means the period of time beginning in January used to determine compliance with the provisions of this part. The licensee may change the starting date of the year used to determine compliance by the licensee provided that the change is made at the beginning of the year and that no day is omitted or duplicated in consecutive years.

[1]The official version appears to have inadvertently omitted the definition of "Sievert".

[57 FR 57878, Dec. 8, 1992; 58 FR 7736, Feb. 9, 1993; 60 FR 36043, July 13, 1995; 60 FR 48625, Sept. 20, 1995; 61 FR 65127, Dec. 10, 1996; 62 FR 4132, Jan. 29, 1997; 62 FR 39087, July 21, 1997; 63 FR 39481, July 23, 1998; 63 FR 45393, Aug. 26, 1998; 64 FR 54556, Oct. 7, 1999; 66 FR 55789, Nov. 2, 2001; 67 FR 16304, April 5, 2002; 67 FR 20370, April 24, 2002; 67 FR 62872, Oct. 9, 2002; 71 FR 65707, Nov. 8, 2006; 72 FR 55921, Oct. 1, 2007; 72 FR 68058, Dec. 4, 2007; 72 FR 72233, Dec. 20, 2007; 73 FR 8588, Feb. 14, 2008; 74 FR 62680, Dec. 1, 2009]

§ 20.1004. Units of radiation dose.

(a) Definitions. As used in this part, the units of radiation dose are:

Gray (Gy) is the SI unit of absorbed dose. One gray is equal to an absorbed dose of 1 Joule/kilogram (100 rads).

Rad is the special unit of absorbed dose. One rad is equal to an absorbed dose of 100 ergs/gram or 0.01 joule/kilogram (0.01 gray).

Rem is the special unit of any of the quantities expressed as dose equivalent. The dose equivalent in rems is equal to the absorbed dose in rads multiplied by the quality factor (1 rem = 0.01 sievert).

Sievert is the SI unit of any of the quantities expressed as dose equivalent. The dose equivalent in sieverts is equal to the absorbed dose in grays multiplied by the quality factor (1 Sv = 100 rems).

(b) As used in this part, the quality factors for converting absorbed dose to dose equivalent are shown in table 1004(b).1.

TABLE 1004(B).1—
QUALITY FACTORS AND
ABSORBED DOSE EQUIVALENCIES

Type of radiation	Quality factor (Q)	Absorbed dose equal to a unit dose equivalent[a]
X–, gamma, or beta radiation	1	1
Alpha particles, multiple-charged particles, fission fragments and heavy particles of unknown charge	20	0.05
Neutrons of unknown energy	10	0.1
High-energy protons	10	0.1

[a] Absorbed dose in rad equal to 1 rem or the absorbed dose in gray equal to 1 sievert.

(c) If it is more convenient to measure the neutron fluence rate than to determine the neutron dose equivalent rate in rems per hour or sieverts per hour, as provided in paragraph (b) of this section, 1 rem (0.01

Sv) of neutron radiation of unknown energies may, for purposes of the regulations in this part, be assumed to result from a total fluence of 25 million neutrons per square centimeter incident upon the body. If sufficient information exists to estimate the approximate energy distribution of the neutrons, the licensee may use the fluence rate per unit dose equivalent or the appropriate Q value from table 1004(b).2 to convert a measured tissue dose in rads to dose equivalent in rems.

TABLE 1004(B).2—MEAN QUALITY FACTORS, Q, AND FLUENCE PER UNIT DOSE EQUIVALENT FOR MONOENERGETIC NEUTRONS

	Neutron energy (MeV)	Quality factor[a] (Q)	Fluence per unit dose equivalent[b] (neutrons cm^{-2} rem^{-1})
(thermal)	2.5×10^{-8}	2	980×10^6
	1×10^{-7}	2	980×10^6
	1×10^{-6}	2	810×10^6
	1×10^{-5}	2	810×10^6
	1×10^{-4}	2	840×10^6
	1×10^{-3}	2	980×10^6
	1×10^{-2}	2.5	1010×10^6
	1×10^{-1}	7.5	170×10^6
	5×10^{-1}	11	39×10^6
	1	11	27×10^6
	2.5	9	29×10^6
	5	8	23×10^6
	7	7	24×10^6
	10	6.5	24×10^6
	14	7.5	17×10^6
	20	8	16×10^6
	40	7	14×10^6
	60	5.5	16×10^6
	1×10^2	4	20×10^6
	2×10^2	3.5	19×10^6
	3×10^2	3.5	16×10^6
	4×10^2	3.5	14×10^6

[a] Value of quality factor (Q) at the point where the dose equivalent is maximum in a 30-cm diameter cylinder tissue-equivalent phantom.

[b] Monoenergetic neutrons incident normally on a 30-cm diameter cylinder tissue-equivalent phantom.

§ 20.1005. Units of radioactivity.

For the purposes of this part, activity is expressed in the special unit of curies (Ci) or in the SI unit of becquerels (Bq), or their multiples, or disintegrations (transformations) per unit of time.

(a) One becquerel = 1 disintegration per second (s^{-1}).

(b) One curie = 3.7×10^{10} disintegrations per second = 3.7×10^{10} becquerels = 2.22×10^{12} disintegrations per minute.

[56 FR 23391, May 21, 1991; 56 FR 61352, Dec. 3, 1991]

§ 20.1006. Interpretations.

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by an officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

§ 20.1007. Communications.

Unless otherwise specified, communications or reports concerning the regulations in this part should be addressed to the Executive Director for Operations (EDO), and sent either by mail to the U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001; by hand delivery to the NRC's offices at 11555 Rockville Pike, Rockville, Maryland; or, where practicable, by electronic submission, for example, via Electronic Information Exchange, or CD–ROM. Electronic submissions must be made in a manner that enables the NRC to receive, read, authenticate, distribute, and archive the submission, and process and retrieve it a single page at a time. Detailed guidance on making electronic submissions can be obtained by visiting the NRC's Web site at http://www.nrc.gov/site-help/e-submittals.html; by e-mail to MSHD.Resource@nrc.gov; or by writing the Office of Information Services, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001. The guidance discusses, among other topics, the formats the NRC can accept, the use of electronic signatures, and the treatment of nonpublic information.

[67 FR 57092, Sept. 6, 2002; 67 FR 72091, Dec. 4, 2002; 68 FR 58801, Oct. 10, 2003; 74 FR 62680, Dec. 1, 2009]

§ 20.1008. Implementation.

(a) [Reserved]

(b) The applicable section of §§ 20.1001–20.2402 must be used in lieu of requirements in the standards for protection against radiation in effect prior to January 1, 1994[1] that are cited in license conditions or technical specifications, except as specified in paragraphs (c), (d), and (e) of this section. If the requirements of this part are more restrictive than the existing license condition, then the licensee shall comply with this part unless exempted by paragraph (d) of this section.

(c) Any existing license condition or technical specification that is more restrictive than a requirement in §§ 20.1001–20.2402 remains in force until there is a technical specification change, license amendment, or license renewal.

(d) If a license condition or technical specification exempted a licensee from a requirement in the standards for protection against radiation in effect prior to January 1, 1994,[1] it continues to exempt a licensee from the corresponding provision of §§ 20.1001–20.2402.

(e) If a license condition cites provisions in requirements in the standards for protection against radiation in effect prior to January 1, 1994[1] and there are no corresponding provisions in §§ 20.1001–20.2402, then the license condition remains in force until there is a technical specification change, license amendment, or license renewal that modifies or removes this condition.

[59 FR 41643, Aug. 15, 1994]

[1] See §§ 20.1–20.602 codified as of January 1, 1993.

§ 20.1009. Information collection requirements: OMB approval.

(a) The Nuclear Regulatory Commission has submitted the information collection requirements contained in this part to the Office of Management and Budget (OMB) for approval as required by the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*). The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. OMB has approved the information collection requirements contained in this part under control number 3150–0014.

(b) The approved information collection requirements contained in this part appear in §§ 20.1003, 20.1101, 20.1202, 20.1203, 20.1204, 20.1206, 20.1208, 20.1301, 20.1302, 20.1403, 20.1404, 20.1406, 20.1501, 20.1601, 20.1703, 20.1901, 20.1904, 20.1905, 20.1906, 20.2002, 20.2004, 20.2005, 20.2006, 20.2102, 20.2103, 20.2104, 20.2105, 20.2106, 20.2107, 20.2108, 20.2110, 20.2201, 20.2202, 20.2203, 20.2204, 20.2205, 20.2206, 20.2207, 20.2301, and appendix G to this part.

(c) This part contains information collection requirements in addition to those approved under the control number specified in paragraph (a) of this section. These information collection requirements and the control numbers under which they are approved are as follows:

(1) In § 20.2104, NRC Form 4 is approved under control number 3150–0005.

(2) In §§ 20.2106 and 20.2206, NRC Form 5 is approved under control number 3150–0006.

(3) In § 20.2006 and appendix G to 10 CFR part 20, NRC Form 540 and 540A is approved under control number 3150–0164.

(4) In § 20.2006 and appendix G to 10 CFR part 20, NRC Form 541 and 541A is approved under control number 3150–0166.

(5) In § 20.2006 and appendix G to 10 CFR part 20, NRC Form 542 and 542A is approved under control number 3150–0165.

(6) In § 20.2207, NRC Form 748 is approved under control number 3150–0202.

[57 FR 57878, Dec. 8, 1992; 60 FR 15663, March 27, 1995; 62 FR 39087, July 21, 1997; 62 FR 52185, Oct. 6, 1997; 63 FR 50128, Sept. 21, 1998; 67 FR 67099, Nov. 4, 2002; 71 FR 65707, Nov. 8, 2006; 72 FR 55922, Oct. 1, 2007; 77 FR 39905, July 6, 2012]

Subpart B. Radiation Protection Programs

SOURCE: 56 FR 23396, May 21, 1991, unless otherwise noted.

§ 20.1101. Radiation protection programs.

(a) Each licensee shall develop, document, and implement a radiation protection program commensurate with the scope and extent of licensed activities and sufficient to ensure compliance with the provisions of this part. (See § 20.2102 for recordkeeping requirements relating to these programs.)

(b) The licensee shall use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA).

(c) The licensee shall periodically (at least annually) review the radiation protection program content and implementation.

(d) To implement the ALARA requirements of § 20.1101 (b), and notwithstanding the requirements in § 20.1301 of this part, a constraint on air emissions of radioactive material to the environment, excluding Radon–222 and its daughters, shall be established by licensees other than those subject to § 50.34a, such that the individual member of the public likely to receive the highest dose will not be expected to receive a total effective dose equivalent in excess of 10 mrem (0.1 mSv) per year from these emissions. If a licensee subject to this requirement exceeds this dose constraint, the licensee shall report the exceedance as provided in § 20.2203 and promptly take appropriate corrective action to ensure against recurrence.

[56 FR 23396, May 21, 1991, as amended at 61 FR 65127, Dec. 10, 1996; 63 FR 39482, July 23, 1998]

Subpart C. Occupational Dose Limits

SOURCE: 56 FR 23396, May 21, 1991, unless otherwise noted.

§ 20.1201. Occupational dose limits for adults.

(a) The licensee shall control the occupational dose to individual adults, except for planned special exposures under § 20.1206, to the following dose limits.

(1) An annual limit, which is the more limiting of—

(i) The total effective dose equivalent being equal to 5 rems (0.05 Sv); or

(ii) The sum of the deep–dose equivalent and the committed dose equivalent to any individual organ or tissue other than the lens of the eye being equal to 50 rems (0.5 Sv).

(2) The annual limits to the lens of the eye, to the skin of the whole body, and to the skin of the extremities, which are:

(i) A lens dose equivalent of 15 rems (0.15 Sv), and

(ii) A shallow–dose equivalent of 50 rem (0.5 Sv) to the skin of the whole body or to the skin of any extremity.

(b) Doses received in excess of the annual limits, including doses received during accidents, emergencies, and planned special exposures, must be subtracted from the limits for planned special exposures that the individual may receive during the current year (see § 20.1206(e)(1)) and during the individual's lifetime (see § 20.1206(e)(2)).

(c) When the external exposure is determined by measurement with an external personal monitoring device, the deep–dose equivalent must be used in place of the effective dose equivalent, unless the effective dose equivalent is determined by a dosimetry method approved by the NRC. The assigned deep–dose equivalent must be for the part of the body receiving the highest exposure. The assigned shallow–dose equivalent must be the dose averaged over the contiguous 10 square centimeters of skin receiving the highest exposure. The deep–dose equivalent, lens–dose equivalent, and shallow–dose equivalent may be assessed from surveys or other radiation measurements for the purpose of demonstrating compliance with the occupational dose limits, if the individual monitoring device was not in the region of highest potential exposure, or the results of individual monitoring are unavailable.

(d) Derived air concentration (DAC) and annual limit on intake (ALI) values are presented in table 1 of appendix B to part 20 and may be used to determine the individual's dose (see § 20.2106) and to demonstrate compliance with the occupational dose limits.

(e) In addition to the annual dose limits, the licensee shall limit the soluble uranium intake by an individual to 10 milligrams in a week in consideration of chemical toxicity (see footnote 3 of appendix B to part 20).

(f) The licensee shall reduce the dose that an individual may be allowed to receive in the current year by the amount of occupational dose received while employed by any other person (see § 20.2104(e)).

[60 FR 20185, April 25, 1995; 63 FR 39482, July 23, 1998; 63 FR 45393, Aug. 26, 1998; 67 FR 16304, April 5, 2002; 72 FR 68059, Dec. 4, 2007; 72 FR 72233, Dec. 20, 2007; 73 FR 8588, Feb. 14, 2008]

§ 20.1202. Compliance with requirements for summation of external and internal doses.

(a) If the licensee is required to monitor under both §§ 20.1502(a) and (b), the licensee shall demonstrate compliance with the dose limits by summing external and internal doses. If the licensee is required to monitor only under § 20.1502(a) or only under § 20.1502(b), then summation is not required to demonstrate compliance with the dose limits. The licensee may demonstrate compliance with the requirements for summation of external and internal doses by meeting one of the conditions specified in paragraph (b) of this section and the conditions in paragraphs (c) and (d) of this section.

(NOTE: The dose equivalents for the lens of the eye, the skin, and the extremities are not included in the summation, but are subject to separate limits.)

(b) *Intake by inhalation.* If the only intake of radionuclides is by inhalation, the total effective dose equivalent limit is not exceeded if the sum of the deep–dose equivalent divided by the total effective dose equivalent limit, and one of the following, does not exceed unity:

(1) The sum of the fractions of the inhalation ALI for each radionuclide, or

(2) The total number of derived air concentration–hours (DAC-hours) for all radionuclides divided by 2,000, or

(3) The sum of the calculated committed effective dose equivalents to all significantly irradiated[1] organs or tissues (T) calculated from bioassay data using appropriate biological models and expressed as a fraction of the annual limit.

(c) *Intake by oral ingestion.* If the occupationally exposed individual also receives an intake of radionuclides by oral ingestion greater than 10 percent of the applicable oral ALI, the licensee shall account for this intake and include it in demonstrating compliance with the limits.

(d) *Intake through wounds or absorption through skin.* The licensee shall evaluate and, to the extent practical, account for intakes through wounds or skin absorption.

NOTE: The intake through intact skin has been included in the calculation of DAC for hydrogen–3 and does not need to be further evaluated.

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[1] An organ or tissue is deemed to be significantly irradiated if, for that organ or tissue, the product of the weighting factor, w_T, and the committed dose equivalent, $H_{T,50}$, per unit intake is greater than 10 percent of the maximum weighted value of $H_{T,50}$, (i.e., W_T $H_{T,50}$) per unit intake for any organ or tissue.

[56 FR 23396, May 21, 1991, as amended at 57 FR 57878, Dec. 8, 1992]

§ 20.1203. Determination of external dose from airborne radioactive material.

Licensees shall, when determining the dose from airborne radioactive material, include the contribution to the deep–dose equivalent, lens dose equivalent, and shallow–dose equivalent from external exposure to the radioactive cloud (see appendix B to part 20, footnotes 1 and 2).

NOTE: Airborne radioactivity measurements and DAC values should not be used as the primary means to assess the deep-dose equivalent when the airborne radioactive material includes radionuclides other than noble gases or if the cloud of airborne radioactive material is not relatively uniform. The determination of the deep-dose equivalent to an individual should be based upon measurements using instruments or individual monitoring devices.

[56 FR 23396, May 21, 1991, as amended at 60 FR 20185, Apr. 25, 1995; 63 FR 39482, July 23, 1998]

§ 20.1204. Determination of internal exposure.

(a) For purposes of assessing dose used to determine compliance with occupational dose equivalent limits, the licensee shall, when required under § 20.1502, take suitable and timely measurements of—

(1) Concentrations of radioactive materials in air in work areas; or

(2) Quantities of radionuclides in the body; or

(3) Quantities of radionuclides excreted from the body; or

(4) Combinations of these measurements.

(b) Unless respiratory protective equipment is used, as provided in § 20.1703, or the assessment of intake is based on bioassays, the licensee shall assume that an individual inhales radioactive material at the airborne concentration in which the individual is present.

(c) When specific information on the physical and biochemical properties of the radionuclides taken into the body or the behavior or the material in an individual is known, the licensee may—

(1) Use that information to calculate the committed effective dose equivalent, and, if used, the licensee shall document that information in the individual's record; and

(2) Upon prior approval of the Commission, adjust the DAC or ALI values to reflect the actual physical and chemical characteristics of airborne radioactive material (e.g., aerosol size distribution or density); and

(3) Separately assess the contribution of fractional intakes of Class D, W, or Y compounds of a given radionuclide (see appendix B to part 20) to the committed effective dose equivalent.

(d) If the licensee chooses to assess intakes of Class Y material using the measurements given in § 20.1204(a)(2) or (3), the licensee may delay the recording and reporting of the assessments for periods up to 7 months, unless otherwise required by §§ 20.2202 or 20.2203, in order to permit the licensee to make additional measurements basic to the assessments.

(e) If the identity and concentration of each radionuclide in a mixture are known, the fraction of the DAC applicable to the mixture for use in calculating DAC–hours must be either—

(1) The sum of the ratios of the concentration to the appropriate DAC value (e.g., D, W, Y) from appendix B to part 20 for each radio–nuclide in the mixture; or

(2) The ratio of the total concentration for all radionuclides in the mixture to the most restrictive DAC value for any radionuclide in the mixture.

(f) If the identity of each radionuclide in a mixture is known, but the concentration of one or more of the radionuclides in the mixture is not known, the DAC for the mixture must be the most restrictive DAC of any radionuclide in the mixture.

(g) When a mixture of radionuclides in air exists, licensees may disregard certain radionuclides in the mixture if—

(1) The licensee uses the total activity of the mixture in demonstrating compliance with the dose limits in § 20.1201 and in complying with the monitoring requirements in § 20.1502(b), and

(2) The concentration of any radionuclide disregarded is less than 10 percent of its DAC, and

(3) The sum of these percentages for all of the radionuclides disregarded in the mixture does not exceed 30 percent.

(h)(1) In order to calculate the committed effective dose equivalent, the licensee may assume that the inhalation of one ALI, or an exposure of 2,000 DAC–hours, results in a committed effective dose equivalent of 5 rems (0.05 Sv) for radionuclides that have their ALIs or DACs based on the committed effective dose equivalent.

(2) When the ALI (and the associated DAC) is determined by the nonstochastic organ dose limit of 50 rems (0.5 Sv), the intake of radionuclides that would result in a committed effective dose equivalent of 5 rems (0.05 Sv) (the stochastic ALI) is listed in parentheses in table 1 of appendix B to part 20. In this case, the licensee may, as a simplifying assumption, use the stochastic ALIs to determine committed effective dose equivalent. However, if the licensee uses the stochastic ALIs, the licensee must also demonstrate that the limit in § 20.1201(a)(1)(ii) is met.

[56 FR 23396, May 21, 1991, as amended at 60 FR 20185, Apr. 25, 1995]

§ 20.1205. [Reserved]

§ 20.1206. Planned special exposures.

A licensee may authorize an adult worker to receive doses in addition to and accounted for separately from the doses received under the limits specified in § 20.1201 provided that each of the following conditions is satisfied—

(a) The licensee authorizes a planned special exposure only in an exceptional situation when alternatives that might avoid the dose estimated to result from the planned special exposure are unavailable or impractical.

(b) The licensee (and employer if the employer is not the licensee) specifically authorizes the planned special exposure, in writing, before the exposure occurs.

(c) Before a planned special exposure, the licensee ensures that the individuals involved are—

(1) Informed of the purpose of the planned operation;

(2) Informed of the estimated doses and associated potential risks and specific radiation levels or other conditions that might be involved in performing the task; and

(3) Instructed in the measures to be taken to keep the dose ALARA considering other risks that may be present.

(d) Prior to permitting an individual to participate in a planned special exposure, the licensee ascertains prior doses as required by § 20.2104(b) during the lifetime of the individual for each individual involved.

(e) Subject to § 20.1201(b), the licensee does not authorize a planned special exposure that would cause an individual to receive a dose from all planned special exposures and all doses in excess of the limits to exceed—

(1) The numerical values of any of the dose limits in § 20.1201(a) in any year; and

(2) Five times the annual dose limits in § 20.1201(a) during the individual's lifetime.

(f) The licensee maintains records of the conduct of a planned special exposure in accordance with § 20.2105 and submits a written report in accordance with § 20.2204.

(g) The licensee records the best estimate of the dose resulting from the planned special exposure in the individual's record and informs the individual, in writing, of the dose within 30 days from the date of the planned special exposure. The dose from planned special exposures is not to be considered in controlling future occupational dose of the individual under § 20.1201(a) but is to be included in evaluations required by § 20.1206 (d) and (e).

[56 FR 23396, May 21, 1991, as amended at 63 FR 39482, July 23, 1998]

§ 20.1207. Occupational dose limits for minors.

The annual occupational dose limits for minors are 10 percent of the annual dose limits specified for adult workers in § 20.1201.

§ 20.1208. Dose equivalent to an embryo/fetus.

(a) The licensee shall ensure that the dose equivalent to the embryo/fetus during the entire pregnancy, due to the occupational exposure of a declared pregnant woman, does not exceed 0.5 rem (5 mSv). (For recordkeeping requirements, see § 20.2106.)

(b) The licensee shall make efforts to avoid substantial variation above a uniform monthly exposure rate to a declared pregnant woman so as to satisfy the limit in paragraph (a) of this section.

(c) The dose equivalent to the embryo/fetus is the sum of—

(1) The deep–dose equivalent to the declared pregnant woman; and

(2) The dose equivalent to the embryo/fetus resulting from radionuclides in the embryo/fetus and radionuclides in the declared pregnant woman.

(d) If the dose equivalent to the embryo/fetus is found to have exceeded 0.5 rem (5 mSv), or is within 0.05 rem (0.5 mSv) of this dose, by the time the woman declares the pregnancy to the licensee, the licensee shall be deemed to be in compliance with paragraph (a) of this section if the additional dose equivalent to the embryo/fetus does not exceed 0.05 rem (0.5 mSv) during the remainder of the pregnancy.

[56 FR 23396, May 21, 1991, as amended at 63 FR 39482, July 23, 1998]

Subpart D. Radiation Dose Limits for Individual Members of the Public

SOURCE: 56 FR 23398, May 21, 1991, unless otherwise noted.

§ 20.1301. Dose limits for individual members of the public.

(a) Each licensee shall conduct operations so that—

(1) The total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 mSv) in a year, exclusive of the dose contributions from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released under § 35.75, from voluntary participation in medical research programs, and from the licensee's disposal of radioactive material into sanitary sewerage in accordance with § 20.2003, and

(2) The dose in any unrestricted area from external sources, exclusive of the dose contributions from patients administered radioactive material and released in accordance with § 35.75, does not exceed 0.002 rem (0.02 millisievert) in any one hour.

(b) If the licensee permits members of the public to have access to controlled areas, the limits for members of the public continue to apply to those individuals.

(c) Notwithstanding paragraph (a)(1) of this section, a licensee may permit visitors to an individual who cannot be released, under § 35.75, to receive a radiation dose greater than 0.1 rem (1 mSv) if—

(1) The radiation dose received does not exceed 0.5 rem (5 mSv); and

(2) The authorized user, as defined in 10 CFR Part 35, has determined before the visit that it is appropriate.

(d) A licensee or license applicant may apply for prior NRC authorization to operate up to an annual dose limit for an individual member of the public of 0.5 rem (5 mSv). The licensee or license applicant shall include the following information in this application:

(1) Demonstration of the need for and the expected duration of operations in excess of the limit in paragraph (a) of this section;

(2) The licensee's program to assess and control dose within the 0.5 rem (5 mSv) annual limit; and

(3) The procedures to be followed to maintain the dose as low as is reasonably achievable.

(e) In addition to the requirements of this part, a licensee subject to the provisions of EPA's generally applicable environmental radiation standards in 40 CFR Part 190 shall comply with those standards.

(f) The Commission may impose additional restrictions on radiation levels in unrestricted areas and on the total quantity of radionuclides that a licensee may release in effluents in order to restrict the collective dose.

[56 FR 23398, May 21, 1991, as amended at 60 FR 48625, Sept. 20, 1995; 62 FR 4133, Jan. 29, 1997; 67 FR 20370, Apr. 24, 2002; 67 FR 62872, Oct. 9, 2002]

§ 20.1302. Compliance with dose limits for individual members of the public.

(a) The licensee shall make or cause to be made, as appropriate, surveys of radiation levels in unrestricted and controlled areas and radioactive materials in effluents released to unrestricted and controlled areas to demonstrate compliance with the dose limits for individual members of the public in § 20.1301.

(b) A licensee shall show compliance with the annual dose limit in § 20.1301 by—

(1) Demonstrating by measurement or calculation that the total effective dose equivalent to the individual likely to receive the highest dose from the licensed operation does not exceed the annual dose limit; or

(2) Demonstrating that—

(i) The annual average concentrations of radioactive material released in gaseous and liquid effluents at the boundary of the unrestricted area do not exceed the values specified in table 2 of appendix B to part 20; and

(ii) If an individual were continuously present in an unrestricted area, the dose from external sources would not exceed 0.002 rem (0.02 mSv) in an hour and 0.05 rem (0.5 mSv) in a year.

(c) Upon approval from the Commission, the licensee may adjust the effluent concentration values in appendix B to part 20, table 2, for members of the public, to take into account the actual physical and chemical characteristics of the effluents (e.g., aerosol size distribution, solubility, density, radioactive decay equilibrium, chemical form).

[56 FR 23398, May 21, 1991; 56 FR 61352, Dec. 3, 1991, as amended at 57 FR 57878, Dec. 8, 1992; 60 FR 20185, Apr. 25, 1995]

Subpart E. Radiological Criteria for License Termination

SOURCE: 62 FR 39088, July 21, 1997, unless otherwise noted.

§ 20.1401. General provisions and scope.

(a) The criteria in this subpart apply to the decommissioning of facilities licensed under Parts 30, 40, 50, 52, 60, 61, 63, 70, and 72 of this chapter, and release of part of a facility or site for unrestricted use in accordance with § 50.83 of this chapter, as well as other facilities subject to the Commission's jurisdiction under the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, as amended. For high–level and low–level waste disposal facilities (10 CFR Parts 60, 61, and 63), the criteria apply only to ancillary surface facilities that support radioactive waste disposal activities. The criteria do not apply to uranium and thorium recovery facilities already subject to appendix A to 10 CFR part 40 or to uranium solution extraction facilities.

(b) The criteria in this subpart do not apply to sites which:

(1) Have been decommissioned prior to the effective date of the rule in accordance with criteria identified in the Site Decommissioning Management Plan (SDMP) Action Plan of April 16, 1992 (57 FR 13389);

(2) Have previously submitted and received Commission approval on a license termination plan (LTP) or decommissioning plan that is compatible with the SDMP Action Plan criteria; or

(3) Submit a sufficient LTP or decommissioning plan before August 20, 1998 and such LTP or decommissioning plan is approved by the Commission before August 20, 1999 and in accordance with the criteria identified in the SDMP Action Plan, except that if an EIS is required in the submittal, there will be a provision for day–for–day extension.

(c) After a site has been decommissioned and the license terminated in accordance with the criteria in this subpart, or after part of a facility or site has been released for unrestricted use in accordance with § 50.83 of this chapter and in accordance with the criteria in this subpart, the Commission will require additional cleanup only, if based on new information, it determines that the criteria of this subpart were not met and residual radioactivity remaining at the site could result in significant threat to public health and safety.

(d) When calculating TEDE to the average member of the critical group the licensee shall determine the peak annual TEDE dose expected within the first 1000 years after decommissioning.

[62 FR 39088, July 21, 1997, as amended at 66 FR 55789, Nov. 2, 2001; 68 FR 19726, Apr. 22, 2003; 72 FR 49485, Aug. 28, 2007]

§ 20.1402. Radiological criteria for unrestricted use.

A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 mrem (0.25 mSv) per year, including that from groundwater sources of drinking water, and that the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA). Determination of the levels which are ALARA must take into account consideration of any detriments, such as deaths from transportation accidents, expected to potentially result from decontamination and waste disposal.

§ 20.1403. Criteria for license termination under restricted conditions.

A site will be considered acceptable for license termination under restricted conditions if:

(a) The licensee can demonstrate that further reductions in residual radioactivity necessary to comply with the provisions of § 20.1402 would result in net public or environmental harm or were not being made because the residual levels associated with restricted conditions are ALARA. Determination of the levels which are ALARA must take into account consideration of any detriments, such as traffic accidents, expected to potentially result from decontamination and waste disposal;

(b) The licensee has made provisions for legally enforceable institutional controls that provide reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group will not exceed 25 mrem (0.25 mSv) per year;

(c) The licensee has provided sufficient financial assurance to enable an independent third party, including a governmental custodian of a site, to assume and carry out responsibilities for any necessary control and maintenance of the site. Acceptable financial assurance mechanisms are—

(1) Funds placed into a trust segregated from the licensee's assets and outside the licensee's administrative control, and in which the adequacy of the trust funds is to be assessed based on an assumed annual 1 percent real rate of return on investment;

(2) A statement of intent in the case of Federal, State, or local Government licensees, as described in § 30.35(f)(4) of this chapter; or

(3) When a government[1] entity is assuming custody and ownership of a site, an arrangement that is deemed acceptable by such governmental entity.

(d) The licensee has submitted a decommissioning plan or License Termination Plan (LTP) to the Commission indicating the licensee's intent to decommission in accordance with §§ 30.36(d), 40.42(d), 50.82(a) and (b), 70.38(d), or 72.54 of this chapter, and specifying that the licensee intends to decommission by restricting use of the site. The licensee shall document in the LTP or decommissioning plan how the advice of individuals and institutions in the community who may be affected by the decommissioning has been sought and incorporated, as appropriate, following analysis of that advice.

(1) Licensees proposing to decommission by restricting use of the site shall seek advice from such affected parties regarding the following matters concerning the proposed decommissioning

(i) Whether provisions for institutional controls proposed by the licensee:

(A) Will provide reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group will not exceed 25 mrem (0.25 mSv) TEDE per year;

(B) Will be enforceable; and

(C) Will not impose undue burdens on the local community or other affected parties.

(ii) Whether the licensee has provided sufficient financial assurance to enable an independent third party, including a governmental custodian of a site, to assume and carry out responsibilities for any necessary control and maintenance of the site;

(2) In seeking advice on the issues identified in § 20.1403(d)(1), the licensee shall provide for:

(i) Participation by representatives of a broad cross section of community interests who may be affected by the decommissioning;

(ii) An opportunity for a comprehensive, collective discussion on the issues by the participants represented; and

(iii) A publicly available summary of the results of all such discussions, including a description of the individual viewpoints of the participants on the issues and the extent of agreement or disagreement among the participants on the issues; and

(e) Residual radioactivity at the site has been reduced so that if the institutional controls were no longer in effect, there is reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group is as low as reasonably achievable and would not exceed either—

(1) 100 mrem (1 mSv) per year; or

(2) 500 mrem (5 mSv) per year provided that the licensee—

(i) Demonstrates that further reductions in residual radioactivity necessary to comply with the 100 mrem/y (1 mSv/y) value of paragraph (e)(1) of this section are not technically achievable, would be prohibitively expensive, or would result in net public or environmental harm;

(ii) Makes provisions for durable institutional controls;

(iii) Provides sufficient financial assurance to enable a responsible government entity or independent third party, including a governmental custodian of a site, both to carry out periodic rechecks of the site no less frequently than every 5 years to assure that the institutional controls remain in place as necessary to meet the criteria of § 20.1403(b) and to assume and carry out responsibilities for any necessary control and maintenance of those controls. Acceptable financial assurance mechanisms are those in paragraph (c) of this section.

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[1]So in original; probably should read "governmental". See 62 FR 39058.

[76 FR 35564, June 17, 2011]

§ 20.1404. Alternate criteria for license termination.

(a) The Commission may terminate a license using alternate criteria greater than the dose criterion of §§ 20.1402, 20.1403(b), and 20.1403(d)(1)(i)(A), if the licensee—

(1) Provides assurance that public health and safety would continue to be protected, and that it is unlikely that the dose from all man–made sources combined, other than medical, would be more than the 1 mSv/y (100 mrem/y) limit of subpart D, by submitting an analysis of possible sources of exposure;

(2) Has employed to the extent practical restrictions on site use according to the provisions of § 20.1403 in minimizing exposures at the site; and

(3) Reduces doses to ALARA levels, taking into consideration any detriments such as traffic accidents expected to potentially result from decontamination and waste disposal.

(4) Has submitted a decommissioning plan or License Termination Plan (LTP) to the Commission indicating the licensee's intent to decommission in accordance with §§ 30.36(d), 40.42(d), 50.82(a) and (b), 70.38(d), or 72.54 of this chapter, and specifying that the licensee proposes to decommission by use of alternate criteria. The licensee shall document in the decommissioning plan or LTP how the advice of individuals and institutions in the community who may be affected by the decommissioning has been sought and addressed, as appropriate, following analysis of that advice. In seeking such advice, the licensee shall provide for:

(i) Participation by representatives of a broad cross section of community interests who may be affected by the decommissioning;

(ii) An opportunity for a comprehensive, collective discussion on the issues by the participants represented; and

(iii) A publicly available summary of the results of all such discussions, including a description of the individual viewpoints of the participants on the issues and the extent of agreement and disagreement on the issues.

(5) Has provided sufficient financial assurance in the form of a trust fund to enable an independent third party, including a governmental custodian of a site, to assume and carry out responsibilities for any necessary control and maintenance of the site.

(b) The use of alternate criteria to terminate a license requires the approval of the Commission after consideration of the NRC staff's recommendations that will address any comments provided by the Environmental Protection Agency and any public comments submitted pursuant to § 20.1405.

[76 FR 35564, June 17, 2011]

§ 20.1405. Public notification and public participation.

Upon the receipt of an LTP or decommissioning plan from the licensee, or a proposal by the licensee for release of a site pursuant to §§ 20.1403 or 20.1404, or whenever the Commission deems such notice to be in the public interest, the Commission shall:

(a) Notify and solicit comments from:

(1) Local and State governments in the vicinity of the site and any Indian Nation or other indigenous people that have treaty or statutory rights that could be affected by the decommissioning; and

(2) The Environmental Protection Agency for cases where the licensee proposes to release a site pursuant to § 20.1404.

(b) Publish a notice in the FEDERAL REGISTER and in a forum, such as local newspapers, letters to State of local organizations, or other appropriate forum, that is readily accessible to individuals in the vicinity of the site, and solicit comments from affected parties.

§ 20.1406. Minimization of contamination.

(a) Applicants for licenses, other than early site permits and manufacturing licenses under part 52 of this chapter and renewals, whose applications are submitted after August 20, 1997, shall describe in the application how facility design and procedures for operation will minimize, to the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste.

(b) Applicants for standard design certifications, standard design approvals, and manufacturing licenses under part 52 of this chapter, whose applications are submitted after August 20, 1997, shall describe in the application how facility design will minimize, to the extent practicable, contamination of the facility and the environment, facilitate

eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste.

(c) Licensees shall, to the extent practical, conduct operations to minimize the introduction of residual radioactivity into the site, including the subsurface, in accordance with the existing radiation protection requirements in subpart B and radiological criteria for license termination in subpart E of this part.

[72 FR 49485, Aug. 28, 2007; 76 FR 35564, June 17, 2011]

Subpart F. Surveys and Monitoring

SOURCE: 56 FR 23398, May 21, 1991, unless otherwise noted.

§ 20.1501. General.

(a) Each licensee shall make or cause to be made, surveys of areas, including the subsurface, that—

(1) May be necessary for the licensee to comply with the regulations in this part; and

(2) Are reasonable under the circumstances to evaluate—

(i) The magnitude and extent of radiation levels; and

(ii) Concentrations or quantities of residual radioactivity; and

(iii) The potential radiological hazards of the radiation levels and residual radioactivity detected.

(b) Notwithstanding § 20.2103(a) of this part, records from surveys describing the location and amount of subsurface residual radioactivity identified at the site must be kept with records important for decommissioning, and such records must be retained in accordance with §§ 30.35(g), 40.36(f), 50.75(g), 70.25(g), or 72.30(d), as applicable.

(c) The licensee shall ensure that instruments and equipment used for quantitative radiation measurements (e.g., dose rate and effluent monitoring) are calibrated periodically for the radiation measured.

(d) All personnel dosimeters (except for direct and indirect reading pocket ionization chambers and those dosimeters used to measure the dose to the extremities) that require processing to determine the radiation dose and that are used by licensees to comply with § 20.1201, with other applicable provisions of this chapter, or with conditions specified in a license must be processed and evaluated by a dosimetry processor—

(1) Holding current personnel dosimetry accreditation from the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute of Standards and Technology; and

(2) Approved in this accreditation process for the type of radiation or radiations included in the NVLAP program that most closely approximates the type of radiation or radiations for which the individual wearing the dosimeter is monitored.

[57 FR 23929, June 5, 1992; 63 FR 39482, July 23, 1998; 63 FR 45393, Aug. 26, 1998; 76 FR 35564, June 17, 2011]

§ 20.1502. Conditions requiring individual monitoring of external and internal occupational dose.

Each licensee shall monitor exposures to radiation and radioactive material at levels sufficient to demonstrate compliance with the occupational dose limits of this part. As a minimum—

(a) Each licensee shall monitor occupational exposure to radiation from licensed and unlicensed radiation sources under the control of the licensee and shall supply and require the use of individual monitoring devices by—

(1) Adults likely to receive, in 1 year from sources external to the body, a dose in excess of 10 percent of the limits in § 20.1201(a),

(2) Minors likely to receive, in 1 year, from radiation sources external to the body, a deep dose equivalent in excess of 0.1 rem (1 mSv), a lens dose equivalent in excess of 0.15 rem (1.5 mSv), or a shallow dose equivalent to the skin or to the extremities in excess of 0.5 rem (5 mSv);

(3) Declared pregnant women likely to receive during the entire pregnancy, from radiation sources external to the body, a deep dose equivalent in excess of 0.1 rem (1 mSv);[2] and

(4) Individuals entering a high or very high radiation area.

(b) Each licensee shall monitor (see § 20.1204) the occupational intake of radioactive material by and assess the committed effective dose equivalent to—

(1) Adults likely to receive, in 1 year, an intake in excess of 10 percent of the applicable ALI(s) in table 1, columns 1 and 2, of appendix B to §§ 20.1001–20.2402;

(2) Minors likely to receive, in 1 year, a committed effective dose equivalent in excess of 0.1 rem (1 mSv); and

(3) Declared pregnant women likely to receive, during the entire pregnancy, a committed effective dose equivalent in excess of 0.1 rem (1 mSv).

[2] All of the occupational doses in § 20.1201 continue to be applicable to the declared pregnant worker as long as the embryo/fetus dose limit is not exceeded.

[56 FR 23398, May 21, 1991, as amended at 60 FR 20185, Apr. 25, 1995; 63 FR 39482, July 23, 1998]

Subpart G. Control of Exposure From External Sources in Restricted Areas

SOURCE: 56 FR 23398, May 21, 1991, unless otherwise noted.

§ 20.1601. Control of access to high radiation areas.

(a) The licensee shall ensure that each entrance or access point to a high radiation area has one or more of the following features—

(1) A control device that, upon entry into the area, causes the level of radiation to be reduced below that level at which an individual might receive a deep–dose equivalent of 0.1 rem (1 mSv) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates;

(2) A control device that energizes a conspicuous visible or audible alarm signal so that the individual entering the high radiation area and the supervisor of the activity are made aware of the entry; or

(3) Entryways that are locked, except during periods when access to the areas is required, with positive control over each individual entry.

(b) In place of the controls required by paragraph (a) of this section for a high radiation area, the licensee may substitute continuous direct or electronic surveillance that is capable of preventing unauthorized entry.

(c) A licensee may apply to the Commission for approval of alternative methods for controlling access to high radiation areas.

(d) The licensee shall establish the controls required by paragraphs (a) and (c) of this section in a way that does not prevent individuals from leaving a high radiation area.

(e) Control is not required for each entrance or access point to a room or other area that is a high radiation area solely because of the presence of radioactive materials prepared for transport and packaged and labeled in accordance with the regulations of the Department of Transportation provided that—

(1) The packages do not remain in the area longer than 3 days; and

(2) The dose rate at 1 meter from the external surface of any package does not exceed 0.01 rem (0.1 mSv) per hour.

(f) Control of entrance or access to rooms or other areas in hospitals is not required solely because of the presence of patients containing radioactive material, provided that there are personnel in attendance who will take the necessary precautions to prevent the exposure of individuals to radiation or radioactive material in excess of the limits established in this part and to operate within the ALARA provisions of the licensee's radiation protection program.

§ 20.1602. Control of access to very high radiation areas.

In addition to the requirements in § 20.1601, the licensee shall institute additional measures to ensure that an individual is not able to gain unauthorized or inadvertent access to areas in which radiation levels could be encountered at 500 rads (5 grays) or more in 1 hour at 1 meter from a radiation source or any surface through which the radiation penetrates.

Subpart H. Respiratory Protection and Controls to Restrict Internal Exposure in Restricted Areas

SOURCE: 56 FR 23400, May 21, 1991, unless otherwise noted.

§ 20.1701. Use of process or other engineering controls.

The licensee shall use, to the extent practical, process or other engineering controls (*e.g.*, containment, decontamination, or ventilation) to control the concentration of radioactive material in air.

[64 FR 54556, Oct. 7, 1999]

§ 20.1702. Use of other controls.

(a) When it is not practical to apply process or other engineering controls to control the concentrations of radioactive material in the air to values below those that define an airborne radioactivity area, the licensee shall, consistent with maintaining the total effective dose equivalent ALARA, increase monitoring and limit intakes by one or more of the following means—

(1) Control of access;

(2) Limitation of exposure times;

(3) Use of respiratory protection equipment; or

(4) Other controls.

(b) If the licensee performs an ALARA analysis to determine whether or not respirators should be used, the licensee may consider safety factors other than radiological factors. The licensee should also consider the impact of respirator use on workers' industrial health and safety.

[64 FR 54556, Oct. 7, 1999]

§ 20.1703. Use of individual respiratory protection equipment.

If the licensee assigns or permits the use of respiratory protection equipment to limit the intake of radioactive material,

(a) The licensee shall use only respiratory protection equipment that is tested and certified by the National Institute for Occupational Safety and Health (NIOSH) except as otherwise noted in this part.

(b) If the licensee wishes to use equipment that has not been tested or certified by NIOSH, or for which there is no schedule for testing or certification, the licensee shall submit an application to the NRC for authorized use of this equipment except as provided in this part. The application must include evidence that the material and performance characteristics of the equipment are capable of providing the proposed degree of protection under anticipated conditions of use. This must be demonstrated either by licensee testing or on the basis of reliable test information.

(c) The licensee shall implement and maintain a respiratory protection program that includes:

(1) Air sampling sufficient to identify the potential hazard, permit proper equipment selection, and estimate doses;

(2) Surveys and bioassays, as necessary, to evaluate actual intakes;

(3) Testing of respirators for operability (user seal check for face sealing devices and functional check for others) immediately prior to each use;

(4) Written procedures regarding—

(i) Monitoring, including air sampling and bioassays;

(ii) Supervision and training of respirator users;

(iii) Fit testing;

(iv) Respirator selection;

(v) Breathing air quality;

(vi) Inventory and control;

(vii) Storage, issuance, maintenance, repair, testing, and quality assurance of respiratory protection equipment;

(viii) Recordkeeping; and

(ix) Limitations on periods of respirator use and relief from respirator use;

(5) Determination by a physician that the individual user is medically fit to use respiratory protection equipment:

(i) Before the initial fitting of a face sealing respirator;

(ii) Before the first field use of non–face sealing respirators, and

(iii) Either every 12 months thereafter, or periodically at a frequency determined by a physician.

(6) Fit testing, with fit factor $\geq$ 10 times the APF for negative pressure devices, and a fit factor $\geq$ 500 for any positive pressure, continuous flow, and pressure–demand devices, before the first field use of tight fitting, face–sealing respirators and periodically thereafter at a frequency not to exceed 1 year. Fit testing must be performed with the facepiece operating in the negative pressure mode.

(d) The licensee shall advise each respirator user that the user may leave the area at any time for relief from respirator use in the event of equipment malfunction, physical or psychological distress, procedural or communication failure, significant deterioration of operating conditions, or any other conditions that might require such relief.

(e) The licensee shall also consider limitations appropriate to the type and mode of use. When selecting respiratory devices the licensee shall provide for vision correction, adequate communication, low temperature work environments, and the concurrent use of other safety or radiological protection equipment. The licensee shall use equipment in such a way as not to interfere with the proper operation of the respirator.

(f) Standby rescue persons are required whenever one–piece atmosphere–supplying suits, or any combination of supplied air respiratory protection device and personnel protective equipment are used from which an unaided individual would have difficulty extricating himself or herself. The standby persons must be equipped with respiratory protection devices or other apparatus appropriate for the potential hazards. The standby rescue persons shall observe or otherwise maintain continuous communication with the workers (visual, voice, signal line, telephone, radio, or other suitable means), and be immediately available to assist them in case of a failure of the air supply or for any other reason that requires relief from distress. A sufficient number of standby rescue persons must be immediately available to assist all users of this type of equipment and to provide effective emergency rescue if needed.

(g) Atmosphere–supplying respirators must be supplied with respirable air of grade D quality or better as defined by the Compressed Gas

Association in publication G–7.1, "Commodity Specification for Air," 1997 and included in the regulations of the Occupational Safety and Health Administration (29 CFR 1910.134(i)(1)(ii)(A) through (E)). Grade D quality air criteria include—

(1) Oxygen content (v/v) of 19.5–23.5%;

(2) Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;

(3) Carbon monoxide (CO) content of 10 ppm or less;

(4) Carbon dioxide content of 1,000 ppm or less; and

(5) Lack of noticeable odor.

(h) The licensee shall ensure that no objects, materials or substances, such as facial hair, or any conditions that interfere with the face—facepiece seal or valve function, and that are under the control of the respirator wearer, are present between the skin of the wearer's face and the sealing surface of a tight–fitting respirator facepiece.

(i) In estimating the dose to individuals from intake of airborne radioactive materials, the concentration of radioactive material in the air that is inhaled when respirators are worn is initially assumed to be the ambient concentration in air without respiratory protection, divided by the assigned protection factor. If the dose is later found to be greater than the estimated dose, the corrected value must be used. If the dose is later found to be less than the estimated dose, the corrected value may be used.

[64 FR 54557, Oct. 7, 1999, as amended at 67 FR 77652, Dec. 19, 2002]

§ 20.1704. Further restrictions on the use of respiratory protection equipment.

The Commission may impose restrictions in addition to the provisions of §§ 20.1702, 20.1703, and Appendix A to Part 20, in order to:

(a) Ensure that the respiratory protection program of the licensee is adequate to limit doses to individuals from intakes of airborne radioactive materials consistent with maintaining total effective dose equivalent ALARA; and

(b) Limit the extent to which a licensee may use respiratory protection equipment instead of process or other engineering controls.

[64 FR 54557, Oct. 7, 1999]

§ 20.1705 Application for use of higher assigned protection factors.

The licensee shall obtain authorization from the Commission before using assigned protection factors in excess of those specified in Appendix A to Part 20. The Commission may authorize a licensee to use higher assigned protection factors on receipt of an application that—

(a) Describes the situation for which a need exists for higher protection factors; and

(b) Demonstrates that the respiratory protection equipment provides these higher protection factors under the proposed conditions of use.

[64 FR 54557, Oct. 7, 1999]

Subpart I. Storage and Control of Licensed Material

SOURCE: 56 FR 23401, May 21, 1991, unless otherwise noted.

§ 20.1801. Security of stored material.

The licensee shall secure from unauthorized removal or access licensed materials that are stored in controlled or unrestricted areas.

§ 20.1802. Control of material not in storage.

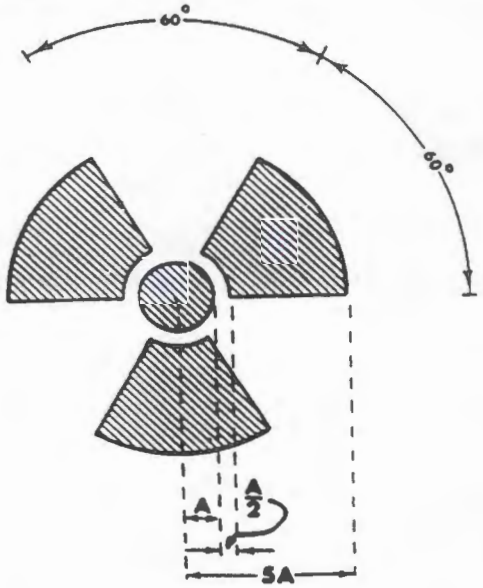
The licensee shall control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area and that is not in storage.

Subpart J. Precautionary Procedures

SOURCE: 56 FR 23401, May 21, 1991, unless otherwise noted.

§ 20.1901. Caution signs.

(a) *Standard radiation symbol.* Unless otherwise authorized by the Commission, the symbol prescribed by this part shall use the colors magenta, or purple, or black on yellow background. The symbol prescribed by this part is the three-bladed design:



RADIATION SYMBOL

(1) Cross-hatched area is to be magenta, or purple, or black, and

(2) The background is to be yellow.

(b) *Exception to color requirements for standard radiation symbol.* Notwithstanding the requirements of paragraph (a) of this section, licensees are authorized to label sources, source holders, or device components containing sources of licensed materials that are subjected to high temperatures, with conspicuously etched or stamped radiation caution symbols and without a color requirement.

(c) *Additional information on signs and labels.* In addition to the contents of signs and labels prescribed in this part, the licensee may provide, on or near the required signs and labels, additional information, as appropriate, to make individuals aware of potential radiation exposures and to minimize the exposures.

§ 20.1902. Posting requirements.

(a) *Posting of radiation areas.* The licensee shall post each radiation area with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, RADIATION AREA."

(b) *Posting of high radiation areas.* The licensee shall post each high radiation area with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, HIGH RADIATION AREA" or "DANGER, HIGH RADIATION AREA."

(c) *Posting of very high radiation areas.* The licensee shall post each very high radiation area with a conspicuous sign or signs bearing the radiation symbol and words "GRAVE DANGER, VERY HIGH RADIATION AREA."

(d) *Posting of airborne radioactivity areas.* The licensee shall post each airborne radioactivity area with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, AIRBORNE RADIOACTIVITY AREA" or "DANGER, AIRBORNE RADIOACTIVITY AREA."

(e) *Posting of areas or rooms in which licensed material is used or stored.* The licensee shall post each area or room in which there is used or stored an amount of licensed material exceeding 10 times the quantity of such material specified in Appendix C to Part 20 with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL(S)" or "DANGER, RADIOACTIVE MATERIAL(S)."

[56 FR 23401, May 21, 1991, as amended at 60 FR 20185, Apr. 25, 1995]

§ 20.1903. Exceptions to posting requirements.

(a) A licensee is not required to post caution signs in areas or rooms containing radioactive materials for periods of less than 8 hours, if each of the following conditions is met:

(1) The materials are constantly attended during these periods by an individual who takes the precautions necessary to prevent the exposure of individuals to radiation or radioactive materials in excess of the limits established in this part; and

(2) The area or room is subject to the licensee's control.

(b) Rooms or other areas in hospitals that are occupied by patients are not required to be posted with caution signs pursuant to § 20.1902 provided that the patient could be released from licensee control pursuant to § 35.75 of this chapter.

(c) A room or area is not required to be posted with a caution sign because of the presence of a sealed source provided the radiation level at 30 centimeters from the surface of the source container or housing does not exceed 0.005 rem (0.05 mSv) per hour.

(d) Rooms in hospitals or clinics that are used for teletherapy are exempt from the requirement to post caution signs under § 20.1902 if—

(1) Access to the room is controlled pursuant to 10 CFR 35.615; and

(2) Personnel in attendance take necessary precautions to prevent the inadvertent exposure of workers, other patients, and members of the public to radiation in excess of the limits established in this part.

[56 FR 23401, May 21, 1991, as amended at 57 FR 39357, Aug. 31, 1992; 62 FR 4133, Jan. 29, 1997; 63 FR 39482, July 23, 1998]

§ 20.1904. Labeling containers.

(a) The licensee shall ensure that each container of licensed material bears a durable, clearly visible label bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL" or "DANGER, RADIOACTIVE MATERIAL." The label must also provide sufficient information (such as the radionuclide(s) present, an estimate of the quantity of radioactivity, the date for which the activity is estimated, radiation levels, kinds of materials, and mass enrichment) to permit individuals handling or using the containers, or working in the vicinity of the containers, to take precautions to avoid or minimize exposures.

(b) Each licensee shall, prior to removal or disposal of empty uncontaminated containers to unrestricted areas, remove or deface the radioactive material label or otherwise clearly indicate that the container no longer contains radioactive materials.

§ 20.1905. Exemptions to labeling requirements.

A licensee is not required to label—

(a) Containers holding licensed material in quantities less than the quantities listed in appendix C to part 20; or

(b) Containers holding licensed material in concentrations less than those specified in table 3 of appendix B to part 20; or

(c) Containers attended by an individual who takes the precautions necessary to prevent the exposure of individuals in excess of the limits established by this part; or

(d) Containers when they are in transport and packaged and labeled in accordance with the regulations of the Department of Transportation,[3] or

(e) Containers that are accessible only to individuals authorized to handle or use them, or to work in the vicinity of the containers, if the contents are identified to these individuals by a readily available written record (examples of containers of this type are containers in locations such as water–filled canals, storage vaults, or hot cells). The record must be retained as long as the containers are in use for the purpose indicated on the record; or

(f) Installed manufacturing or process equipment, such as reactor components, piping, and tanks; or

(g) Containers holding licensed material (other than sealed sources that are either specifically or generally licensed) at a facility licensed under Parts 50 or 52 of this chapter, not including non–power reactors, that are within an area posted under the requirements in § 20.1902 if the containers are:

(1) Conspicuously marked (such as by providing a system of color coding of containers) commensurate with the radiological hazard;

(2) Accessible only to individuals who have sufficient instruction to minimize radiation exposure while handling or working in the vicinity of the containers; and

(3) Subject to plant procedures to ensure they are appropriately labeled, as specified at § 20.1904 before being removed from the posted area.

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[3]Labeling of packages containing radioactive materials is required by the Department of Transportation (DOT) if the amount and type of radioactive material exceeds the limits for an excepted quantity or article as defined and limited by DOT regulations 49 CFR 173.403 (m) and (w) and 173.421–424.

[57 FR 23929, June 5, 1992; 60 FR 20185, April 25, 1995; 72 FR 68059, Dec. 4, 2007; 72 FR 72233, Dec. 20, 2007; 73 FR 8588, Feb. 14, 2008]

§ 20.1906. Procedures for receiving and opening packages.

(a) Each licensee who expects to receive a package containing quantities of radioactive material in excess of a Type A quantity, as defined in § 71.4 and appendix A to part 71 of this chapter, shall make arrangements to receive—

(1) The package when the carrier offers it for delivery; or

(2) Notification of the arrival of the package at the carrier's terminal and to take possession of the package expeditiously.

(b) Each licensee shall—

(1) Monitor the external surfaces of a labeled[3a] package for radioactive contamination unless the package contains only radioactive material in the form of a gas or in special form as defined in 10 CFR 71.4;

(2) Monitor the external surfaces of a labeled[3a] package for radiation levels unless the package contains quantities of radioactive material that are less than or equal to the Type A quantity, as defined in § 71.4 and appendix A to part 71 of this chapter; and

(3) Monitor all packages known to contain radioactive material for radioactive contamination and radiation levels if there is evidence of degradation of package integrity, such as packages that are crushed, wet, or damaged.

(c) The licensee shall perform the monitoring required by paragraph (b) of this section as soon as practical after receipt of the package, but

not later than 3 hours after the package is received at the licensee's facility if it is received during the licensee's normal working hours, or not later than 3 hours from the beginning of the next working day if it is received after working hours.

(d) The licensee shall immediately notify the final delivery carrier and the NRC Operations Center (301–816–5100), by telephone, when—

(1) Removable radioactive surface contamination exceeds the limits of § 71.87(i) of this chapter; or

(2) External radiation levels exceed the limits of § 71.47 of this chapter.

(e) Each licensee shall—

(1) Establish, maintain, and retain written procedures for safely opening packages in which radioactive material is received; and

(2) Ensure that the procedures are followed and that due consideration is given to special instructions for the type of package being opened.

(f) Licensees transferring special form sources in licensee–owned or licensee–operated vehicles to and from a work site are exempt from the contamination monitoring requirements of paragraph (b) of this section, but are not exempt from the survey requirement in paragraph (b) of this section for measuring radiation levels that is required to ensure that the source is still properly lodged in its shield.

[3a]Labeled with a Radioactive White I, Yellow II, or Yellow III label as specified in U.S. Department of Transportation regulations, 49 CFR 172.403 and 172.436–440.

[56 FR 23401, May 21, 1991, as amended at 57 FR 39357, Aug. 31, 1992; 60 FR 20185, Apr. 25, 1995; 63 FR 39482, July 23, 1998]

Subpart K. Waste Disposal

SOURCE: 56 FR 23403, May 21, 1991, unless otherwise noted.

§ 20.2001. General requirements.

(a) A licensee shall dispose of licensed material only—

(1) By transfer to an authorized recipient as provided in § 20.2006 or in the regulations in parts 30, 40, 60, 61, 63, 70, and 72 of this chapter;

(2) By decay in storage; or

(3) By release in effluents within the limits in § 20.1301; or

(4) As authorized under §§ 20.2002, 20.2003, 20.2004, 20.2005, or § 20.2008.

(b) A person must be specifically licensed to receive waste containing licensed material from other persons for:

(1) Treatment prior to disposal; or

(2) Treatment or disposal by incineration; or

(3) Decay in storage; or

(4) Disposal at a land disposal facility licensed under part 61 of this chapter; or

(5) Disposal at a geologic repository under part 60 or part 63 of this chapter.

[56 FR 23403, May 21, 1991, as amended at 66 FR 55789, Nov. 2, 2001; 72 FR 55922, Oct. 1, 2007]

§ 20.2002. Method for obtaining approval of proposed disposal procedures.

A licensee or applicant for a license may apply to the Commission for approval of proposed procedures, not otherwise authorized in the regulations in this chapter, to dispose of licensed material generated in the licensee's activities. Each application shall include:

(a) A description of the waste containing licensed material to be disposed of, including the physical and chemical properties important to risk evaluation, and the proposed manner and conditions of waste disposal; and

(b) An analysis and evaluation of pertinent information on the nature of the environment; and

(c) The nature and location of other potentially affected licensed and unlicensed facilities; and

(d) Analyses and procedures to ensure that doses are maintained ALARA and within the dose limits in this part.

§ 20.2003. Disposal by release into sanitary sewerage.

(a) A licensee may discharge licensed material into sanitary sewerage if each of the following conditions is satisfied:

(1) The material is readily soluble (or is readily dispersible biological material) in water; and

(2) The quantity of licensed or other radioactive material that the licensee releases into the sewer in 1 month divided by the average monthly volume of water released into the sewer by the licensee does not exceed the concentration listed in table 3 of appendix B to part 20; and

(3) If more than one radionuclide is released, the following conditions must also be satisfied:

(i) The licensee shall determine the fraction of the limit in table 3 of appendix B to part 20 represented by discharges into sanitary sewerage by dividing the actual monthly average concentration of each radionuclide released by the licensee into the sewer by the concentration of that radionuclide listed in table 3 of appendix B to part 20; and

(ii) The sum of the fractions for each radionuclide required by paragraph (a)(3)(i) of this section does not exceed unity; and

(4) The total quantity of licensed and other radioactive material that the licensee releases into the sanitary sewerage system in a year does not exceed 5 curies (185 GBq) of hydrogen–3, 1 curie (37 GBq) of carbon–14, and 1 curie (37 GBq) of all other radioactive materials combined.

(b) Excreta from individuals undergoing medical diagnosis or therapy with radioactive material are not subject to the limitations contained in paragraph (a) of this section.

[56 FR 23403, May 21, 1991, as amended at 60 FR 20185, Apr. 25, 1995]

§ 20.2004. Treatment or disposal by incineration.

(a) A licensee may treat or dispose of licensed material by incineration only:

(1) As authorized by paragraph (b) of this section; or

(2) If the material is in a form and concentration specified in § 20.2005; or

(3) As specifically approved by the Commission pursuant to § 20.2002.

(b)(1) Waste oils (petroleum derived or synthetic oils used principally as lubricants, coolants, hydraulic or insulating fluids, or metalworking oils) that have been radioactively contaminated in the course of the operation or maintenance of a nuclear power reactor licensed under part 50 of this chapter may be incinerated on the site where generated provided that the total radioactive effluents from the facility, including the effluents from such incineration, conform to the requirements of appendix I to part 50 of this chapter and the effluent release limits contained in applicable license conditions other than effluent limits specifically related to incineration of waste oil. The licensee shall report any

changes or additions to the information supplied under §§ 50.34 and 50.34a of this chapter associated with this incineration pursuant to § 50.71 of this chapter, as appropriate. The licensee shall also follow the procedures of § 50.59 of this chapter with respect to such changes to the facility or procedures.

(2) Solid residues produced in the process of incinerating waste oils must be disposed of as provided by § 20.2001.

(3) The provisions of this section authorize onsite waste oil incineration under the terms of this section and supersede any provision in an individual plant license or technical specification that may be inconsistent.

[57 FR 57656, Dec. 7, 1992]

§ 20.2005. Disposal of specific wastes.

(a) A licensee may dispose of the following licensed material as if it were not radioactive:

(1) 0.05 microcurie (1.85 kBq), or less, of hydrogen–3 or carbon–14 per gram of medium used for liquid scintillation counting; and

(2) 0.05 microcurie (1.85 kBq), or less, of hydrogen–3 or carbon–14 per gram of animal tissue, averaged over the weight of the entire animal.

(b) A licensee may not dispose of tissue under paragraph (a)(2) of this section in a manner that would permit its use either as food for humans or as animal feed.

(c) The licensee shall maintain records in accordance with § 20.2108.

§ 20.2006. Transfer for disposal and manifests.

(a) The requirements of this section and appendix G to 10 CFR part 20 are designed to—

(1) Control transfers of low–level radioactive waste by any waste generator, waste collector, or waste processor licensee, as defined in this part, who ships low–level waste either directly, or indirectly through a waste collector or waste processor, to a licensed low–level waste land disposal facility (as defined in part 61 of this chapter);

(2) Establish a manifest tracking system; and

(3) Supplement existing requirements concerning transfers and recordkeeping for those wastes.

(b) Any licensee shipping radioactive waste intended for ultimate disposal at a licensed land disposal facility must document the information required on NRC's Uniform Low–Level Radioactive Waste Manifest and transfer this recorded manifest information to the intended consignee in accordance with appendix G to 10 CFR part 20.

(c) Each shipment manifest must include a certification by the waste generator as specified in section II of appendix G to 10 CFR part 20.

(d) Each person involved in the transfer for disposal and disposal of waste, including the waste generator, waste collector, waste processor, and disposal facility operator, shall comply with the requirements specified in section III of appendix G to 10 CFR part 20.

(e) Any licensee shipping byproduct material as defined in paragraphs (3) and (4) of the definition of *Byproduct material* set forth in § 20.1003 intended for ultimate disposal at a land disposal facility licensed under part 61 of this chapter must document the information required on the NRC's Uniform Low–Level Radioactive Waste Manifest and transfer this recorded manifest information to the intended consignee in accordance with appendix G to this part.

[63 FR 50128, Sept. 21, 1998, as amended at 72 FR 55922, Oct. 1, 2007]

§ 20.2007. Compliance with environmental and health protection regulations.

Nothing in this subpart relieves the licensee from complying with other applicable Federal, State, and local regulations governing any other toxic or hazardous properties of materials that may be disposed of under this subpart.

§ 20.2008. Disposal of certain byproduct material.

(a) Licensed material as defined in paragraphs (3) and (4) of the definition of *Byproduct material* set forth in Sec. 20.1003 may be disposed of in accordance with part 61 of this chapter, even though it is not defined as low–level radioactive waste. Therefore, any licensed byproduct material being disposed of at a facility, or transferred for ultimate disposal at a facility licensed under part 61 of this chapter, must meet the requirements of Sec. 20.2006.

(b) A licensee may dispose of byproduct material, as defined in paragraphs (3) and (4) of the definition of *Byproduct material* set forth in Sec. 20.1003, at a disposal facility authorized to dispose of such material in accordance with any Federal or State solid or hazardous waste law, including the Solid Waste Disposal Act, as authorized under the Energy Policy Act of 2005.

[72 FR 55922, Oct. 1, 2007]

Subpart L. Records

SOURCE: 56 FR 23404, May 21, 1991, unless otherwise noted.

§ 20.2101. General provisions.

(a) Each licensee shall use the units: curie, rad, rem, including multiples and subdivisions, and shall clearly indicate the units of all quantities on records required by this part.

(b) In the records required by this part, the licensee may record quantities in SI units in parentheses following each of the units specified in paragraph (a) of this section. However, all quantities must be recorded as stated in paragraph (a) of this section.

(c) Not withstanding the requirements of paragraph (a) of this section, when recording information on shipment manifests, as required in § 20.2006(b), information must be recorded in the International System of Units (SI) or in SI and units as specified in paragraph (a) of this section.

(d) The licensee shall make a clear distinction among the quantities entered on the records required by this part (e.g., total effective dose equivalent, shallow–dose equivalent, lens dose equivalent, deep–dose equivalent, committed effective dose equivalent).

[56 FR 23404, May 21, 1991, as amended at 60 FR 15663, Mar. 27, 1995; 63 FR 39483, July 23, 1998]

§ 20.2102. Records of radiation protection programs.

(a) Each licensee shall maintain records of the radiation protection program, including:

(1) The provisions of the program; and

(2) Audits and other reviews of program content and implementation.

(b) The licensee shall retain the records required by paragraph (a)(1) of this section until the Commission terminates each pertinent license requiring the record. The licensee shall retain the records required by paragraph (a)(2) of this section for 3 years after the record is made.

§ 20.2103. Records of surveys.

(a) Each licensee shall maintain records showing the results of surveys and calibrations required by §§ 20.1501 and 20.1906(b). The licensee shall retain these records for 3 years after the record is made.

(b) The licensee shall retain each of the following records until the Commission terminates each pertinent license requiring the record:

(1) Records of the results of surveys to determine the dose from external sources and used, in the absence of or in combination with individual monitoring data, in the assessment of individual dose equivalents. This includes those records of results of surveys to determine the dose from external sources and used, in the absence of or in combination with individual monitoring data, in the assessment of individual dose equivalents required under the standards for protection against radiation in effect prior to January 1, 1994; and

(2) Records of the results of measurements and calculations used to determine individual intakes of radioactive material and used in the assessment of internal dose. This includes those records of the results of measurements and calculations used to determine individual intakes of radioactive material and used in the assessment of internal dose required under the standards for protection against radiation in effect prior to January 1, 1994; and

(3) Records showing the results of air sampling, surveys, and bioassays required pursuant to § 20.1703(c)(1) and (2). This includes those records showing the results of air sampling, surveys, and bioassays required under the standards for protection against radiation in effect prior to January 1, 1994; and

(4) Records of the results of measurements and calculations used to evaluate the release of radioactive effluents to the environment. This includes those records of the results of measurements and calculations used to evaluate the release of radioactive effluents to the environment required under the standards for protection against radiation in effect prior to January 1, 1994.

[56 FR 23404, May 21, 1991, as amended at 60 FR 20185, Apr. 25, 1995; 66 FR 64737, Dec. 14, 2001]

§ 20.2104. Determination of prior occupational dose.

(a) For each individual who is likely to receive an annual occupational dose requiring monitoring under § 20.1502, the licensee shall determine the occupational radiation dose received during the current year.

(1) Determine the occupational radiation dose received during the current year; and

(2) Attempt to obtain the records of cumulative occupational radiation dose.

(b) Prior to permitting an individual to participate in a planned special exposure, the licensee shall determine—

(1) The internal and external doses from all previous planned special exposures; and

(2) All doses in excess of the limits (including doses received during accidents and emergencies) received during the lifetime of the individual.

(c) In complying with the requirements of paragraphs (a) or (b) of this section, a licensee may—

(1) Accept, as a record of the occupational dose that the individual received during the current year, a written signed statement from the individual, or from the individual's most recent employer for work involving radiation exposure, that discloses the nature and the amount of any occupational dose that the individual may have received during the current year;

(2) Accept, as the record of cumulative radiation dose, an up–to–date NRC Form 4, or equivalent, signed by the individual and countersigned by an appropriate official of the most recent employer for work involving radiation exposure, or the individual's current employer (if the individual is not employed by the licensee); and

(3) Obtain reports of the individual's dose equivalent(s) from the most recent employer for work involving radiation exposure, or the individual's current employer (if the individual is not employed by the licensee) by telephone, telegram, electronic media, or letter. The licensee shall request a written verification of the dose data if the authenticity of the transmitted report cannot be established.

(d) The licensee shall record the exposure history of each individual, as required by paragraphs (a) or (b) of this section, on NRC Form 4, or other clear and legible record, including all of the information required by NRC Form 4.[4] The form or record must show each period in which the individual received occupational exposure to radiation or radioactive material and must be signed by the individual who received the exposure. For each period for which the licensee obtains reports, the licensee shall use the dose shown in the report in preparing the NRC Form 4. For any period in which the licensee does not obtain a report, the licensee shall place a notation on the NRC Form 4 indicating the periods of time for which data are not available.

(e) If the licensee is unable to obtain a complete record of an individual's current and previously accumulated occupational dose, the licensee shall assume—

(1) In establishing administrative controls under § 20.1201(f) for the current year, that the allowable dose limit for the individual is reduced by 1.25 rems (12.5 mSv) for each quarter for which records were unavailable and the individual was engaged in activities that could have resulted in occupational radiation exposure; and

(2) That the individual is not available for planned special exposures.

(f) The licensee shall retain the records on NRC Form 4 or equivalent until the Commission terminates each pertinent license requiring this record. The licensee shall retain records used in preparing NRC Form 4 for 3 years after the record is made. This includes records required under the standards for protection against radiation in effect prior to January 1, 1994.

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[4]Licensees are not required to partition historical dose between external dose equivalent(s) and internal committed dose equivalent(s). Further, occupational exposure histories obtained and recorded on NRC Form 4 before January 1, 1994, might not have included effective dose equivalent, but may be used in the absence of specific information on the intake of radionuclides by the individual.

[57 FR 57878, Dec. 8, 1992; 60 FR 20186, April 25, 1995; 60 FR 36043, July 13, 1995; 72 FR 68059, Dec. 4, 2007; 72 FR 72233, Dec. 20, 2007; 73 FR 8588, Feb. 14, 2008]

§ 20.2105. Records of planned special exposures.

(a) For each use of the provisions of § 20.1206 for planned special exposures, the licensee shall maintain records that describe—

(1) The exceptional circumstances requiring the use of a planned special exposure; and

(2) The name of the management official who authorized the planned special exposure and a copy of the signed authorization; and

(3) What actions were necessary; and

(4) Why the actions were necessary; and

(5) How doses were maintained ALARA; and

(6) What individual and collective doses were expected to result, and the doses actually received in the planned special exposure.

(b) The licensee shall retain the records until the Commission terminates each pertinent license requiring these records.

§ 20.2106. Records of individual monitoring results.

(a) *Recordkeeping requirement.* Each licensee shall maintain records of doses received by all individuals for whom monitoring was required

pursuant to § 20.1502, and records of doses received during planned special exposures, accidents, and emergency conditions. These records[5] must include, when applicable—

(1) The deep–dose equivalent to the whole body, lens dose equivalent, shallow–dose equivalent to the skin, and shallow–dose equivalent to the extremities;

(2) The estimated intake of radionuclides (see § 20.1202);

(3) The committed effective dose equivalent assigned to the intake of radionuclides;

(4) The specific information used to assess the committed effective dose equivalent pursuant to § 20.1204(a) and (c), and when required by § 20.1502;

(5) The total effective dose equivalent when required by § 20.1202; and

(6) The total of the deep–dose equivalent and the committed dose to the organ receiving the highest total dose.

(b) *Recordkeeping frequency.* The licensee shall make entries of the records specified in paragraph (a) of this section at least annually.

(c) *Recordkeeping format.* The licensee shall maintain the records specified in paragraph (a) of this section on NRC Form 5, in accordance with the instructions for NRC Form 5, or in clear and legible records containing all the information required by NRC Form 5.

(d) *Privacy protection.* The records required under this section should be protected from public disclosure because of their personal privacy nature. These records are protected by most State privacy laws and, when transferred to the NRC, are protected by the Privacy Act of 1974, Public Law 93–579, 5 U.S.C. 552a, and the Commission's regulations in 10 CFR part 9.

(e) The licensee shall maintain the records of dose to an embryo/fetus with the records of dose to the declared pregnant woman. The declaration of pregnancy shall also be kept on file, but may be maintained separately from the dose records.

(f) The licensee shall retain the required form or record until the Commission terminates each pertinent license requiring this record. This includes records required under the standards for protection against radiation in effect prior to January 1, 1994.

[5] Assessments of dose equivalent and records made using units in effect before the licensee's adoption of this part need not be changed.

[56 FR 23404, May 21, 1991, as amended at 60 FR 20186, Apr. 25, 1995; 63 FR 39483, July 23, 1998]

§ 20.2107. Records of dose to individual members of the public.

(a) Each licensee shall maintain records sufficient to demonstrate compliance with the dose limit for individual members of the public (see § 20.1301).

(b) The licensee shall retain the records required by paragraph (a) of this section until the Commission terminates each pertinent license requiring the record.

§ 20.2108. Records of waste disposal.

(a) Each licensee shall maintain records of the disposal of licensed materials made under §§ 20.2002, 20.2003, 20.2004, 20.2005, 10 CFR part 61 and disposal by burial in soil, including burials authorized before January 28, 1981.[6]

(b) The licensee shall retain the records required by paragraph (a) of this section until the Commission terminates each pertinent license requiring the record. Requirements for disposition of these records, prior to license termination, are located in §§ 30.51, 40.61, 70.51, and 72.80 for activities licensed under these parts.

[6] A previous § 20.304 permitted burial of small quantities of licensed materials in soil before January 28, 1981, without specific Commission authorization.

[56 FR 23404, May 21, 1991, as amended at 60 FR 20186, Apr. 25, 1995; 61 FR 24673, May 16, 1996]

§ 20.2109. [Reserved]

§ 20.2110. Form of records.

Each record required by this part must be legible throughout the specified retention period. The record may be the original or a reproduced copy or a microform provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of producing a clear copy throughout the required retention period. The record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records, such as letters, drawings, and specifications, must include all pertinent information, such as stamps, initials, and signatures. The licensee shall maintain adequate safeguards against tampering with and loss of records.

Subpart M. Reports

SOURCE: 56 FR 23406, May 21, 1991, unless otherwise noted.

§ 20.2201. Reports of theft or loss of licensed material.

(a) Telephone reports.

(1) Each licensee shall report by telephone as follows:

(i) Immediately after its occurrence becomes known to the licensee, any lost, stolen, or missing licensed material in an aggregate quantity equal to or greater than 1,000 times the quantity specified in appendix C to part 20 under such circumstances that it appears to the licensee that an exposure could result to persons in unrestricted areas; or

(ii) Within 30 days after the occurrence of any lost, stolen, or missing licensed material becomes known to the licensee, all licensed material in a quantity greater than 10 times the quantity specified in appendix C to part 20 that is still missing at this time.

(2) Reports must be made as follows:

(i) Licensees having an installed Emergency Notification System shall make the reports to the NRC Operations Center in accordance with § 50.72 of this chapter, and

(ii) All other licensees shall make reports by telephone to the NRC Operations Center (301–816–5100).

(b) Written reports.

(1) Each licensee required to make a report under paragraph (a) of this section shall, within 30 days after making the telephone report, make a written report setting forth the following information:

(i) A description of the licensed material involved, including kind, quantity, and chemical and physical form; and

(ii) A description of the circumstances under which the loss or theft occurred; and

(iii) A statement of disposition, or probable disposition, of the licensed material involved; and

(iv) Exposures of individuals to radiation, circumstances under which the exposures occurred, and the possible total effective dose equivalent to persons in unrestricted areas; and

(v) Actions that have been taken, or will be taken, to recover the material; and

(vi) Procedures or measures that have been, or will be, adopted to ensure against a recurrence of the loss or theft of licensed material.

(2) Reports must be made as follows:

(i) For holders of an operating license for a nuclear power plant, the events included in paragraph (b) of this section must be reported in accordance with the procedures described in § 50.73(b), (c), (d), (e), and (g) of this chapter and must include the information required in paragraph (b)(1) of this section, and

(ii) All other licensees shall make reports to the Administrator of the appropriate NRC Regional Office listed in appendix D to part 20.

(c) A duplicate report is not required under paragraph (b) of this section if the licensee is also required to submit a report pursuant to §§ 30.55(c), 37.57, 37.81, 40.64(c), 50.72, 50.73, 70.52, 73.27(b), 73.67(e)(3)(vii), 73.67(g)(3)(iii), 73.71, or 150.19(c) of this chapter.

(d) Subsequent to filing the written report, the licensee shall also report any additional substantive information on the loss or theft within 30 days after the licensee learns of such information.

(e) The licensee shall prepare any report filed with the Commission pursuant to this section so that names of individuals who may have received exposure to radiation are stated in a separate and detachable part of the report.

[57 FR 23929, June 5, 1992; 58 FR 69220, Dec. 30, 1993; 60 FR 20186, April 25, 1995; 66 FR 64738, Dec. 14, 2001; 67 FR 3585, Jan. 25, 2002; 78 FR 17006, March 19, 2013]

§ 20.2202. Notification of incidents.

(a) Immediate notification. Notwithstanding any other requirements for notification, each licensee shall immediately report any event involving byproduct, source, or special nuclear material possessed by the licensee that may have caused or threatens to cause any of the following conditions—

(1) An individual to receive—

(i) A total effective dose equivalent of 25 rems (0.25 Sv) or more; or

(ii) A lens dose equivalent of 75 rems (0.75 Sv) or more; or

(iii) A shallow–dose equivalent to the skin or extremities of 250 rads (2.5 Gy) or more; or

(2) The release of radioactive material, inside or outside of a restricted area, so that, had an individual been present for 24 hours, the individual could have received an intake five times the annual limit on intake (the provisions of this paragraph do not apply to locations where personnel are not normally stationed during routine operations, such as hot–cells or process enclosures).

(b) Twenty–four hour notification. Each licensee shall, within 24 hours of discovery of the event, report any event involving loss of control of licensed material possessed by the licensee that may have caused, or threatens to cause, any of the following conditions:

(1) An individual to receive, in a period of 24 hours—

(i) A total effective dose equivalent exceeding 5 rems (0.05 Sv); or

(ii) A lens dose equivalent exceeding 15 rems (0.15 Sv); or

(iii) A shallow–dose equivalent to the skin or extremities exceeding 50 rems (0.5 Sv); or

(2) The release of radioactive material, inside or outside of a restricted area, so that, had an individual been present for 24 hours, the individual could have received an intake in excess of one occupational annual limit on intake (the provisions of this paragraph do not apply to locations where personnel are not normally stationed during routine operations, such as hot–cells or process enclosures).

(c) The licensee shall prepare any report filed with the Commission pursuant to this section so that names of individuals who have received exposure to radiation or radioactive material are stated in a separate and detachable part of the report.

(d) Reports made by licensees in response to the requirements of this section must be made as follows:

(1) Licensees having an installed Emergency Notification System shall make the reports required by paragraphs (a) and (b) of this section to the NRC Operations Center in accordance with 10 CFR 50.72; and

(2) All other licensees shall make the reports required by paragraphs (a) and (b) of this section by telephone to the NRC Operations Center (301) 816–5100.

(e) The provisions of this section do not include doses that result from planned special exposures, that are within the limits for planned special exposures, and that are reported under § 20.2204.

[56 FR 23406, May 21, 1991, as amended at 56 FR 40766, Aug. 16, 1991; 57 FR 57879, Dec. 8, 1992; 59 FR 14086, Mar. 25, 1994; 63 FR 39483, July 23, 1998]

§ 20.2203. Reports of exposures, radiation levels, and concentrations of radioactive material exceeding the constraints or limits.

(a) Reportable events. In addition to the notification required by § 20.2202, each licensee shall submit a written report within 30 days after learning of any of the following occurrences:

(1) Any incident for which notification is required by § 20.2202; or

(2) Doses in excess of any of the following:

(i) The occupational dose limits for adults in § 20.1201; or

(ii) The occupational dose limits for a minor in § 20.1207; or

(iii) The limits for an embryo/fetus of a declared pregnant woman in § 20.1208; or

(iv) The limits for an individual member of the public in § 20.1301; or

(v) Any applicable limit in the license; or

(vi) The ALARA constraints for air emissions established under § 20.1101(d); or

(3) Levels of radiation or concentrations of radioactive material in—

(i) A restricted area in excess of any applicable limit in the license; or

(ii) An unrestricted area in excess of 10 times any applicable limit set forth in this part or in the license (whether or not involving exposure of any individual in excess of the limits in § 20.1301); or

(4) For licensees subject to the provisions of EPA's generally applicable environmental radiation standards in 40 CFR part 190, levels of radiation or releases of radioactive material in excess of those standards, or of license conditions related to those standards.

(b) Contents of reports.

(1) Each report required by paragraph (a) of this section must describe the extent of exposure of individuals to radiation and radioactive material, including, as appropriate:

(i) Estimates of each individual's dose; and

(ii) The levels of radiation and concentrations of radioactive material involved; and

(iii) The cause of the elevated exposures, dose rates, or concentrations; and

(iv) Corrective steps taken or planned to ensure against a recurrence, including the schedule for achieving conformance with applicable limits, ALARA constraints, generally applicable environmental standards, and associated license conditions.

(2) Each report filed pursuant to paragraph (a) of this section must include for each occupationally overexposed[1] individual: the name, Social Security account number, and date of birth. The report must be prepared so that this information is stated in a separate and detachable part of the report and must be clearly labeled "Privacy Act Information: Not for Public Disclosure."

(c) For holders of an operating license or a combined license for a nuclear power plant, the occurrences included in paragraph (a) of this section must be reported in accordance with the procedures described in §§ 50.73(b), (c), (d), (e), and (g) of this chapter, and must include the information required by paragraph (b) of this section. Occurrences reported in accordance with § 50.73 of this chapter need not be reported by a duplicate report under paragraph (a) of this section.

(d) All licensees, other than those holding an operating license or a combined license for a nuclear power plant, who make reports under paragraph (a) of this section shall submit the report in writing either by mail addressed to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555–0001; by hand delivery to the NRC's offices at 11555 Rockville Pike, Rockville, Maryland; or, where practicable, by electronic submission, for example, Electronic Information Exchange, or CD–ROM. Electronic submissions must be made in a manner that enables the NRC to receive, read, authenticate, distribute, and archive the submission, and process and retrieve it a single page at a time. Detailed guidance on making electronic submissions can be obtained by visiting the NRC's Web site at http://www.nrc.gov/site–help/e–submittals.html; by e–mail to MSHD.Resource@nrc.gov; or by writing the Office of Information Services, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001. A copy should be sent to the appropriate NRC Regional Office listed in appendix D to this part.

[1]With respect to the limit for the embryo/fetus (§ 20.1208), the identifiers should be those of the declared pregnant woman.

[57 FR 23929, June 5, 1992; 60 FR 20186, April 25, 1995; 61 FR 65127, Dec. 10, 1996; 67 FR 57092, Sept. 6, 2002; 67 FR 72091, Dec. 4, 2002; 68 FR 14308, March 25, 2003; 68 FR 27903, May 22, 2003; 68 FR 58801, Oct. 10, 2003; 72 FR 49486, Aug. 28, 2007; 74 FR 62680, Dec. 1, 2009]

§ 20.2204. Reports of planned special exposures.

The licensee shall submit a written report to the Administrator of the appropriate NRC Regional Office listed in appendix D to part 20 within 30 days following any planned special exposure conducted in accordance with § 20.1206, informing the Commission that a planned special exposure was conducted and indicating the date the planned special exposure occurred and the information required by § 20.2105.

[56 FR 23406, May 21, 1991, as amended at 60 FR 20186, Apr. 25, 1995]

§ 20.2205. Reports to individuals of exceeding dose limits.

When a licensee is required by §§ 20.2203 or 20.2204 to report to the Commission any exposure of an identified occupationally exposed individual, or an identified member of the public, to radiation or radioactive material, the licensee shall also provide the individual a report on his or her exposure data included in the report to Commission. This report must be transmitted no later than the transmittal to the Commission.

[60 FR 36043, July 13, 1995; 72 FR 68059, Dec. 4, 2007; 72 FR 72233, Dec. 20, 2007; 73 FR 8588, Feb. 14, 2008]

§ 20.2206. Reports of individual monitoring.

(a) This section applies to each person licensed by the Commission to—

(1) Operate a nuclear reactor designed to produce electrical or heat energy pursuant to § 50.21(b) or § 50.22 of this chapter or a testing facility as defined in § 50.2 of this chapter; or

(2) Possess or use byproduct material for purposes of radiography pursuant to parts 30 and 34 of this chapter; or

(3) Possess or use at any one time, for purposes of fuel processing, fabricating, or reprocessing, special nuclear material in a quantity exceeding 5,000 grams of contained uranium–235, uranium–233, or plutonium, or any combination thereof pursuant to part 70 of this chapter; or

(4) Possess high–level radioactive waste at a geologic repository operations area pursuant to part 60 or 63 of this chapter; or

(5) Possess spent fuel in an independent spent fuel storage installation (ISFSI) pursuant to part 72 of this chapter; or

(6) Receive radioactive waste from other persons for disposal under part 61 of this chapter; or

(7) Possess or use at any time, for processing or manufacturing for distribution pursuant to parts 30, 32, 33 or 35 of this chapter, byproduct material in quantities exceeding any one of the following quantities:

Radionuclide	*Quantity of radionuclide[1] in curies*
Cesium–137	1
Cobalt–60	1
Gold–198	100
Iodine–131	1
Iridium–192	10
Krypton–85	1,000
Promethium–147	10
Technetium– 99m	1,000

[1] The Commission may require as a license condition, or by rule, regulation, or order pursuant to § 20.2302, reports from licensees who are licensed to use radionuclides not on this list, in quantities sufficient to cause comparable radiation levels.

(b) Each licensee in a category listed in paragraph (a) of this section shall submit an annual report of the results of individual monitoring carried out by the licensee for each individual for whom monitoring was required by § 20.1502 during that year. The licensee may include additional data for individuals for whom monitoring was provided but not required. The licensee shall use Form NRC 5 or electronic media containing all the information required by Form NRC 5.

(c) The licensee shall file the report required by § 20.2206(b), covering the preceding year, on or before April 30 of each year. The licensee shall submit the report to the REIRS Project Manager by an appropriate method listed in § 20.1007 or via the REIRS Web site at *http://www.reirs.com.*

[56 FR 23406, May 21, 1991, as amended at 56 FR 32072, July 15, 1991; 66 FR 55789, Nov. 2, 2001; 68 FR 58802, Oct. 10, 2003]

§ 20.2207. Reports of transactions involving nationally tracked sources.

Each licensee who manufactures, transfers, receives, disassembles, or disposes of a nationally tracked source shall complete and submit a National Source Tracking Transaction Report as specified in paragraphs (a) through (e) of this section for each type of transaction.

(a) Each licensee who manufactures a nationally tracked source shall complete and submit a National Source Tracking Transaction Report. The report must include the following information:

(1) The name, address, and license number of the reporting licensee;

(2) The name of the individual preparing the report;

(3) The manufacturer, model, and serial number of the source;

(4) The radioactive material in the source;

(5) The initial source strength in becquerels (curies) at the time of manufacture; and

(6) The manufacture date of the source.

(b) Each licensee that transfers a nationally tracked source to another person shall complete and submit a National Source Tracking Transaction Report. The report must include the following information:

(1) The name, address, and license number of the reporting licensee;

(2) The name of the individual preparing the report;

(3) The name and license number of the recipient facility and the shipping address;

(4) The manufacturer, model, and serial number of the source or, if not available, other information to uniquely identify the source;

(5) The radioactive material in the source;

(6) The initial or current source strength in becquerels (curies);

(7) The date for which the source strength is reported;

(8) The shipping date;

(9) The estimated arrival date; and

(10) For nationally tracked sources transferred as waste under a Uniform Low–Level Radioactive Waste Manifest, the waste manifest number and the container identification of the container with the nationally tracked source.

(c) Each licensee that receives a nationally tracked source shall complete and submit a National Source Tracking Transaction Report. The report must include the following information:

(1) The name, address, and license number of the reporting licensee;

(2) The name of the individual preparing the report;

(3) The name, address, and license number of the person that provided the source;

(4) The manufacturer, model, and serial number of the source or, if not available, other information to uniquely identify the source;

(5) The radioactive material in the source;

(6) The initial or current source strength in becquerels (curies);

(7) The date for which the source strength is reported;

(8) The date of receipt; and

(9) For material received under a Uniform Low–Level Radioactive Waste Manifest, the waste manifest number and the container identification with the nationally tracked source.

(d) Each licensee that disassembles a nationally tracked source shall complete and submit a National Source Tracking Transaction Report. The report must include the following information:

(1) The name, address, and license number of the reporting licensee;

(2) The name of the individual preparing the report;

(3) The manufacturer, model, and serial number of the source or, if not available, other information to uniquely identify the source;

(4) The radioactive material in the source;

(5) The initial or current source strength in becquerels (curies);

(6) The date for which the source strength is reported;

(7) The disassemble date of the source.

(e) Each licensee who disposes of a nationally tracked source shall complete and submit a National Source Tracking Transaction Report. The report must include the following information:

(1) The name, address, and license number of the reporting licensee;

(2) The name of the individual preparing the report;

(3) The waste manifest number;

(4) The container identification with the nationally tracked source.

(5) The date of disposal; and

(6) The method of disposal.

(f) The reports discussed in paragraphs (a) through (e) of this section must be submitted by the close of the next business day after the transaction. A single report may be submitted for multiple sources and transactions. The reports must be submitted to the National Source Tracking System by using:

(1) The on–line National Source Tracking System;

(2) Electronically using a computer–readable format;

(3) By facsimile;

(4) By mail to the address on the National Source Tracking Transaction Report Form (NRC Form 748); or

(5) By telephone with followup by facsimile or mail.

(g) Each licensee shall correct any error in previously filed reports or file a new report for any missed transaction within 5 business days of the discovery of the error or missed transaction. Such errors may be detected by a variety of methods such as administrative reviews or by physical inventories required by regulation. In addition, each licensee shall reconcile the inventory of nationally tracked sources possessed by the licensee against that licensee's data in the National Source Tracking System. The reconciliation must be conducted during the month of January in each year. The reconciliation process must include resolving any discrepancies between the National Source Tracking System and the actual inventory by filing the reports identified by paragraphs (a) through (e) of this section. By January 31 of each year, each licensee must submit to the National Source Tracking System confirmation that the data in the National Source Tracking System is correct.

(h) Each licensee that possesses Category 1 nationally tracked sources shall report its initial inventory of Category 1 nationally tracked sources to the National Source Tracking System by January 31, 2009. Each licensee that possesses Category 2 nationally tracked sources shall report its initial inventory of Category 2 nationally tracked sources to the National Source Tracking System by January 31, 2009. The information may be submitted by using any of the methods identified by paragraph (f)(1) through (f)(4) of this section. The initial inventory report must include the following information:

(1) The name, address, and license number of the reporting licensee;

(2) The name of the individual preparing the report;

(3) The manufacturer, model, and serial number of each nationally tracked source or, if not available, other information to uniquely identify the source;

(4) The radioactive material in the sealed source;

(5) The initial or current source strength in becquerels (curies); and

(6) The date for which the source strength is reported.

[71 FR 65707, Nov. 8, 2006, as amended at 72 FR 59163, Oct. 19, 2007]

Subpart N. Exemptions and Additional Requirements

SOURCE: 56 FR 23408, May 21, 1991, unless otherwise noted.

§ 20.2301. Applications for exemptions.

The Commission may, upon application by a licensee or upon its own initiative, grant an exemption from the requirements of the regulations in this part if it determines the exemption is authorized by law and would not result in undue hazard to life or property.

§ 20.2302. Additional requirements.

The Commission may, by rule, regulation, or order, impose requirements on a licensee, in addition to those established in the regulations in this part, as it deems appropriate or necessary to protect health or to minimize danger to life or property.

Subpart O. Enforcement

§ 20.2401. Violations.

(a) The Commission may obtain an injunction or other court order to prevent a violation of the provisions of—

(1) The Atomic Energy Act of 1954, as amended;

(2) Title II of the Energy Reorganization Act of 1974, as amended; or

(3) A regulation or order issued pursuant to those Acts.

(b) The Commission may obtain a court order for the payment of a civil penalty imposed under section 234 of the Atomic Energy Act:

(1) For violations of—

(i) Sections 53, 57, 62, 63, 81, 82, 101, 103, 104, 107 or 109 of the Atomic Energy Act of 1954, as amended;

(ii) Section 206 of the Energy Reorganization Act;

(iii) Any rule, regulation, or order issued pursuant to the sections specified in paragraph (b)(1)(i) of this section; and

(iv) Any term, condition, or limitation of any license issued under the sections specified in paragraph (b)(1)(i) of this section.

(2) For any violation for which a license may be revoked under Section 186 of the Atomic Energy Act of 1954, as amended.

[56 FR 23408, May 21, 1991; 56 FR 61352, Dec. 3, 1991, as amended at 57 FR 55071, Nov. 24, 1992]

§ 20.2402. Criminal penalties.

(a) Section 223 of the Atomic Energy Act of 1954, as amended, provides for criminal sanctions for willful violation of, attempted violation of, or conspiracy to violate, any regulation issued under sections 161b, 161i, or 161o of the Act. For purposes of section 223, all the regulations in §§ 20.1001 through 20.2402 are issued under one or more of sections 161b, 161i, or 161o, except for the sections listed in paragraph (b) this section.

(b) The regulations in §§ 20.1001 through 20.2402 that are not issued under Sections 161b, 161i, or 161o for the purposes of Section 223 are as follows: §§ 20.1001, 20.1002, 20.1003, 20.1004, 20.1005, 20.1006, 20.1007, 20.1008, 20.1009, 20.1405, 20.1704, 20.1903, 20.1905, 20.2002, 20.2007, 20.2301, 20.2302, 20.2401, and 20.2402.

[57 FR 55071, Nov. 24, 1992, as amended at 62 FR 39089, July 21, 1997]

Appendix A to Part 20—Assigned Protection Factors for Respirators[a]

	Operating mode	Assigned Protection Factors
I. Air Purifying Respirators [Particulate[b] only][c]:		
Filtering facepiece .... disposable[d]:	Negative Pressure	(d)
Facepiece, half[e]	Negative Pressure	10
Facepiece, full	Negative Pressure	100
Facepiece, half	Powered air–purifying respirators.	50
Facepiece, full	Powered air–purifying respirators.	1000
Helmet/hood	Powered air–purifying respirators.	1000
Facepiece, loose–fitting.	Powered air–purifying respirators.	25
II. Atmosphere supplying respirators [particulate, gases and vapors[f]]:		
1. Air–line respirator:		
Facepiece, half	Demand	10
Facepiece, half	Continuous Flow	50
Facepiece, half	Pressure Demand	50
Facepiece, full	Demand	100
Facepiece, full	Continuous Flow	1000
Facepiece, full	Pressure Demand	1000
Helmet/hood	Continuous Flow	1000
Facepiece, loose–fitting	Continuous Flow	25
Suit	Continuous Flow	(g)
2. Self–contained breathing Apparatus (SCBA):		
Facepiece, full	Demand	[h] 100
Facepiece, full	Pressure Demand	[i] 10,000
Facepiece, full	Demand, Recirculating ...	[h] 100
Facepiece, full	Positive Pressure ..... Recirculating.	[i] 10,000
III. Combination Respirators: Any combination of air–purifying and atmosphere–supplying type respirators.	Assigned protection factor for type and mode of operation as listed above.	

[a] These assigned protection factors apply only in a respiratory protection program that meets the requirements of this Part. They are applicable only to airborne radiological hazards and may not be appropriate to circumstances when chemical or other respiratory hazards exist instead of, or in addition to, radioactive hazards. Selection and use of respirators for such circumstances must also comply with Department of Labor regulations.

Radioactive contaminants for which the concentration values in Table 1, Column 3 of Appendix B to Part 20 are based on internal dose due to inhalation may, in addition, present external exposure hazards at higher concentrations. Under these circumstances, limitations on occupancy may have to be governed by external dose limits.

[b] Air purifying respirators with APF <100 must be equipped with particulate filters that are at least 95 percent efficient. Air purifying respirators with APF = 100 must be equipped with particulate filters that are at least 99 percent efficient. Air purifying respirators with APFs >100 must be equipped with particulate filters that are at least 99.97 percent efficient.

[c] The licensee may apply to the Commission for the use of an APF greater than 1 for sorbent cartridges as protection against airborne radioactive gases and vapors (e.g., radioiodine).

[d] Licensees may permit individuals to use this type of respirator who have not been medically screened or fit tested on the device provided that no credit be taken for their use in estimating intake or dose. It is also recognized that it is difficult to perform an effective positive or negative pressure pre–use user

seal check on this type of device. All other respiratory protection program requirements listed in § 20.1703 apply. An assigned protection factor has not been assigned for these devices. However, an APF equal to 10 may be used if the licensee can demonstrate a fit factor of at least 100 by use of a validated or evaluated, qualitative or quantitative fit test.

[e] Under–chin type only. No distinction is made in this Appendix between elastomeric half–masks with replaceable cartridges and those designed with the filter medium as an integral part of the facepiece (e.g., disposable or reusable disposable). Both types are acceptable so long as the seal area of the latter contains some substantial type of seal–enhancing material such as rubber or plastic, the two or more suspension straps are adjustable, the filter medium is at least 95 percent efficient and all other requirements of this Part are met.

[f] The assigned protection factors for gases and vapors are not applicable to radioactive contaminants that present an absorption or submersion hazard. For tritium oxide vapor, approximately one–third of the intake occurs by absorption through the skin so that an overall protection factor of 3 is appropriate when atmosphere–supplying respirators are used to protect against tritium oxide. Exposure to radioactive noble gases is not considered a significant respiratory hazard, and protective actions for these contaminants should be based on external (submersion) dose considerations.

[g] No NIOSH approval schedule is currently available for atmosphere supplying suits. This equipment may be used in an acceptable respiratory protection program as long as all the other minimum program requirements, with the exception of fit testing, are met (i.e., § 20.1703).

[h] The licensee should implement institutional controls to assure that these devices are not used in areas immediately dangerous to life or health (IDLH).

[i] This type of respirator may be used as an emergency device in unknown concentrations for protection against inhalation hazards. External radiation hazards and other limitations to permitted exposure such as skin absorption shall be taken into account in these circumstances. This device may not be used by any individual who experiences perceptible outward leakage of breathing gas while wearing the device.

[64 FR 54558, Oct. 7, 1999; 64 FR 55524, Oct. 13, 1999]

Appendix B to Part 20. Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage

Introduction

For each radionuclide Table 1 indicates the chemical form which is to be used for selecting the appropriate ALI or DAC value. The ALIs and DACs for inhalation are given for an aerosol with an activity median aerodynamic diameter (AMAD) of 1 μm and for three classes (D,W,Y) of radioactive material, which refer to their retention (approximately days, weeks or years) in the pulmonary region of the lung. This classification applies to a range of clearance half-times of less than 10 days for D, for W from 10 to 100 days, and for Y greater than 100 days. The class (D, W, or Y) given in the column headed "Class" applies only to the inhalation ALIs and DACs given in Table 1, columns 2 and 3. Table 2 provides concentration limits for airborne and liquid effluents released to the general environment. Table 3 provides concentration limits for discharges to sanitary sewer systems.

Notation

The values in Tables 1, 2, and 3 are presented in the computer "E" notation. In this notation a value of 6E–02 represents a value of $6x10^{-2}$ or 0.06, 6E+2 represents $6x10^{2}$ or 600, and 6E+0 represents $6x10^{0}$ or 6.

Table 1 "Occupational"

Note that the columns in Table 1, of this appendix captioned "Oral Ingestion ALI," "Inhalation ALI," and "DAC," are applicable to occupational exposure to radioactive material.

The ALIs in this appendix are the annual intakes of a given radionuclide by "Reference Man" which would result in either (1) a committed effective dose equivalent of 5 rems (stochastic ALI) or (2) a committed dose equivalent of 50 rems to an organ or tissue (non–stochastic ALI). The stochastic ALIs were derived to result in a risk, due to irradiation of organs and tissues, comparable to the risk associated with deep dose equivalent to the whole body of 5 rems. The derivation includes multiplying the committed dose equivalent to an organ or tissue by a weighting factor, w_T. This weighting factor is the proportion of the risk of stochastic effects resulting from irradiation of the organ or tissue, T, to the total risk of stochastic effects when the whole body is irradiated uniformly. The values of w_T are listed under the definition of weighting factor in § 20.1003. The non-stochastic ALIs were derived to avoid non-stochastic effects, such as prompt damage to tissue or reduction in organ function.

A value of $w_T = 0.06$ is applicable to each of the five organs or tissues in the "remainder" category receiving the highest dose equivalents, and the dose equivalents of all other remaining tissues may be disregarded. The following parts of the GI tract—stomach, small intestine, upper large intestine, and lower large intestine—are to be treated as four separate organs.

Note that the dose equivalents for extremities (hands and forearms, feet and lower legs), skin, and lens of the eye are not considered in computing the committed effective dose equivalent, but are subject to limits that must be met separately.

When an ALI is defined by the stochastic dose limit, this value alone, is given. When an ALI is determined by the non-stochastic dose limit to an organ, the organ or tissue to which the limit applies is shown, and the ALI for the stochastic limit is shown in parentheses. (Abbreviated organ or tissue designations are used: LLI wall = lower large intestine wall; St. wall = stomach wall; Blad wall = bladder wall; and Bone surf = bone surface.)

The use of the ALIs listed first, the more limiting of the stochastic and non-stochastic ALIs, will ensure that non-stochastic effects are avoided and that the risk of stochastic effects is limited to an acceptably low value. If, in a particular situation involving a radionuclide for which the non-stochastic ALI is limiting, use of that non-stochastic ALI is considered unduly conservative, the licensee may use the stochastic ALI to determine the committed effective dose equivalent. However, the licensee shall also ensure that the 50-rem dose equivalent limit for any organ or tissue is not exceeded by the sum of the external deep dose equivalent plus the internal committed dose to that organ (not the effective dose). For the case where there is no external dose contribution, this would be demonstrated if the sum of the fractions of the non-stochastic ALIs (ALI_{ns}) that contribute to the committed dose equivalent to the organ receiving the highest dose does not exceed unity (i.e., Σ (intake (in μCi) of each radionuclide/ALI_{ns}) < 1.0). If there is an external deep dose equivalent contribution of H_d then this sum must be less than $1–(H_d/50)$ instead of being < 1.0.

The derived air concentration (DAC) values are derived limits intended to control chronic occupational exposures. The relationship between the DAC and the ALI is given by: DAC = ALI (in μCi) / (2000 hours per working year x 60 minutes/hour x 2 x 10^4 ml per minute) = [ALI / 2.4 x 10^9] μCi/ml, where 2 x 10^4 ml is the volume of air breathed per minute at work by "Reference Man" under working conditions of "light work."

The DAC values relate to one of two modes of exposure: either external submersion or the internal committed dose equivalents resulting from inhalation of radioactive materials. Derived air concentrations based upon submersion are for immersion in a semi-infinite cloud of uniform concentration and apply to each radionuclide separately.

The ALI and DAC values relate to exposure to the single radionuclide named, but also include contributions from the in-growth of any daughter radionuclide produced in the body by the decay of the parent.

However, intakes that include both the parent and daughter radionuclides should be treated by the general method appropriate for mixtures.

The value of ALI and DAC do not apply directly when the individual both ingests and inhales a radionuclide, when the individual is exposed to a mixture of radionuclides by either inhalation or ingestion or both, or when the individual is exposed to both internal and external radiation (see § 20.1202). When an individual is exposed to radioactive materials which fall under several of the translocation classifications (i.e., Class D, Class W, or Class Y) of the same radionuclide, the exposure may be evaluated as if it were a mixture of different radionuclides.

It should be noted that the classification of a compound as Class D, W, or Y is based on the chemical form of the compound and does not take into account the radiological half-life of different radioisotopes. For this reason, values are given for Class D, W, and Y compounds, even for very short-lived radionuclides.

Table 2

The columns in Table 2 of this appendix captioned "Effluents," "Air," and "Water," are applicable to the assessment and control of dose to the public, particularly in the implementation of the provisions of § 20.1302. The concentration values given in Columns 1 and 2 of Table 2 are equivalent to the radionuclide concentrations which, if inhaled or ingested continuously over the course of a year, would produce a total effective dose equivalent of 0.05 rem (50 millirem or 0.5 millisieverts).

Consideration of non-stochastic limits has not been included in deriving the air and water effluent concentration limits because non-stochastic effects are presumed not to occur at the dose levels established for individual members of the public. For radionuclides, where the non-stochastic limit was governing in deriving the occupational DAC, the stochastic ALI was used in deriving the corresponding airborne effluent limit in Table 2. For this reason, the DAC and airborne effluent limits are not always proportional as was the case in appendix B to §§ 20.1–20.601.

The air concentration values listed in Table 2, Column 1, were derived by one of two methods. For those radionuclides for which the stochastic limit is governing, the occupational stochastic inhalation ALI was divided by 2.4×10^9 ml, relating the inhalation ALI to the DAC, as explained above, and then divided by a factor of 300. The factor of 300 includes the following components: a factor of 50 to relate the 5-rem annual occupational dose limit to the 0.1-rem limit for members of the public, a factor of 3 to adjust for the difference in exposure time and the inhalation rate for a worker and that for members of the public; and a factor of 2 to adjust the occupational values (derived for adults) so that they are applicable to other age groups.

For those radionuclides for which submersion (external dose) is limiting, the occupational DAC in Table 1, Column 3, was divided by 219. The factor of 219 is composed of a factor of 50, as described above, and a factor of 4.38 relating occupational exposure for 2,000 hours per year to full-time exposure (8,760 hours per year). Note that an additional factor of 2 for age considerations is not warranted in the submersion case.

The water concentrations were derived by taking the most restrictive occupational stochastic oral ingestion ALI and dividing by 7.3×10^7. The factor of 7.3×10^7 (ml) includes the following components: the factors of 50 and 2 described above and a factor of 7.3×10^5 (ml) which is the annual water intake of "Reference Man."

Note 2 of this appendix provides groupings of radionuclides which are applicable to unknown mixtures of radionuclides. These groupings (including occupational inhalation ALIs and DACs, air and water effluent concentrations and sewerage) require demonstrating that the most limiting radionuclides in successive classes are absent. The limit for the unknown mixture is defined when the presence of one of the listed radionuclides cannot be definitely excluded either from knowledge of the radionuclide composition of the source or from actual measurements.

Table 3 "Sewer Disposal"

The monthly average concentrations for release to sanitary sewers are applicable to the provisions in § 20.2003. The concentration values were derived by taking the most restrictive occupational stochastic oral ingestion ALI and dividing by 7.3×10^6 (ml). The factor of 7.3×10^6 (ml) is composed of a factor of 7.3×10^5 (ml), the annual water intake by "Reference Man," and a factor of 10, such that the concentrations, if the sewage released by the licensee were the only source of water ingested by a reference man during a year, would result in a committed effective dose equivalent of 0.5 rem.

LIST OF ELEMENTS

Name	Atomic Symbol	Atomic No.
Actinium	Ac	89
Aluminum	Al	13
Americium	Am	95
Antimony	Sb	51
Argon	Ar	18
Arsenic	As	33
Astatine	At	85
Barium	Ba	56
Berkelium	Bk	97
Beryllium	Be	4
Bismuth	Bi	83
Bromine	Br	35
Cadmium	Cd	48
Calcium	Ca	20
Californium	Cf	98
Carbon	C	6
Cerium	Ce	58
Cesium	Cs	55
Chlorine	Cl	17
Chromium	Cr	24
Cobalt	Co	27
Copper	Cu	29
Curium	Cm	96
Dysprosium	Dy	66
Einsteinium	Es	99
Erbium	Er	68
Europium	Eu	63
Fermium	Fm	100
Fluorine	F	9
Francium	Fr	87
Gadolinium	Gd	64
Gallium	Ga	31
Germanium	Ge	32
Gold	Au	79
Hafnium	Hf	72
Holmium	Ho	67
Hydrogen	H	1
Indium	In	49
Iodine	I	53
Iridium	Ir	77
Iron	Fe	26
Krypton	Kr	36
Lanthanum	La	57
Lead	Pb	82
Lutetium	Lu	71
Magnesium	Mg	12
Manganese	Mn	25
Mendelevium	Md	101
Mercury	Hg	80
Molybdenum	Mo	42
Neodymium	Nd	60
Neptunium	Np	93
Nickel	Ni	28
Niobium	Nb	41
Nitrogen	N	7
Osmium	Os	76
Oxygen	O	8
Palladium	Pd	46
Phosphorus	P	15
Platinum	Pt	78
Plutonium	Pu	94
Polonium	Po	84
Potassium	K	19
Praseodymium	Pr	59
Promethium	Pm	61
Protactinium	Pa	91
Radium	Ra	88
Radon	Rn	86
Rhenium	Re	75
Rhodium	Rh	45
Rubidium	Rb	37
Ruthenium	Ru	44
Samarium	Sm	62
Scandium	Sc	21
Selenium	Se	34
Silicon	Si	14
Silver	Ag	47
Sodium	Na	11
Strontium	Sr	38
Sulfur	S	16
Tantalum	Ta	73
Technetium	Tc	43
Tellurium	Te	52
Terbium	Tb	65
Thallium	Tl	81
Thorium	Th	90
Thulium	Tm	69
Tin	Sn	50
Titanium	Ti	22
Tungsten	W	74
Uranium	U	92
Vanadium	V	23
Xenon	Xe	54
Ytterbium	Yb	70
Yttrium	Y	39
Zinc	Zn	30
Zirconium	Zr	40

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
1	Hydrogen–3	Water, DAC includes skin absorption	8E+4	8E+4	2E–5	1E–7	1E–3	1E–2
		Gas (HT or T_2) Submersion[1]: Use above values as HT and T_2 oxidize in air and in the body to HTO						
4	Beryllium–7	W, all compounds except those given for Y	4E+4	2E+4	9E–6	3E–8	6E–4	6E–3
		Y, oxides, halides, and nitrates	–	2E+4	8E–6	3E–8	–	–
4	Beryllium–10	W, see 7Be	1E+3	2E+2	6E–8	2E–10	–	–
			LLI wall (1E+3)	–	–	–	2E–5	2E–4
		Y, see 7Be	–	1E+1	6E–9	2E–11	–	–
6	Carbon–11[2]	Monoxide	–	1E+6	5E–4	2E–6	–	–
		Dioxide	–	6E+5	3E–4	9E–7	–	–
		Compounds	4E+5	4E+5	2E–4	6E–7	6E–3	6E–2
6	Carbon–14	Monoxide	–	2E+6	7E–4	2E–6	–	–
		Dioxide	–	2E+5	9E–5	3E–7	–	–
		Compounds	2E+3	2E+3	1E–6	3E–9	3E–5	3E–4
7	Nitrogen–13[2]	Submersion[1]	–	–	4E–6	2E–8	–	–
8	Oxygen–15[2]	Submersion[1]	–	–	4E–6	2E–8	–	–
9	Fluorine–18[2]	D, fluorides of H, Li, Na, K, Rb, Cs, and Fr	5e+4	7E+4	3E–5	1E–7	–	–
			St wall (5E+4)	–	–	–	7E–4	7E–3
		W, fluorides of Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, As, Sb, Bi, Fe, Ru, Os, Co, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, V, Nb, Ta, Mn, Tc, and Re	–	9e+4	4e–5	1e–7	–	–
		y, LANTHANUM FLUORIDE	–	8e+4	3e–5	1e–7	–	–
11	Sodium–22	D, all compounds	4E+2	6E+2	3E–7	9E–10	6E–6	6E–5
11	Sodium–24	D, all compounds	4E+3	5E+3	2E–6	7E–9	5E–5	5E–4
12	Magnesium–28	D, all compounds except those given for W	7E+2	2E+3	7E–7	2E–9	9E–6	9E–5
		W, oxides, hydroxides, carbides, halides, and nitrates	–	1E+3	5E–7	2E–9	–	–
13	Aluminum–26	D, all compounds except those given for W	4E+2	6E+1	3E–8	9E–11	6E–6	6E–5
		W, oxides, hydroxides, carbides, halides, and nitrates	–	9E+1	4E–8	1E–10	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
14	Silicon–31	D, all compounds except those given for W and Y	9E+3	3E+4	1E–5	4E–8	1E–4	1E–3
		W, oxides, hydroxides, carbides, and nitrates	–	3E+4	1E–5	5E–8	–	–
		Y, aluminosilicate glass	–	3E+4	1E–5	4E–8	–	–
14	Silicon–32	D, see ^{31}Si	2E+3	2E+2	1E–7	3E–10	–	–
			LLI wall (3E+3)	–	–	–	4E–5	4E–4
		W, see ^{31}Si	–	1E+2	5E–8	2E–10	–	–
		Y, see ^{31}Si	–	5E+0	2E–9	7E–12	–	–
15	Phosphorus–32	D, all compounds except phosphates given for W	6E+2	9E+2	4E–7	1E–9	9E–6	9E–5
		W, phosphates of Zn^{2+}, S^{3+}, Mg^{2+}, Fe^{3+}, Bi^{3+}, and lanthanides	–	4E+2	2E–7	5E–10	–	–
15	Phosphorus–33	D, see ^{32}P	6E+3	8E+3	4E–6	1E–8	8E–5	8E–4
		W, see ^{32}P	–	3E+3	1E–6	4E–9	–	–
16	Sulfur–35	Vapor	–	1E+4	6E–6	2E–8	–	–
		D, sulfides and sulfates except those given for W	1E+4	2E+4	7E–6	2E–8	–	–
			LLI wall (8E+3)	–	–	–	1E–4	1E–3
		W, elemental sulfur, sulfides of Sr, Ba, Ge, Sn, Pb, As, Sb, Bi, Cu, Ag, Au, Zn, Cd, Hg, W, and Mo. Sulfates of Ca, Sr, Ba, Ra, As, Sb, and Bi	6E+3 –	2E+3	9E–7	3E–9	–	–
17	Chlorine–36	D, chlorides of H, Li, Na, K, Rb, Cs, and Fr	2E+3	2E+3	1E–6	3E–9	2E–5	2E–4
		W, chlorides of lanthanides, Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, Ge, Sn, Pb, As, Sb, Bi, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Tc, and Re	–	2E+2	1E–7	3E–10	–	–
17	Chlorine–38[2]	D, see ^{36}Cl	2E+4	4E+4	2E–5	6E–8	–	–
			St. wall (3E+4)	–	–	–	3E–4	3E–3
		W, see ^{36}Cl	–	5E+4	2E–5	6E–8	–	–
17	Chlorine–39[2]	D, see ^{36}Cl	2E+4	5E+4	2E–5	7E–8	–	–
			St. wall (4E+4)	–	–	–	5E–4	5E–3
		W, see ^{36}Cl	–	6E+4	2E–5	8E–8	–	–
18	Argon–37	Submersion[1]	–	–	1E+0	6E–3	–	–
18	Argon–39	Submersion[1]	–	–	2E–4	8E–7	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
18	Argon–41	Submersion[1]	–	–	3E–6	1E–8	–	–
19	Potassium–40	D, all compounds	3E+2	4E+2	2E–7	6E–10	4E–6	4E–5
19	Potassium–42	D, all compounds	5E+3	5E+3	2E–6	7E–9	6E–5	6E–4
19	Potassium–43	D, all compounds	6E+3	9E+3	4E–6	1E–8	9E–5	9E–4
19	Potassium–44[2]	D, all compounds	2E+4	7E+4	3E–5	9E–8	–	–
			St. wall (4E+4)	–	–	–	5E–4	5E–3
19	Potassium–45[2]	D, all compounds	3E+4	1E+5	5E–5	2E–7	–	–
			St. wall (5E+4)	–	–	–	7E–4	7E–3
20	Calcium–41	W, all compounds	3E+3	4E+3	2E–6	–	–	–
			Bone surf (4E+3)	Bone surf (4E+3)	–	5E–9	6E–5	6E–4
20	Calcium–45	W, all compounds	2E+3	8E+2	4E–7	1E–9	2E–5	2E–4
20	Calcium–47	W, all compounds	8E+2	9E+2	4E–7	1E–9	1E–5	1E–4
21	Scandium–43	Y, all compounds	7E+3	2E+4	9E–6	3E–8	1E–4	1E–3
21	Scandium–44m	Y, all compounds	5E+2	7E+2	3E–7	1E–9	7E–6	7E–5
21	Scandium–44	Y, all compounds	4E+3	1E+4	5E–6	2E–8	5E–5	5E–4
21	Scandium–46	Y, all compounds	9E+2	2E+2	1E–7	3E–10	1E–5	1E–4
21	Scandium–47	Y, all compounds	2E+3	3E+3	1E–6	4E–9	–	–
			LLI wall (3E+3)	–	–	–	4E–5	4E–4
21	Scandium–48	Y, all compounds	8E+2	1E+3	6E–7	2E–9	1E–5	1E–4
21	Scandium–49[2]	Y, all compounds	2E+4	5E+4	2E–5	8E–8	3E–4	3E–3
22	Titanium–44	D, all compounds except those given for W and Y	3E+2	1E+1	5E–9	2E–11	4E–6	4E–5
		W, oxides, hydroxides, carbides, halides, and nitrates	–	3E+1	1E–8	4E–11	–	–
		Y, $SrTiO_3$	–	6E+0	2E–9	8E–12	–	–
22	Titanium–45	D, see ^{44}Ti	9E+3	3E+4	1E–5	3E–8	1E–4	1E–3
		W, see ^{44}Ti	–	4E+4	1E–5	5E–8	–	–
		Y, see ^{44}Ti	–	3E+4	1E–5	4E–8	–	–
23	Vanadium–47[2]	D, all compounds except those given for W	3E+4	8E+4	3E–5	1E–7	–	–
			St. wall (3E+4)	–	–	–	4E–4	4E–3
		W, oxides, hydroxides, carbides, and halides	–	1E+5	4E–5	1E–7	–	–
23	Vanadium–48	D, see ^{47}V	6E+2	1E+3	5E–7	2E–9	9E–6	9E–5
		W, see ^{47}V	–	6E+2	3E–7	9E–10	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
23	Vanadium–49	D, see ^{47}V	7E+4	3E+4	1E–5	–	–	–
			LLI wall (9E+4)	Bone surf (3E+4)	–	5E–8	1E–3	1E–2
		W, see ^{47}V	–	2E+4	8E–6	2E–8	–	–
24	Chromium–48	D, all compounds except those given for W and Y	6E+3	1E+4	5E–6	2E–8	8E–5	8E–4
		W, halides and nitrates	–	7E+3	3E–6	1E–8	–	–
		Y, oxides and hydroxides	–	7E+3	3E–6	1E–8	–	–
24	Chromium–49[2]	D, see ^{48}Cr	3E+4	8E+4	4E–5	1E–7	4E–4	4E–3
		W, see ^{48}Cr	–	1E+5	4E–5	1E–7	–	–
		Y, see ^{48}Cr	–	9E+4	4E–5	1E–7	–	–
24	Chromium–51	D, see ^{48}Cr	4E+4	5E+4	2E–5	6E–8	5E–4	5E–3
		W, see ^{48}Cr	–	2E+4	1E–5	3E–8	–	–
		Y, see ^{48}Cr	–	2E+4	8E–6	3E–8	–	–
25	Manganese–51[2]	D, all compounds except those given for W	2E+4	5E+4	2E–5	7E–8	3E–4	3E–3
		W, oxides, hydroxides, halides, and nitrates	–	6E+4	3E–5	8E–8	–	–
25	Manganese–52m[2]	D, see ^{51}Mn	3E+4	9E+4	4E–5	1E–7	–	–
			St. wall (4E+4)	–	–	–	5E–4	5E–3
		W, see ^{51}Mn	–	1E+5	4E–5	1E–7	–	–
25	Manganese–52	D, see ^{51}Mn	7E+2	1E+3	5E–7	2E–9	1E–5	1E–4
		W, see ^{51}Mn	–	9E+2	4E–7	1E–9	–	–
25	Manganese–53	D, see ^{51}Mn	5E+4	1E+4	5E–6	–	7E–4	7E–3
			–	Bone surf (2E+4)	–	3E–8	–	–
		W, see ^{51}Mn	–	1E+4	5E–6	2E–8	–	–
25	Manganese–54	D, see ^{51}Mn	2E+3	9E+2	4E–7	1E–9	3E–5	3E–4
		W, see ^{51}Mn	–	8E+2	3E–7	1E–9	–	–
25	Manganese–56	D, see ^{51}Mn	5E+3	2E+4	6E–6	2E–8	7E–5	7E–4
		W, see ^{51}Mn	–	2E+4	9E–6	3E–8	–	–
26	Iron–52	D, all compounds except those given for W	9E+2	3E+3	1E–6	4E–9	1E–5	1E–4
		W, oxides, hydroxides, and halides	–	2E+3	1E–6	3E–9	–	–
26	Iron–55	D, see ^{52}Fe	9E+3	2E+3	8E–7	3E–9	1E–4	1E–3
		W, see ^{52}Fe	–	4E+3	2E–6	6E–9	–	–
26	Iron–59	D, see ^{52}Fe	8E+2	3E+2	1E–7	5E–10	1E–5	1E–4
		W, see ^{52}Fe	–	5E+2	2E–7	7E–10	–	–
26	Iron–60	D, see ^{52}Fe	3E+1	6E+0	3E–9	9E–12	4E–7	4E–6
		W, see ^{52}Fe	–	2E+1	8E–9	3E–11	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
27	Cobalt–55	W, all compounds except those given for Y	1E+3	3E+3	1E–6	4E–9	2E–5	2E–4
		Y, oxides, hydroxides, halides, and nitrates	–	3E+3	1E–6	4E–9	–	–
27	Cobalt–56	W, see ^{55}Co	5E+2	3E+2	1E–7	4E–10	6E–6	6E–5
		Y, see ^{55}Co	4E+2	2E+2	8E–8	3E–10	–	–
27	Cobalt–57	W, see ^{55}Co	8E+3	3E+3	1E–6	4E–9	6E–5	6E–4
		Y, see ^{55}Co	4E+3	7E+2	3E–7	9E–10	–	–
27	Cobalt–58m	W, see ^{55}Co	6E+4	9E+4	4E–5	1E–7	8E–4	8E–3
		Y, see ^{55}Co	–	6E+4	3E–5	9E–8	–	–
27	Cobalt–58	W, see ^{55}Co	2E+3	1E+3	5E–7	2E–9	2E–5	2E–4
		Y, see ^{55}Co	1E+3	7E+2	3E–7	1E–9	–	–
27	Cobalt–60m[2]	W, see ^{55}Co	1E+6	4E+6	2E–3	6E–6	–	–
			St. wall (1E+6)	–	–	–	2E–2	2E–1
		Y, see ^{55}Co	–	3E+6	1E–3	4E–6	–	–
27	Cobalt–60	W, see ^{55}Co	5E+2	2E+2	7E–8	2E–10	3E–6	3E–5
		Y, see ^{55}Co	2E+2	3E+1	1E–8	5E–11	–	–
27	Cobalt–61[2]	W, see ^{55}Co	2E+4	6E+4	3E–5	9E–8	3E–4	3E–3
		Y, see ^{55}Co	2E+4	6E+4	2E–5	8E–8	–	–
27	Cobalt–62m[2]	W, see ^{55}Co	4E+4	2E+5	7E–5	2E–7	–	–
			St. wall (5E+4)	–	–	–	7E–4	7E–3
		Y, see ^{55}Co	–	2E+5	6E–5	2E–7	–	–
28	Nickel–56	D, all compounds except those given for W	1E+3	2E+3	8E–7	3E–9	2E–5	2E–4
		W, oxides, hydroxides, and carbides	–	1E+3	5E–7	2E–9	–	–
		Vapor	–	1E+3	5E–7	2E–9	–	–
28	Nickel–57	D, see ^{56}Ni	2E+3	5E+3	2E–6	7E–9	2E–5	2E–4
		W, see ^{56}Ni	–	3E+3	1E–6	4E–9	–	–
		Vapor	–	6E+3	3E–6	9E–9	–	–
28	Nickel–59	D, see ^{56}Ni	2E+4	4E+3	2E–6	5E–9	3E–4	3E–3
		W, see ^{56}Ni	–	7E+3	3E–6	1E–8	–	–
		Vapor	–	2E+3	8E–7	3E–9	–	–
28	Nickel–63	D, see ^{56}Ni	9E+3	2E+3	7E–7	2E–9	1E–4	1E–3
		W, see ^{56}Ni	–	3E+3	1E–6	4E–9	–	–
		Vapor	–	8E+2	3E–7	1E–9	–	–
28	Nickel–65	D, see ^{56}Ni	8E+3	2E+4	1E–5	3E–8	1E–4	1E–3
		W, see ^{56}Ni	–	3E+4	1E–5	4E–8	–	–
		Vapor	–	2E+4	7E–6	2E–8	–	–
28	Nickel–66	D, see ^{56}Ni	4E+2	2E+3	7E–7	2E–9	–	–
			LL1 wall (5E+2)	–	–	–	6E–6	6E–5
		W, see ^{56}Ni	–	6E+2	3E–7	9E–10	–	–
		Vapor	–	3E+3	1E–6	4E–9	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
29	Copper–60[2]	D, all compounds except those given for W and Y	3E+4	9E+4	4E–5	1E–7	–	–
			St. wall (3E+4)	–	–	–	4E–4	4E–3
		W, sulfides, halides, and nitrates	–	1E+5	5E–5	2E–7	–	–
		Y, oxides and hydroxides	–	1E+5	4E–5	1E–7	–	–
29	Copper–61	D, see ^{60}Cu	1E+4	3E+4	1E–5	4E–8	2E–4	2E–3
		W, see ^{60}Cu	–	4E+4	2E–5	6E–8	–	–
		Y, see ^{60}Cu	–	4E+4	1E–5	5E–8	–	–
29	Copper–64	D, see ^{60}Cu	1E+4	3E+4	1E–5	4E–8	2E–4	2E–3
		W, see ^{60}Cu	–	2E+4	1E–5	3E–8	–	–
		Y, see ^{60}Cu	–	2E+4	9E–6	3E–8	–	–
29	Copper–67	D, see ^{60}Cu	5E+3	8E+3	3E–6	1E–8	6E–5	6E–4
		W, see ^{60}Cu	–	5E+3	2E–6	7E–9	–	–
		Y, see ^{60}Cu	–	5E+3	2E–6	6E–9	–	–
30	Zinc–62	Y, all compounds	1E+3	3E+3	1E–6	4E–9	2E–5	2E–4
30	Zinc–63[2]	Y, all compounds	2E+4	7E+4	3E–5	9E–8	–	–
			St. wall (3E+4)	–	–	–	3E–4	3E–3
30	Zinc–65	Y, all compounds	4E+2	3E+2	1E–7	4E–10	5E–6	5E–5
30	Zinc–69m	Y, all compounds	4E+3	7E+3	3E–6	1E–8	6E–5	6E–4
30	Zinc–69[2]	Y, all compounds	6E+4	1E+5	6E–5	2E–7	8E–4	8E–3
30	Zinc–71m	Y, all compounds	6E+3	2E+4	7E–6	2E–8	8E–5	8E–4
30	Zinc–72	Y, all compounds	1E+3	1E+3	5E–7	2E–9	1E–5	1E–4
31	Gallium–65[2]	D, all compounds except those given for W	5E+4	2E+5	7E–5	2E–7	–	–
			St. wall (6E+4)	–	–	–	9E–4	9E–3
		W, oxides, hydroxides, carbides, halides, and nitrates	–	2E+5	8E–5	3E–7	–	–
31	Gallium–66	D, see ^{65}Ga	1E+3	4E+3	1E–6	5E–9	1E–5	1E–4
		W, see ^{65}Ga	–	3E+3	1E–6	4E–9	–	–
31	Gallium–67	D, see ^{65}Ga	7E+3	1E+4	6E–6	2E–8	1E–4	1E–3
		W, see ^{65}Ga	–	1E+4	4E–6	1E–8	–	–
31	Gallium–68[2]	D, see ^{65}Ga	2E+4	4E+4	2E–5	6E–8	2E–4	2E–3
		W, see ^{65}Ga	–	5E+4	2E–5	7E–8	–	–
31	Gallium–70[2]	D, see ^{65}Ga	5E+4	2E+5	7E–5	2E–7	–	–
			St. wall (7E+4)	–	–	–	1E–3	1E–2
		W, see ^{65}Ga	–	2E+5	8E–5	3E–7	–	–
31	Gallium–72	D, see ^{65}Ga	1E+3	4E+3	1E–6	5E–9	2E–5	2E–4
		W, see ^{65}Ga	–	3E+3	1E–6	4E–9	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
31	Gallium–73	D, see ^{65}Ga	5E+3	2E+4	6E–6	2E–8	7E–5	7E–4
		W, see ^{65}Ga	–	2E+4	6E–6	2E–8	–	–
32	Germanium–66	D, all compounds except those given for W	2E+4	3E+4	1E–5	4E–8	3E–4	3E–3
		W, oxides, sulfides, and halides	–	2E+4	8E–6	3E–8	–	–
32	Germanium–67[2]	D, see ^{66}Ge	3E+4	9E+4	4E–5	1E–7	–	–
			St. wall (4E+4)	–	–	–	6E–4	6E–3
		W, see ^{66}Ge	–	1E+5	4E–5	1E–7	–	–
32	Germanium–68	D, see ^{66}Ge	5E+3	4E+3	2E–6	5E–9	6E–5	6E–4
		W, see ^{66}Ge	–	1E+2	4E–8	1E–10	–	–
32	Germanium–69	D, see ^{66}Ge	1E+4	2E+4	6E–6	2E–8	2E–4	2E–3
		W, see ^{66}Ge	–	8E+3	3E–6	1E–8	–	–
32	Germanium–71	D, see ^{66}Ge	5E+5	4E+5	2E–4	6E–7	7E–3	7E–2
		W, see ^{66}Ge	–	4E+4	2E–5	6E–8	–	–
32	Germanium–75[2]	D, see ^{66}Ge	4E+4	8E+4	3E–5	1E–7	–	–
			St. wall (7E+4)	–	–	–	9E–4	9E–3
		W, see ^{66}Ge	–	8E+4	4E–5	1E–7	–	–
32	Germanium–77	D, see ^{66}Ge	9E+3	1E+4	4E–6	1E–8	1E–4	1E–3
		W, see ^{66}Ge	–	6E+3	2E–6	8E–9	–	–
32	Germanium–78[2]	D, see ^{66}Ge	2E+4	2E+4	9E–6	3E–8	–	–
			St. wall (2E+4)	–	–	–	3E–4	3E–3
		W, see ^{66}Ge	–	2E+4	9E–6	3E–8	–	–
33	Arsenic–69[2]	W, all compounds	3E+4	1E+5	5E–5	2E–7	–	–
			St. wall (4E+4)	–	–	–	6E–4	6E–3
33	Arsenic–70[2]	W, all compounds	1E+4	5E+4	2E–5	7E–8	2E–4	2E–3
33	Arsenic–71	W, all compounds	4E+3	5E+3	2E–6	6E–9	5E–5	5E–4
33	Arsenic–72	W, all compounds	9E+2	1E+3	6E–7	2E–9	1E–5	1E–4
33	Arsenic–73	W, all compounds	8E+3	2E+3	7E–7	2E–9	1E–4	1E–3
33	Arsenic–74	W, all compounds	1E+3	8E+2	3E–7	1E–9	2E–5	2E–4
33	Arsenic–76	W, all compounds	1E+3	1E+3	6E–7	2E–9	1E–5	1E–4
33	Arsenic–77	W, all compounds	4E+3	5E+3	2E–6	7E–9	–	–
			LLI wall (5E+3)	–	–	–	6E–5	6E–4
33	Arsenic–78[2]	W, all compounds	8E+3	2E+4	9E–6	3E–8	1E–4	1E–3

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
34	Selenium–70[2]	D, all compounds except those given for W	2E+4	4E+4	2E–5	5E–8	1E–4	1E–3
		W, oxides, hydroxides, carbides, and elemental Se	1E+4–	4E+4	2E–5	6E–8	–	–
34	Selenium–73m[2]	D, see ^{70}Se	6E+4	2E+5	6E–5	2E–7	4E–4	4E–3
		W, see ^{70}Se	3E+4	1E+5	6E–5	2E–7	–	–
34	Selenium–73	D, see ^{70}Se	3E+3	1E+4	5E–6	2E–8	4E–5	4E–4
		W, see ^{70}Se	–	2E+4	7E–6	2E–8	–	–
34	Selenium–75	D, see ^{70}Se	5E+2	7E+2	3E–7	1E–9	7E–6	7E–5
		W, see ^{70}Se	–	6E+2	3E–7	8E–10	–	–
34	Selenium–79	D, see ^{70}Se	6E+2	8E+2	3E–7	1E–9	8E–6	8E–5
		W, see ^{70}Se	–	6E+2	2E–7	8E–10	–	–
34	Selenium–81m[2]	D, see ^{70}Se	4E+4	7E+4	3E–5	9E–8	3E–4	3E–3
		W, see ^{70}Se	2E+4	7E+4	3E–5	1E–7	–	–
34	Selenium–81[2]	D, see ^{70}Se	6E+4	2E+5	9E–5	3E–7	–	–
			St. wall (8E+4)	–	–	–	1E–3	1E–2
		W, see ^{70}Se	–	2E+5	1E–4	3E–7	–	–
34	Selenium–83[2]	D, see ^{70}Se	4E+4	1E+5	5E–5	2E–7	4E–4	4E–3
		W, see ^{70}Se	3E+4	1E+5	5E–5	2E–7	–	–
35	Bromine–74m[2]	D, bromides of H, Li, Na, K, Rb, Cs, and Fr	1E+4	4E+4	2E–5	5E–8	–	–
			St. wall (2E+4)	–	–	–	3E–4	3E–3
		W, bromides of lanthanides, Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, Ge, Sn, Pb, As, Sb, Bi, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Mn, Tc, and Re	–	4E+4	2E–5	6E–8	–	–
35	Bromine–74[2]	D, see ^{74m}Br	2E+4	7E+4	3E–5	1E–7	–	–
			St. wall (4E+4)	–	–	–	5E–4	5E–3
		W, see ^{74m}Br	–	8E+4	4E–5	1E–7	–	–
35	Bromine–75[2]	D, see ^{74m}Br	3E+4	5E+4	2E–5	7E–8	–	–
			St. wall (4E+4)	–	–	–	5E–4	5E–3
		W, see ^{74m}Br	–	5E+4	2E–5	7E–8	–	–
35	Bromine–76	D, see ^{74m}Br	4E+3	5E+3	2E–6	7E–9	5E–5	5E–4
		W, see ^{74m}Br	–	4E+3	2E–6	6E–9	–	–
35	Bromine–77	D, see ^{74m}Br	2E+4	2E+4	1E–5	3E–8	2E–4	2E–3
		W, see ^{74m}Br	–	2E+4	8E–6	3E–8	–	–
35	Bromine–80m	D, see ^{74m}Br	2E+4	2E+4	7E–6	2E–8	3E–4	3E–3
		W, see ^{74m}Br	–	1E+4	6E–6	2E–8	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
35	Bromine–80[2]	D, see ^{74m}Br	5E+4	2E+5	8E–5	3E–7	–	–
		St. wall	(9E+4)	–	–	–	1E–3	1E–2
		W, see ^{74m}Br	–	2E+5	9E–5	3E–7	–	–
35	Bromine–82	D, see ^{74m}Br	3E+3	4E+3	2E–6	6E–9	4E–5	4E–4
		W, see ^{74m}Br	–	4E+3	2E–6	5E–9	–	–
35	Bromine–83	D, see ^{74m}Br	5E+4	6E+4	3E–5	9E–8	–	–
		St. wall	(7E+4)	–	–	–	9E–4	9E–3
		W, see ^{74m}Br	–	6E+4	3E–5	9E–8	–	–
35	Bromine–84[2]	D, see ^{74m}Br	2E+4	6E+4	2E–5	8E–8	–	–
		St. wall	(3E+4)	–	–	–	4E–4	4E–3
		W, see ^{74m}Br	–	6E+4	3E–5	9E–8	–	–
36	Krypton–74[2]	Submersion[1]	–	–	3E–6	1E–8	–	–
36	Krypton–76	Submersion[1]	–	–	9E–6	4E–8	–	–
36	Krypton–77[2]	Submersion[1]	–	–	4E–6	2E–8	–	–
36	Krypton–79	Submersion[1]	–	–	2E–5	7E–8	–	–
36	Krypton–81	Submersion[1]	–	–	7E–4	3E–6	–	–
36	Krypton–83m[2]	Submersion[1]	–	–	1E–2	5E–5	–	–
36	Krypton–85m	Submersion[1]	–	–	2E–5	1E–7	–	–
36	Krypton–85	Submersion[1]	–	–	1E–4	7E–7	–	–
36	Krypton–87[2]	Submersion[1]	–	–	5E–6	2E–8	–	–
36	Krypton–88	Submersion[1]	–	–	2E–6	9E–9	–	–
37	Rubidium–79[2]	D, all compounds	4E+4	1E+5	5E–5	2E–7	–	–
		St. wall	(6E+4)	–	–	–	8E–4	8E–3
37	Rubidium–81m[2]	D, all compounds	2E+5	3E+5	1E–4	5E–7	–	–
		St. wall	(3E+5)	–	–	–	4E–3	4E–2
37	Rubidium–81	D, all compounds	4E+4	5E+4	2E–5	7E–8	5E–4	5E–3
37	Rubidium–82m	D, all compounds	1E+4	2E+4	7E–6	2E–8	2E–4	2E–3
37	Rubidium–83	D, all compounds	6E+2	1E+3	4E–7	1E–9	9E–6	9E–5
37	Rubidium–84	D, all compounds	5E+2	8E+2	3E–7	1E–9	7E–6	7E–5
37	Rubidium–86	D, all compounds	5E+2	8E+2	3E–7	1E–9	7E–6	7E–5
37	Rubidium–87	D, all compounds	1E+3	2E+3	6E–7	2E–9	1E–5	1E–4
37	Rubidium–88[2]	D, all compounds	2E+4	6E+4	3E–5	9E–8	–	–
		St. wall	(3E+4)	–	–	–	4E–4	4E–3

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
37	Rubidium–89[2]	D, all compounds	4E+4	1E+5	6E–5	2E–7	–	–
			St. wall (6E+4)	–	–	–	9E–4	9E–3
38	Strontium–80[2]	D, all soluble compounds except $SrTiO_3$	4E+3	1E+4	5E–6	2E–8	6E–5	6E–4
		Y, all insoluble compounds and $SrTiO_3$	–	1E+4	5E–6	2E–8	–	–
38	Strontium–81[2]	D, see ^{80}Sr	3E+4	8E+4	3E–5	1E–7	3E–4	3E–3
		Y, see ^{80}Sr	2E+4	8E+4	3E–5	1E–7	–	–
38	Strontium–82	D, see ^{80}Sr	3E+2	4E+2	2E–7	6E–10	–	–
			LLI wall (2E+2)	–	–	–	3E–6	3E–5
		Y, see ^{80}Sr	2E+2	9E+1	4E–8	1E–10	–	–
38	Strontium–83	D, see ^{80}Sr	3E+3	7E+3	3E–6	1E–8	3E–5	3E–4
		Y, see ^{80}Sr	2E+3	4E+3	1E–6	5E–9	–	–
38	Strontium–85m[2]	D, see ^{80}Sr	2E+5	6E+5	3E–4	9E–7	3E–3	3E–2
		Y, see ^{80}Sr	–	8E+5	4E–4	1E–6	–	–
38	Strontium–85	D, see ^{80}Sr	3E+3	3E+3	1E–6	4E–9	4E–5	4E–4
		Y, see ^{80}Sr	–	2E+3	6E–7	2E–9	–	–
38	Strontium–87m	D, see ^{80}Sr	5E+4	1E+5	5E–5	2E–7	6E–4	6E–3
		Y, see ^{80}Sr	4E+4	2E+5	6E–5	2E–7	–	–
38	Strontium–89	D, see ^{80}Sr	6E+2	8E+2	4E–7	1E–9	–	–
			LLI wall (6E+2)	–	–	–	8E–6	8E–5
		Y, see ^{80}Sr	5E+2	1E+2	6E–8	2E–10	–	–
38	Strontium–90	D, see ^{80}Sr	3E+1	2E+1	8E–9	–	–	–
			Bone surf (4E+1)	Bone surf (2E+1)	–	3E–11	5E–7	5E–6
		Y, see ^{80}Sr	–	4E+0	2E–9	6E–12	–	–
38	Strontium–91	D, see ^{80}Sr	2E+3	6E+3	2E–6	8E–9	2E–5	2E–4
		Y, see ^{80}Sr	–	4E+3	1E–6	5E–9	–	–
38	Strontium–92	D, see ^{80}Sr	3E+3	9E+3	4E–6	1E–8	4E–5	4E–4
		Y, see ^{80}Sr	–	7E+3	3E–6	9E–9	–	–
39	Yttrium–86m[2]	W, all compounds except those given for Y	2E+4	6E+4	2E–5	8E–8	3E–4	3E–3
		Y, oxides and hydroxides	–	5E+4	2E–5	8E–8	–	–
39	Yttrium–86	W, see ^{86m}Y	1E+3	3E+3	1E–6	5E–9	2E–5	2E–4
		Y, see ^{86m}Y	–	3E+3	1E–6	5E–9	–	–
39	Yttrium–87	W, see ^{86m}Y	2E+3	3E+3	1E–6	5E–9	3E–5	3E–4
		Y, see ^{86m}Y	–	3E+3	1E–6	5E–9	–	–
39	Yttrium–88	W, see ^{86m}Y	1E+3	3E+2	1E–7	3E–10	1E–5	1E–4
		Y, see ^{86m}Y	–	2E+2	1E–7	3E–10	–	–
39	Yttrium–90m	W, see ^{86m}Y	8E+3	1E+4	5E–6	2E–8	1E–4	1E–3
		Y, see ^{86m}Y	–	1E+4	5E–6	2E–8	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
39	Yttrium–90	W, see ^{86m}Y	4E+2	7E+2	3E–7	9E–10	–	–
			LLI wall (5E+2)	–	–	–	7E–6	7E–5
		Y, see ^{86m}Y	–	6E+2	3E–7	9E–10	–	–
39	Yttrium–91m[2]	W, see ^{86m}Y	1E+5	2E+5	1E–4	3E–7	2E–3	2E–2
		Y, see ^{86m}Y	–	2E+5	7E–5	2E–7	–	–
39	Yttrium–91	W, see ^{86m}Y	5E+2	2E+2	7E–8	2E–10	–	–
			LLI wall (6E+2)	–	–	–	8E–6	8E–5
		Y, see ^{86m}Y	–	1E+2	5E–8	2E–10	–	–
39	Yttrium–92	W, see ^{86m}Y	3E+3	9E+3	4E–6	1E–8	4E–5	4E–4
		Y, see ^{86m}Y	–	8E+3	3E–6	1E–8	–	–
39	Yttrium–93	W, see ^{86m}Y	1E+3	3E+3	1E–6	4E–9	2E–5	2E–4
		Y, see ^{86m}Y	–	2E+3	1E–6	3E–9	–	–
39	Yttrium–94[2]	W, see ^{86m}Y	2E+4	8E+4	3E–5	1E–7	–	–
			St. wall (3E+4)	–	–	–	4E–4	4E–3
		Y, see ^{86m}Y	–	8E+4	3E–5	1E–7	–	–
39	Yttrium–95[2]	W, see ^{86m}Y	4E+4	2E+5	6E–5	2E–7	–	–
			St. wall (5E+4)	–	–	–	7E–4	7E–3
		Y, see ^{86m}Y	–	1E+5	6E–5	2E–7	–	–
40	Zirconium–86	D, all compounds except those given for W and Y	1E+3	4E+3	2E–6	6E–9	2E–5	2E–4
		W, oxides, hydroxides, halides, and nitrates	–	3E+3	1E–6	4E–9	–	–
		Y, carbide	–	2E+3	1E–6	3E–9	–	–
40	Zirconium–88	D, see ^{86}Zr	4E+3	2E+2	9E–8	3E–10	5E–5	5E–4
		W, see ^{86}Zr	–	5E+2	2E–7	7E–10	–	–
		Y, see ^{86}Zr	–	3E+2	1E–7	4E–10	–	–
40	Zirconium–89	D, see ^{86}Zr	2E+3	4E+3	1E–6	5E–9	2E–5	2E–4
		W, see ^{86}Zr	–	2E+3	1E–6	3E–9	–	–
		Y, see ^{86}Zr	–	2E+3	1E–6	3E–9	–	–
40	Zirconium–93	D, see ^{86}Zr	1E+3	6E+0	3E–9	–	–	–
			Bone surf (3E+3)	Bone surf (2E+1)	–	2E–11	4E–5	4E–4
		W, see ^{86}Zr	–	2E+1	1E–8	–	–	–
				Bone surf (6E+1)	–	9E–11	–	–
		Y, see ^{86}Zr	–	6E+1	2E–8	–	–	–
				Bone surf (7E+1)	–	9E–11	–	–
40	Zirconium–95	D, see ^{86}Zr	1E+3	1E+2	5E–8	–	2E–5	2E–4
				Bone surf (3E+2)	–	4E–10	–	–
		W, see ^{86}Zr	–	4E+2	2E–7	1E–10	–	–
		Y, see ^{86}Zr	–	3E+2	1E–7	4E–10	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
40	Zirconium–97	D, see ^{86}Zr	6E+2	2E+3	8E–7	3E–9	9E–6	9E–5
		W, see ^{86}Zr	–	1E+3	6E–7	2E–9	–	–
		Y, see ^{86}Zr	–	1E+3	5E–7	2E–9	–	–
41	Niobium–88[2]	W, all compounds except those given for Y	5E+4	2E+5	9E–5	3E–7	–	–
			St. wall (7E+4)	–	–	–	1E–3	1E–2
		Y, oxides and hydroxides	–	2E+5	9E–5	3E–7	–	–
41	Niobium–89m[2] (66 min)	W, see ^{88}Nb	1E+4	4E+4	2E–5	6E–8	1E–4	1E–3
		Y, see ^{88}Nb	–	4E+4	2E–5	5E–8	–	–
41	Niobium–89 (122 min)	W, see ^{88}Nb	5E+3	2E+4	8E–6	3E–8	7E–5	7E–4
		Y, see ^{88}Nb	–	2E+4	6E–6	2E–8	–	–
41	Niobium–90	W, see ^{88}Nb	1E+3	3E+3	1E–6	4E–9	1E–5	1E–4
		Y, see ^{88}Nb	–	2E+3	1E–6	3E–9	–	–
41	Niobium–93m	W, see ^{88}Nb	9E+3	2E+3	8E–7	3E–9	–	–
			LLI wall (1E+4)	–	–	–	2E–4	2E–3
		Y, see ^{88}Nb	–	2E+2	7E–8	2E–10	–	–
41	Niobium–94	W, see ^{88}Nb	9E+2	2E+2	8E–8	3E–10	1E–5	1E–4
		Y, see ^{88}Nb	–	2E+1	6E–9	2E–11	–	–
41	Niobium–95m	W, see ^{88}Nb	2E+3	3E+3	1E–6	4E–9	–	–
			LLI wall (2E+3)	–	–	–	3E–5	3E–4
		Y, see ^{88}Nb	–	2E+3	9E–7	3E–9	–	–
41	Niobium–95	W, see ^{88}Nb	2E+3	1E+3	5E–7	2E–9	3E–5	3E–4
		Y, see ^{88}Nb	–	1E+3	5E–7	2E–9	–	–
41	Niobium–96	W, see ^{88}Nb	1E+3	3E+3	1E–6	4E–9	2E–5	2E–4
		Y, see ^{88}Nb	–	2E+3	1E–6	3E–9	–	–
41	Niobium–97[2]	W, see ^{88}Nb	2E+4	8E+4	3E–5	1E–7	3E–4	3E–3
		Y, see ^{88}Nb	–	7E+4	3E–5	1E–7	–	–
41	Niobium–98[2]	W, see ^{88}Nb	1E+4	5E+4	2E–5	8E–8	2E–4	2E–3
		Y, see ^{88}Nb	–	5E+4	2E–5	7E–8	–	–
42	Molybdenum–90	D, all compounds except those given for Y	4E+3	7E+3	3E–6	1E–8	3E–5	3E–4
		Y, oxides, hydroxides, and MoS_2	2E+3	5E+3	2E–6	6E–9	–	–
42	Molybdenum–93m	D, see ^{90}Mo	9E+3	2E+4	7E–6	2E–8	6E–5	6E–4
		Y, see ^{90}Mo	4E+3	1E+4	6E–6	2E–8	–	–
42	Molybdenum–93	D, see ^{90}Mo	4E+3	5E+3	2E–6	8E–9	5E–5	5E–4
		Y, see ^{90}Mo	2E+4	2E+2	8E–8	2E–10	–	–
42	Molybdenum–99	D, see ^{90}Mo	2E+3	3E+3	1E–6	4E–9	–	–
			LLI wall (1E+3)	–	–	–	2E–5	2E–4
		Y, see ^{90}Mo	1E+3	1E+3	6E–7	2E–9	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
42	Molybdenum–101[2]	D, see ^{90}Mo	4E+4	1E+5	6E–5	2E–7	–	–
			St. wall (5E+4)	–	–	–	7E–4	7E–3
		Y, see ^{90}Mo	–	1E+5	6E–5	2E–7	–	–
43	Technetium–93m[2]	D, all compounds except those given for W	7E+4	2E+5	6E–5	2E–7	1E–3	1E–2
		W, oxides, hydroxides, halides, and nitrates	–	3E+5	1E–4	4E–7	–	–
43	Technetium–93	D, see ^{93m}Tc	3E+4	7E+4	3E–5	1E–7	4E–4	4E–3
		W, see ^{93m}Tc	–	1E+5	4E–5	1E–7	–	–
43	Technetium–94m[2]	D, see ^{93m}Tc	2E+4	4E+4	2E–5	6E–8	3E–4	3E–3
		W, see ^{93m}Tc	–	6E+4	2E–5	8E–8	–	–
43	Technetium–94	D, see ^{93m}Tc	9E+3	2E+4	8E–6	3E–8	1E–4	1E–3
		W, see ^{93m}Tc	–	2E+4	1E–5	3E–8	–	–
43	Technetium–95m	D, see ^{93m}Tc	4E+3	5E+3	2E–6	8E–9	5E–5	5E–4
		W, see ^{93m}Tc	–	2E+3	8E–7	3E–9	–	–
43	Technetium–95	D, see ^{93m}Tc	1E+4	2E+4	9E–6	3E–8	1E–4	1E–3
		W, see ^{93m}Tc	–	2E+4	8E–6	3E–8	–	–
43	Technetium–96m[2]	D, see ^{93m}Tc	2E+5	3E+5	1E–4	4E–7	2E–3	2E–2
		W, see ^{93m}Tc	–	2E+5	1E–4	3E–7	–	–
43	Technetium–96	D, see ^{93m}Tc	2E+3	3E+3	1E–6	5E–9	3E–5	3E–4
		W, see ^{93m}Tc	–	2E+3	9E–7	3E–9	–	–
43	Technetium–97m	D, see ^{93m}Tc	5E+3	7E+3	3E–6	–	6E–5	6E–4
			–	St. wall (7E+3)	–	1E–8	–	–
		W, see ^{93m}Tc	–	1E+3	5E–7	2E–9	–	–
43	Technetium–97	D, see ^{93m}Tc	4E+4	5E+4	2E–5	7E–8	5E–4	5E–3
		W, see ^{93m}Tc	–	6E+3	2E–6	8E–9	–	–
43	Technetium–98	D, see ^{93m}Tc	1E+3	2E+3	7E–7	2E–9	1E–5	1E–4
		W, see ^{93m}Tc	–	3E+2	1E–7	4E–10	–	–
43	Technetium–99m	D, see ^{93m}Tc	8E+4	2E+5	6E–5	2E–7	1E–3	1E–2
		W, see ^{93m}Tc	–	2E+5	1E–4	3E–7	–	–
43	Technetium–99	D, see ^{93m}Tc	4E+3	5E+3	2E–6	–	6E–5	6E–4
			–	St. wall (6E+3)	–	8E–9	–	–
		W, see ^{93m}Tc	–	7E+2	3E–7	9E–10	–	–
43	Technetium–101[2]	D, see ^{93m}Tc	9E+4	3E+5	1E–4	5E–7	–	–
			St. wall (1E+5)	–	–	–	2E–3	2E–2
		W, see ^{93m}Tc	–	4E+5	2E–4	5E–7	–	–
43	Technetium–104[2]	D, see ^{93m}Tc	2E+4	7E+4	3E–5	1E–7	–	–
			St. wall (3E+4)	–	–	–	4E–4	4E–3
		W, see ^{93m}Tc	–	9E+4	4E–5	1E–7	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
44	Ruthenium–94[2]	D, all compounds except those given for W and Y	2E+4	4E+4	2E–5	6E–8	2E–4	2E–3
		W, halides	–	6E+4	3E–5	9E–8	–	–
		Y, oxides and hydroxides	–	6E+4	2E–5	8E–8	–	–
44	Ruthenium–97	D, see ^{94}Ru	8E+3	2E+4	8E–6	3E–8	1E–4	1E–3
		W, see ^{94}Ru	–	1E+4	5E–6	2E–8	–	–
		Y, see ^{94}Ru	–	1E+4	5E–6	2E–8	–	–
44	Ruthenium–103	D, see ^{94}Ru	2E+3	2E+3	7E–7	2E–9	3E–5	3E–4
		W, see ^{94}Ru	–	1E+3	4E–7	1E–9	–	–
		Y, see ^{94}Ru	–	6E+2	3E–7	9E–10	–	–
44	Ruthenium–105	D, see ^{94}Ru	5E+3	1E+4	6E–6	2E–8	7E–5	7E–4
		W, see ^{94}Ru	–	1E+4	6E–6	2E–8	–	–
		Y, see ^{94}Ru	–	1E+4	5E–6	2E–8	–	–
44	Ruthenium–106	D, see ^{94}Ru	2E+2	9E+1	4E–8	1E–10	–	–
			LLI wall (2E+2)	–	–	–	3E–6	3E–5
		W, see ^{94}Ru	–	5E+1	2E–8	8E–11	–	–
		Y, see ^{94}Ru	–	1E+1	5E–9	2E–11	–	–
45	Rhodium–99m	D, all compounds except those given for W and Y	2E+4	6E+4	2E–5	8E–8	2E–4	2E–3
		W, halides	–	8E+4	3E–5	1E–7	–	–
		Y, oxides and hydroxides	–	7E+4	3E–5	9E–8	–	–
45	Rhodium–99	D, see ^{99m}Rh	2E+3	3E+3	1E–6	4E–9	3E–5	3E–4
		W, see ^{99m}Rh	–	2E+3	9E–7	3E–9	–	–
		Y, see ^{99m}Rh	–	2E+3	8E–7	3E–9	–	–
45	Rhodium–100	D, see ^{99m}Rh	2E+3	5E+3	2E–6	7E–9	2E–5	2E–4
		W, see ^{99m}Rh	–	4E+3	2E–6	6E–9	–	–
		Y, see ^{99m}Rh	–	4E+3	2E–6	5E–9	–	–
45	Rhodium–101m	D, see ^{99m}Rh	6E+3	1E+4	5E–6	2E–8	8E–5	8E–4
		W, see ^{99m}Rh	–	8E+3	4E–6	1E–8	–	–
		Y, see ^{99m}Rh	–	8E+3	3E–6	1E–8	–	–
45	Rhodium–101	D, see ^{99m}Rh	2E+3	5E+2	2E–7	7E–10	3E–5	3E–4
		W, see ^{99m}Rh	–	8E+2	3E–7	1E–9	–	–
		Y, see ^{99m}Rh	–	2E+2	6E–8	2E–10	–	–
45	Rhodium–102m	D, see ^{99m}Rh	1E+3	5E+2	2E–7	7E–10	–	–
			LLI wall (1E+3)	–	–	–	2E–5	2E–4
		W, see ^{99m}Rh	–	4E+2	2E–7	5E–10	–	–
		Y, see ^{99m}Rh	–	1E+2	5E–8	2E–10	–	–
45	Rhodium–102	D, see ^{99m}Rh	6E+2	9E+1	4E–8	1E–10	8E–6	8E–5
		W, see ^{99m}Rh	–	2E+2	7E–8	2E–10	–	–
		Y, see ^{99m}Rh	–	6E+1	2E–8	8E–11	–	–
45	Rhodium–103m[2]	D, see ^{99m}Rh	4E+5	1E+6	5E–4	2E–6	6E–3	6E–2
		W, see ^{99m}Rh	–	1E+6	5E–4	2E–6	–	–
		Y, see ^{99m}Rh	–	1E+6	5E–4	2E–6	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values: Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values: Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values: Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations: Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations: Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers: Monthly Average Concentration (μCi/ml)
45	Rhodium–105	D, see ^{99m}Rh	4E+3	1E+4	5E–6	2E–8	–	–
			LLI wall (4E+3)	–	–	–	5E–5	5E–4
		W, see ^{99m}Rh	–	6E+3	3E–6	9E–9	–	–
		Y, see ^{99m}Rh	–	6E+3	2E–6	8E–9	–	–
45	Rhodium–106m	D, see ^{99m}Rh	8E+3	3E+4	1E–5	4E–8	1E–4	1E–3
		W, see ^{99m}Rh	–	4E+4	2E–5	5E–8	–	–
		Y, see ^{99m}Rh	–	4E+4	1E–5	5E–8	–	–
45	Rhodium–107[2]	D, see ^{99m}Rh	7E+4	2E+5	1E–4	3E–7	–	–
			St. wall (9E+4)	–	–	–	1E–3	1E–2
		W, see ^{99m}Rh	–	3E+5	1E–4	4E–7	–	–
		Y, see ^{99m}Rh	–	3E+5	1E–4	3E–7	–	–
46	Palladium–100	D, all compounds except those given for W and Y	1E+3	1E+3	6E–7	2E–9	2E–5	2E–4
		W, nitrates	–	1E+3	5E–7	2E–9	–	–
		Y, oxides and hydroxides	–	1E+3	6E–7	2E–9	–	–
46	Palladium–101	D, see ^{100}Pd	1E+4	3E+4	1E–5	5E–8	2E–4	2E–3
		W, see ^{100}Pd	–	3E+4	1E–5	5E–8	–	–
		Y, see ^{100}Pd	–	3E+4	1E–5	4E–8	–	–
46	Palladium–103	D, see ^{100}Pd	6E+3	6E+3	3E–6	9E–9	–	–
			LLI wall (7E+3)	–	–	–	1E–4	1E–3
		W, see ^{100}Pd	–	4E+3	2E–6	6E–9	–	–
		Y, see ^{100}Pd	–	4E+3	1E–6	5E–9	–	–
46	Palladium–107	D, see ^{100}Pd	3E+4	2E+4	9E–6	–	–	–
			LLI wall (4E+4)	Kidneys (2E+4)	–	3E–8	5E–4	5E–3
		W, see ^{100}Pd	–	7E+3	3E–6	1E–8	–	–
		Y, see ^{100}Pd	–	4E+2	2E–7	6E–10	–	–
46	Palladium–109	D, see ^{100}Pd	2E+3	6E+3	3E–6	9E–9	3E–5	3E–4
		W, see ^{100}Pd	–	5E+3	2E–6	8E–9	–	–
		Y, see ^{100}Pd	–	5E+3	2E–6	6E–9	–	–
47	Silver–102[2]	D, all compounds except those given for W and Y	5E+4	2E+5	8E–5	2E–7	–	–
			St. wall (6E+4)	–	–	–	9E–4	9E–3
		W, nitrates and sulfides	–	2E+5	9E–5	3E–7	–	–
		Y, oxides and hydroxides	–	2E+5	8E–5	3E–7	–	–
47	Silver–103[2]	D, see ^{102}Ag	4E+4	1E+5	4E–5	1E–7	5E–4	5E–3
		W, see ^{102}Ag	–	1E+5	5E–5	2E–7	–	–
		Y, see ^{102}Ag	–	1E+5	5E–5	2E–7	–	–
47	Silver–104m[2]	D, see ^{102}Ag	3E+4	9E+4	4E–5	1E–7	4E–4	4E–3
		W, see ^{102}Ag	–	1E+5	5E–5	2E–7	–	–
		Y, see ^{102}Ag	–	1E+5	5E–5	2E–7	–	–
47	Silver–104[2]	D, see ^{102}Ag	2E+4	7E+4	3E–5	1E–7	3E–4	3E–3
		W, see ^{102}Ag	–	1E+5	6E–5	2E–7	–	–
		Y, see ^{102}Ag	–	1E+5	6E–5	2E–7	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
47	Silver–105	D, see ^{102}Ag	3E+3	1E+3	4E–7	1E–9	4E–5	4E–4
		W, see ^{102}Ag	–	2E+3	7E–7	2E–9	–	–
		Y, see ^{102}Ag	–	2E+3	7E–7	2E–9	–	–
47	Silver–106m	D, see ^{102}Ag	8E+2	7E+2	3E–7	1E–9	1E–5	1E–4
		W, see ^{102}Ag	–	9E+2	4E–7	1E–9	–	–
		Y, see ^{102}Ag	–	9E+2	4E–7	1E–9	–	–
47	Silver–106[2]	D, see ^{102}Ag	6E+4 St. wall (6E+4)	2E+5 –	8E–5 –	3E–7 –	– 9E–4	– 9E–3
		W, see ^{102}Ag	–	2E+5	9E–5	3E–7	–	–
		Y, see ^{102}Ag	–	2E+5	8E–5	3E–7	–	–
47	Silver–108m	D, see ^{102}Ag	6E+2	2E+2	8E–8	3E–10	9E–6	9E–5
		W, see ^{102}Ag	–	3E+2	1E–7	4E–10	–	–
		Y, see ^{102}Ag	–	2E+1	1E–8	3E–11	–	–
47	Silver–110m	D, see ^{102}Ag	5E+2	1E+2	5E–8	2E–10	6E–6	6E–5
		W, see ^{102}Ag	–	2E+2	8E–8	3E–10	–	–
		Y, see ^{102}Ag	–	9E+1	4E–8	1E–10	–	–
47	Silver–111	D, see ^{102}Ag	9E+2 LLI wall (1E+3)	2E+3 Liver (2E+3)	6E–7 –	– 2E–9	– 2E–5	– 2E–4
		W, see ^{102}Ag	–	9E+2	4E–7	1E–9	–	–
		Y, see ^{102}Ag	–	9E+2	4E–7	1E–9	–	–
47	Silver–112	D, see ^{102}Ag	3E+3	8E+3	3E–6	1E–8	4E–5	4E–4
		W, see ^{102}Ag	–	1E+4	4E–6	1E–8	–	–
		Y, see ^{102}Ag	–	9E+3	4E–6	1E–8	–	–
47	Silver–115[2]	D, see ^{102}Ag	3E+4 St. wall (3E+4)	9E+4 –	4E–5 –	1E–7 –	– 4E–4	– 4E–3
		W, see ^{102}Ag	–	9E+4	4E–5	1E–7	–	–
		Y, see ^{102}Ag	–	8E+4	3E–5	1E–7	–	–
48	Cadmium–104[2]	D, all compounds except those given for W and Y	2E+4	7E+4	3E–5	9E–8	3E–4	3E–3
		W, sulfides, halides, and nitrates	–	1E+5	5E–5	2E–7	–	–
		Y, oxides and hydroxides	–	1E+5	5E–5	2E–7	–	–
48	Cadmium–107	D, see ^{104}Cd	2E+4	5E+4	2E–5	8E–8	3E–4	3E–3
		W, see ^{104}Cd	–	6E+4	2E–5	8E–8	–	–
		Y, see ^{104}Cd	–	5E+4	2E–5	7E–8	–	–
48	Cadmium–109	D, see ^{104}Cd	3E+2 Kidneys (4E+2)	4E+1 Kidneys (5E+1)	1E–8 –	– 7E–11	– 6E–6	– 6E–5
		W, see ^{104}Cd	–	1E+2 Kidneys (1E+2)	5E–8 –	– 2E–10	– –	– –
		Y, see ^{104}Cd	–	1E+2	5E–8	2E–10	–	–
48	Cadmium–113m	D, see ^{104}Cd	2E+1 Kidneys (4E+1)	2E+0 Kidneys (4E+0)	1E–9 –	– 5E–12	– 5E–7	– 5E–6
		W, see ^{104}Cd	–	8E+0 Kidneys (1E+1)	4E–9 –	– 2E–11	– –	– –
		Y, see ^{104}Cd	–	1E+1	5E–9	2E–11	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
48	Cadmium–113	D, see ^{104}Cd	2E+1 Kidneys (3E+1)	2E+0 Kidneys (3E+0)	9E–10 –	– 5E–12	– 4E–7	– 4E–6
		W, see ^{104}Cd	–	8E+0 Kidneys (1E+1)	3E–9 –	– 2E–11	– –	– –
		Y, see ^{104}Cd	–	1E+1	6E–9	2E–11	–	–
48	Cadmium–115m	D, see ^{104}Cd	3E+2	5E+1 Kidneys (8E+1)	2E–8 –	– 1E–10	4E–6 –	4E–5 –
		W, see ^{104}Cd	–	1E+2	5E–8	2E–10	–	–
		Y, see ^{104}Cd	–	1E+2	6E–8	2E–10	–	–
48	Cadmium–115	D, see ^{104}Cd	9E+2 LLI wall (1E+3)	1E+3 –	6E–7 –	2E–9 –	– 1E–5	– 1E–4
		W, see ^{104}Cd	–	1E+3	5E–7	2E–9	–	–
		Y, see ^{104}Cd	–	1E+3	6E–7	2E–9	–	–
48	Cadmium–117m	D, see ^{104}Cd	5E+3	1E+4	5E–6	2E–8	6E–5	6E–4
		W, see ^{104}Cd	–	2E+4	7E–6	2E–8	–	–
		Y, see ^{104}Cd	–	1E+4	6E–6	2E–8	–	–
48	Cadmium–117	D, see ^{104}Cd	5E+3	1E+4	5E–6	2E–8	6E–5	6E–4
		W, see ^{104}Cd	–	2E+4	7E–6	2E–8	–	–
		Y, see ^{104}Cd	–	1E+4	6E–6	2E–8	–	–
49	Indium–109	D, all compounds except those given for W	2E+4	4E+4	2E–5	6E–8	3E–4	3E–3
		W, oxides, hydroxides, halides, and nitrates	–	6E+4	3E–5	9E–8	–	–
49	Indium–110[2] (69.1 min)	D, see ^{109}In	2E+4	4E+4	2E–5	6E–8	2E–4	2E–3
		W, see ^{109}In	–	6E+4	2E–5	8E–8	–	–
49	Indium–110 (4.9 h)	D, see ^{109}In	5E+3	2E+4	7E–6	2E–8	7E–5	7E–4
		W, see ^{109}In	–	2E+4	8E–6	3E–8	–	–
49	Indium–111	D, see ^{109}In	4E+3	6E+3	3E–6	9E–9	6E–5	6E–4
		W, see ^{109}In	–	6E+3	3E–6	9E–9	–	–
49	Indium–112[2]	D, see ^{109}In	2E+5	6E+5	3E–4	9E–7	2E–3	2E–2
		W, see ^{109}In	–	7E+5	3E–4	1E–6	–	–
49	Indium–113m[2]	D, see ^{109}In	5E+4	1E+5	6E–5	2E–7	7E–4	7E–3
		W, see ^{109}In	–	2E+5	8E–5	3E–7	–	–
49	Indium–114m	D, see ^{109}In	3E+2 LLI wall (4E+2)	6E+1 –	3E–8 –	9E–11 –	– 5E–6	– 5E–5
		W, see ^{109}In	–	1E+2	4E–8	1E–10	–	–
49	Indium–115m	D, see ^{109}In	1E+4	4E+4	2E–5	6E–8	2E–4	2E–3
		W, see ^{109}In	–	5E+4	2E–5	7E–8	–	–
49	Indium–115	D, see ^{109}In	4E+1	1E+0	6E–10	2E–12	5E–7	5E–6
		W, see ^{109}In	–	5E+0	2E–9	8E–12	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
49	Indium–116m[2]	D, see ^{109}In	2E+4	8E+4	3E–5	1E–7	3E–4	3E–3
		W, see ^{109}In	–	1E+5	5E–5	2E–7	–	–
49	Indium–117m[2]	D, see ^{109}In	1E+4	3E+4	1E–5	5E–8	2E–4	2E–3
		W, see ^{109}In	–	4E+4	2E–5	6E–8	–	–
49	Indium–117[2]	D, see ^{109}In	6E+4	2E+5	7E–5	2E–7	8E–4	8E–3
		W, see ^{109}In	–	2E+5	9E–5	3E–7	–	–
49	Indium–119m[2]	D, see ^{109}In	4E+4 St. wall (5E+4)	1E+5 –	5E–5 –	2E–7 –	– 7E–4	– 7E–3
		W, see ^{109}In	–	1E+5	6E–5	2E–7	–	–
50	Tin–110	D, all compounds except those given for W	4E+3	1E+4	5E–6	2E–8	5E–5	5E–4
		W, sulfides, oxides, hydroxides, halides, nitrates, and stannic phosphate	–	1E+4	5E–6	2E–8	–	–
50	Tin–111[2]	D, see ^{110}Sn	7E+4	2E+5	9E–5	3E–7	1E–3	1E–2
		W, see ^{110}Sn	–	3E+5	1E–4	4E–7	–	–
50	Tin–113	D, see ^{110}Sn	2E+3 LLI wall (2E+3)	1E+3 –	5E–7 –	2E–9 –	– 3E–5	– 3E–4
		W, see ^{110}Sn	–	5E+2	2E–7	8E–10	–	–
50	Tin–117m	D, see ^{110}Sn	2E+3 LLI wall (2E+3)	1E+3 Bone surf (2E+3)	5E–7 –	– 3E–9	– 3E–5	– 3E–4
		W, see ^{110}Sn	–	1E+3	6E–7	2E–9	–	–
50	Tin–119m	D, see ^{110}Sn	3E+3 LLI wall (4E+3)	2E+3 –	1E–6 –	3E–9 –	– 6E–5	– 6E–4
		W, see ^{110}Sn	–	1E+3	4E–7	1E–9	–	–
50	Tin–121m	D, see ^{110}Sn	3E+3 LLI wall (4E+3)	9E+2 –	4E–7 –	1E–9 –	– 5E–5	– 5E–4
		W, see ^{110}Sn	–	5E+2	2E–7	8E–10	–	–
50	Tin–121	D, see ^{110}Sn	6E+3 LLI wall (6E+3)	2E+4 –	6E–6 –	2E–8 –	– 8E–5	– 8E–4
		W, see ^{110}Sn	–	1E+4	5E–6	2E–8	–	–
50	Tin–123m[2]	D, see ^{110}Sn	5E+4	1E+5	5E–5	2E–7	7E–4	7E–3
		W, see ^{110}Sn	–	1E+5	6E–5	2E–7	–	–
50	Tin–123	D, see ^{110}Sn	5E+2 LLI wall (6E+2)	6E+2 –	3E–7 –	9E–10 –	– 9E–6	– 9E–5
		W, see ^{110}Sn	–	2E+2	7E–8	2E–10	–	–
50	Tin–125	D, see ^{110}Sn	4E+2 LLI wall (5E+2)	9E+2 –	4E–7 –	1E–9 –	– 6E–6	– 6E–5
		W, see ^{110}Sn	–	4E+2	1E–7	5E–10	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values: Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values: Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values: Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations: Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations: Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers: Monthly Average Concentration (μCi/ml)
50	Tin–126	D, see ^{110}Sn	3E+2	6E+1	2E–8	8E–11	4E–6	4E–5
		W, see ^{110}Sn	–	7E+1	3E–8	9E–11	–	–
50	Tin–127	D, see ^{110}Sn	7E+3	2E+4	8E–6	3E–8	9E–5	9E–4
		W, see ^{110}Sn	–	2E+4	8E–6	3E–8	–	–
50	Tin–128[2]	D, see ^{110}Sn	9E+3	3E+4	1E–5	4E–8	1E–4	1E–3
		W, see ^{110}Sn	–	4E+4	1E–5	5E–8	–	–
51	Antimony–115[2]	D, all compounds except those given for W	8E+4	2E+5	1E–4	3E–7	1E–3	1E–2
		W, oxides, hydroxides, halides, sulfides, sulfates, and nitrates	–	3E+5	1E–4	4E–7	–	–
51	Antimony–116m[2]	D, see ^{115}Sb	2E+4	7E+4	3E–5	1E–7	3E–4	3E–3
		W, see ^{115}Sb	–	1E+5	6E–5	2E–7	–	–
51	Antimony–116[2]	D, see ^{115}Sb	7E+4	3E+5	1E–4	4E–7	–	–
			St. wall (9E+4)	–	–	–	1E–3	1E–2
		W, see ^{115}Sb	–	3E+5	1E–4	5E–7	–	–
51	Antimony–117	D, see ^{115}Sb	7E+4	2E+5	9E–5	3E–7	9E–4	9E–3
		W, see ^{115}Sb	–	3E+5	1E–4	4E–7	–	–
51	Antimony–118m	D, see ^{115}Sb	6E+3	2E+4	8E–6	3E–8	7E–5	7E–4
		W, see ^{115}Sb	5E+3	2E+4	9E–6	3E–8	–	–
51	Antimony–119	D, see ^{115}Sb	2E+4	5E+4	2E–5	6E–8	2E–4	2E–3
		W, see ^{115}Sb	2E+4	3E+4	1E–5	4E–8	–	–
51	Antimony–120 (16 min)	D, see ^{115}Sb	1E+5	4E+5	2E–4	6E–7	–	–
			St. wall (2E+5)	–	–	–	2E–3	2E–2
		W, see ^{115}Sb	–	5E+5	2E–4	7E–7	–	–
51	Antimony–120 (5.76 d)	D, see ^{115}Sb	1E+3	2E+3	9E–7	3E–9	1E–5	1E–4
		W, see ^{115}Sb	9E+2	1E+3	5E–7	2E–9	–	–
51	Antimony–122	D, see ^{115}Sb	8E+2	2E+3	1E–6	3E–9	–	–
			LLI wall (8E+2)	–	–	–	1E–5	1E–4
		W, see ^{115}Sb	7E+2	1E+3	4E–7	2E–9	–	–
51	Antimony–124m[2]	D, see ^{115}Sb	3E+5	8E+5	4E–4	1E–6	3E–3	3E–2
		W, see ^{115}Sb	2E+5	6E+5	2E–4	8E–7	–	–
51	Antimony–124	D, see ^{115}Sb	6E+2	9E+2	4E–7	1E–9	7E–6	7E–5
		W, see ^{115}Sb	5E+2	2E+2	1E–7	3E–10	–	–
51	Antimony–125	D, see ^{115}Sb	2E+3	2E+3	1E–6	3E–9	3E–5	3E–4
		W, see ^{115}Sb	–	5E+2	2E–7	7E–10	–	–
51	Antimony–126m[2]	D, see ^{115}Sb	5E+4	2E+5	8E–5	3E–7	–	–
			St. wall (7E+4)	–	–	–	9E–4	9E–3
		W, see ^{115}Sb	–	2E+5	8E–5	3E–7	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
51	Antimony–126m[2]	D, see ^{115}Sb	5E+4	2E+5	8E–5	3E–7	–	–
			St. wall (7E+4)	–	–	–	9E–4	9E–3
		W, see ^{115}Sb	–	2E+5	8E–5	3E–7	–	–
51	Antimony–126	D, see ^{115}Sb	6E+2	1E+3	5E–7	2E–9	7E–6	7E–5
		W, see ^{115}Sb	5E+2	5E+2	2E–7	7E–10	–	–
51	Antimony–127	D, see ^{115}Sb	8E+2	2E+3	9E–7	3E–9	–	–
			LLI wall (8E+2)	–	–	–	1E–5	1E–4
		W, see ^{115}Sb	7E+2	9E+2	4E–7	1E–9	–	–
51	Antimony–128[2] (10.4 min)	D, see ^{115}Sb	8E+4	4E+5	2E–4	5E–7	–	–
			St. wall (1E+5)	–	–	–	1E–3	1E–2
		W, see ^{115}Sb	–	4E+5	2E–4	6E–7	–	–
51	Antimony–128 (9.01 h)	D, see ^{115}Sb	1E+3	4E+3	2E–6	6E–9	2E–5	2E–4
		W, see ^{115}Sb	–	3E+3	1E–6	5E–9	–	–
51	Antimony–129	D, see ^{115}Sb	3E+3	9E+3	4E–6	1E–8	4E–5	4E–4
		W, see ^{115}Sb	–	9E+3	4E–6	1E–8	–	–
51	Antimony–130[2]	D, see ^{115}Sb	2E+4	6E+4	3E–5	9E–8	3E–4	3E–3
		W, see ^{115}Sb	–	8E+4	3E–5	1E–7	–	–
51	Antimony–131[2]	D, see ^{115}Sb	1E+4	2E+4	1E–5	–	–	–
			Thyroid (2E+4)	Thyroid (4E+4)	–	6E–8	2E–4	2E–3
		W, see ^{115}Sb	–	2E+4	1E–5		–	–
				Thyroid				
			–	(4E+4)	–	6E–8	–	–
52	Tellurium–116	D, all compounds except those given for W	8E+3	2E+4	9E–6	3E–8	1E–4	1E–3
		W, oxides, hydroxides, and nitrates	–	3E+4	1E–5	4E–8	–	–
52	Tellurium–121m	D, see ^{116}Te	5E+2	2E+2	8E–8	–	–	–
			Bone surf (7E+2)	Bone surf (4E+2)	–	5E–10	1E–5	1E–4
		W, see ^{116}Te	–	4E+2	2E–7	6E–10	–	–
52	Tellurium–121	D, see ^{116}Te	3E+3	4E+3	2E–6	6E–9	4E–5	4E–4
		W, see ^{116}Te	–	3E+3	1E–6	4E–9	–	–
52	Tellurium–123m	D, see ^{116}Te	6E+2	2E+2	9E–8	–	–	–
			Bone surf (1E+3)	Bone surf (5E+2)	–	8E–10	1E–5	1E–4
		W, see ^{116}Te	–	5E+2	2E–7	8E–10	–	–
52	Tellurium–123	D, see ^{116}Te	5E+2	2E+2	8E–8	–	–	–
			Bone surf (1E+3)	Bone surf (5E+2)	–	7E–10	2E–5	2E–4
		W, see ^{116}Te	–	4E+2	2E–7	–	–	–
				Bone surf				
			–	(1E+3)	–	2E–9	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
52	Tellurium–125m	D, see ^{116}Te	1E+3 Bone surf (1E+3)	4E+2 Bone surf (1E+3)	2E–7 –	– 1E–9	– 2E–5	– 2E–4
		W, see ^{116}Te	–	7E+2	3E–7	1E–9	–	–
52	Tellurium–127m	D, see ^{116}Te	6E+2	3E+2 Bone surf (4E+2)	1E–7 –	– 6E–10	9E–6 –	9E–5 –
		W, see ^{116}Te	–	3E+2	1E–7	4E–10	–	–
52	Tellurium–127	D, see ^{116}Te	7E+3	2E+4	9E–6	3E–8	1E–4	1E–3
		W, see ^{116}Te	–	2E+4	7E–6	2E–8	–	–
52	Tellurium–129m	D, see ^{116}Te	5E+2	6E+2	3E–7	9E–10	7E–6	7E–5
		W, see ^{116}Te	–	2E+2	1E–7	3E–10	–	–
52	Tellurium–129[2]	D, see ^{116}Te	3E+4	6E+4	3E–5	9E–8	4E–4	4E–3
		W, see ^{116}Te	–	7E+4	3E–5	1E–7	–	–
52	Tellurium–131m	D, see ^{116}Te	3E+2 Thyroid (6E+2)	4E+2 Thyroid (1E+3)	2E–7 –	– 2E–9	– 8E–6	– 8E–5
		W, see ^{116}Te	–	4E+2 Thyroid (9E+2)	2E–7 –	– 1E–9	– –	– –
52	Tellurium–131[2]	D, see ^{116}Te	3E+3 Thyroid (6E+3)	5E+3 Thyroid (1E+4)	2E–6 –	– 2E–8	– 8E–5	– 8E–4
		W, see ^{116}Te	–	5E+3 Thyroid (1E+4)	2E–6 –	– 2E–8	– –	– –
52	Tellurium–132	D, see ^{116}Te	2E+2 Thyroid (7E+2)	2E+2 Thyroid (8E+2)	9E–8 –	– 1E–9	– 9E–6	– 9E–5
		W, see ^{116}Te	–	2E+2 Thyroid (6E+2)	9E–8 –	– 9E–10	– –	– –
52	Tellurium–133m[2]	D, see ^{116}Te	3E+3 Thyroid (6E+3)	5E+3 Thyroid (1E+4)	2E–6 –	– 2E–8	– 9E–5	– 9E–4
		W, see ^{116}Te	–	5E+3 Thyroid (1E+4)	2E–6 –	– 2E–8	– –	– –
52	Tellurium–133[2]	D, see ^{116}Te	1E+4 Thyroid (3E+4)	2E+4 Thyroid (6E+4)	9E–6 –	– 8E–8	– 4E–4	– 4E–3
		W, see ^{116}Te	–	2E+4 Thyroid (6E+4)	9E–6 –	– 8E–8	– –	– –
52	Tellurium–134[2]	D, see ^{116}Te	2E+4 Thyroid (2E+4)	2E+4 Thyroid (5E+4)	1E–5 –	– 7E–8	– 3E–4	– 3E–3
		W, see ^{116}Te	–	2E+4 Thyroid (5E+4)	1E–5 –	– 7E–8	– –	– –

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion	Col. 2 Inhalation	Col. 3	Col. 1	Col. 2	
			ALI (μCi)	ALI (μCi)	DAC (μCi/ml)	Air (μCi/ml)	Water (μCi/ml)	Monthly Average Concentration (μCi/ml)
53	Iodine–120m[2]	D, all compounds	1E+4 Thyroid (1E+4)	2E+4 –	9E–6 –	3E–8 –	2E–4	2E–3
53	Iodine–120[2]	D, all compounds	4E+3 Thyroid (8E+3)	9E+3 Thyroid (1E+4)	4E–6 –	2E–8	1E–4	1E–3
53	Iodine–121	D, all compounds	1E+4 Thyroid (3E+4)	2E+4 Thyroid (5E+4)	8E–6 –	7E–8	4E–4	4E–3
53	Iodine–123	D, all compounds	3E+3 Thyroid (1E+4)	6E+3 Thyroid (2E+4)	3E–6 –	2E–8	1E–4	1E–3
53	Iodine–124	D, all compounds	5E+1 Thyroid (2E+2)	8E+1 Thyroid (3E+2)	3E–8 –	4E–10	2E–6	2E–5
53	Iodine–125	D, all compounds	4E+1 Thyroid (1E+2)	6E+1 Thyroid (2E+2)	3E–8 –	3E–10	2E–6	2E–5
53	Iodine–126	D, all compounds	2E+1 Thyroid (7E+1)	4E+1 Thyroid (1E+2)	1E–8 –	2E–10	1E–6	1E–5
53	Iodine–128[2]	D, all compounds	4E+4 St. wall (6E+4)	1E+5 –	5E–5 –	2E–7 –	8E–4	8E–3
53	Iodine–129	D, all compounds	5E+0 Thyroid (2E+1)	9E+0 Thyroid (3E+1)	4E–9 –	4E–11	2E–7	2E–6
53	Iodine–130	D, all compounds	4E+2 Thyroid (1E+3)	7E+2 Thyroid (2E+3)	3E–7 –	3E–9	2E–5	2E–4
53	Iodine–131	D, all compounds	3E+1 Thyroid (9E+1)	5E+1 Thyroid (2E+2)	2E–8 –	2E–10	1E–6	1E–5
53	Iodine–132m[2]	D, all compounds	4E+3 Thyroid (1E+4)	8E+3 Thyroid (2E+4)	4E–6 –	3E–8	1E–4	1E–3
53	Iodine–132	D, all compounds	4E+3 Thyroid (9E+3)	8E+3 Thyroid (1E+4)	3E–6 –	2E–8	1E–4	1E–3
53	Iodine–133	D, all compounds	1E+2 Thyroid (5E+2)	3E+2 Thyroid (9E+2)	1E–7 –	1E–9	7E–6	7E–5
53	Iodine–134[2]	D, all compounds	2E+4 Thyroid (3E+4)	5E+4 –	2E–5 –	6E–8 –	4E–4	4E–3

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
53	Iodine–135	D, all compounds	8E+2	2E+3	7E–7	–	–	–
			Thyroid (3E+3)	Thyroid (4E+3)	–	6E–9	3E–5	3E–4
54	Xenon–120[2]	Submersion[1]	–	–	1E–5	4E–8	–	–
54	Xenon–121[2]	Submersion[1]	–	–	2E–6	1E–8	–	–
54	Xenon–122	Submersion[1]	–	–	7E–5	3E–7	–	–
54	Xenon–123	Submersion[1]	–	–	6E–6	3E–8	–	–
54	Xenon–125	Submersion[1]	–	–	2E–5	7E–8	–	–
54	Xenon–127	Submersion[1]	–	–	1E–5	6E–8	–	–
54	Xenon–129m	Submersion[1]	–	–	2E–4	9E–7	–	–
54	Xenon–131m	Submersion[1]	–	–	4E–4	2E–6	–	–
54	Xenon–133m	Submersion[1]	–	–	1E–4	6E–7	–	–
54	Xenon–133	Submersion[1]	–	–	1E–4	5E–7	–	–
54	Xenon–135m[2]	Submersion[1]	–	–	9E–6	4E–8	–	–
54	Xenon–135	Submersion[1]	–	–	1E–5	7E–8	–	–
54	Xenon–138[2]	Submersion[1]	–	–	4E–6	2E–8	–	–
55	Cesium–125[2]	D, all compounds	5E+4	1E+5	6E–5	2E–7	–	–
			St. wall (9E+4)	–	–	–	1E–3	1E–2
55	Cesium–127	D, all compounds	6E+4	9E+4	4E–5	1E–7	9E–4	9E–3
55	Cesium–129	D, all compounds	2E+4	3E+4	1E–5	5E–8	3E–4	3E–3
55	Cesium–130[2]	D, all compounds	6E+4	2E+5	8E–5	3E–7	–	–
			St. wall (1E+5)	–	–	–	1E–3	1E–2
55	Cesium–131	D, all compounds	2E+4	3E+4	1E–5	4E–8	3E–4	3E–3
55	Cesium–132	D, all compounds	3E+3	4E+3	2E–6	6E–9	4E–5	4E–4
55	Cesium–134m	D, all compounds	1E+5	1E+5	6E–5	2E–7	–	–
			St. wall (1E+5)	–	–	–	2E–3	2E–2
55	Cesium–134	D, all compounds	7E+1	1E+2	4E–8	2E–10	9E–7	9E–6
55	Cesium–135m[2]	D, all compounds	1E+5	2E+5	8E–5	3E–7	1E–3	1E–2
55	Cesium–135	D, all compounds	7E+2	1E+3	5E–7	2E–9	1E–5	1E–4
55	Cesium–136	D, all compounds	4E+2	7E+2	3E–7	9E–10	6E–6	6E–5
55	Cesium–137	D, all compounds	1E+2	2E+2	6E–8	2E–10	1E–6	1E–5
55	Cesium–138[2]	D, all compounds	2E+4	6E+4	2E–5	8E–8	–	–
			St. wall (3E+4)	–	–	–	4E–4	4E–3

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
56	Barium–126[2]	D, all compounds	6E+3	2E+4	6E–6	2E–8	8E–5	8E–4
56	Barium–128	D, all compounds	5E+2	2E+3	7E–7	2E–9	7E–6	7E–5
56	Barium–131m[2]	D, all compounds	4E+5	1E+6	6E–4	2E–6	–	–
			St. wall (5E+5)	–	–	–	7E–3	7E–2
56	Barium–131	D, all compounds	3E+3	8E+3	3E–6	1E–8	4E–5	4E–4
56	Barium–133m	D, all compounds	2E+3	9E+3	4E–6	1E–8	–	–
			LLI wall (3E+3)	–	–	–	4E–5	4E–4
56	Barium–133	D, all compounds	2E+3	7E+2	3E–7	9E–10	2E–5	2E–4
56	Barium–135m	D, all compounds	3E+3	1E+4	5E–6	2E–8	4E–5	4E–4
56	Barium–139[2]	D, all compounds	1E+4	3E+4	1E–5	4E–8	2E–4	2E–3
56	Barium–140	D, all compounds	5E+2	1E+3	6E–7	2E–9	–	–
			LLI wall (6E+2)	–	–	–	8E–6	8E–5
56	Barium–141[2]	D, all compounds	2E+4	7E+4	3E–5	1E–7	3E–4	3E–3
56	Barium–142[2]	D, all compounds	5E+4	1E+5	6E–5	2E–7	7E–4	7E–3
57	Lanthanum–131[2]	D, all compounds except those given for W	5E+4	1E+5	5E–5	2E–7	6E–4	6E–3
		W, oxides and hydroxides	–	2E+5	7E–5	2E–7	–	–
57	Lanthanum–132	D, see ^{131}La	3E+3	1E+4	4E–6	1E–8	4E–5	4E–4
		W, see ^{131}La	–	1E+4	5E–6	2E–8	–	–
57	Lanthanum–135	D, see ^{131}La	4E+4	1E+5	4E–5	1E–7	5E–4	5E–3
		W, see ^{131}La	–	9E+4	4E–5	1E–7	–	–
57	Lanthanum–137	D, see ^{131}La	1E+4	6E+1 Liver	3E–8	–	2E–4	2E–3
			–	(7E+1)	–	1E–10	–	–
		W, see ^{131}La	–	3E+2 Liver	1E–7	–	–	–
			–	(3E+2)	–	4E–10	–	–
57	Lanthanum–138	D, see ^{131}La	9E+2	4E+0	1E–9	5E–12	1E–5	1E–4
		W, see ^{131}La	–	1E+1	6E–9	2E–11	–	–
57	Lanthanum–140	D, see ^{131}La	6E+2	1E+3	6E–7	2E–9	9E–6	9E–5
		W, see ^{131}La	–	1E+3	5E–7	2E–9	–	–
57	Lanthanum–141	D, see ^{131}La	4E+3	9E+3	4E–6	1E–8	5E–5	5E–4
		W, see ^{131}La	–	1E+4	5E–6	2E–8	–	–
57	Lanthanum–142[2]	D, see ^{131}La	8E+3	2E+4	9E–6	3E–8	1E–4	1E–3
		W, see ^{131}La	–	3E+4	1E–5	5E–8	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
57	Lanthanum–143[2]	D, see ^{131}La	4E+4	1E+5	4E–5	1E–7	–	–
			St. wall (4E+4)	–	–	–	5E–4	5E–3
		W, see ^{131}La	–	9E+4	4E–5	1E–7	–	–
58	Cerium–134	W, all compounds except those given for Y	5E+2	7E+2	3E–7	1E–9	–	–
			LLI wall (6E+2)	–	–	–	8E–6	8E–5
		Y, oxides, hydroxides, and fluorides	–	7E+2	3E–7	9E–10	–	–
58	Cerium–135	W, see ^{134}Ce	2E+3	4E+3	2E–6	5E–9	2E–5	2E–4
		Y, see ^{134}Ce	–	4E+3	1E–6	5E–9	–	–
58	Cerium–137m	W, see ^{134}Ce	2E+3	4E+3	2E–6	6E–9	–	–
			LLI wall (2E+3)	–	–	–	3E–5	3E–4
		Y, see ^{134}Ce	–	4E+3	2E–6	5E–9	–	–
58	Cerium–137	W, see ^{134}Ce	5E+4	1E+5	6E–5	2E–7	7E–4	7E–3
		Y, see ^{134}Ce	–	1E+5	5E–5	2E–7	–	–
58	Cerium–139	W, see ^{134}Ce	5E+3	8E+2	3E–7	1E–9	7E–5	7E–4
		Y, see ^{134}Ce	–	7E+2	3E–7	9E–10	–	–
58	Cerium–141	W, see ^{134}Ce	2E+3	7E+2	3E–7	1E–9	–	–
			LLI wall (2E+3)	–	–	–	3E–5	3E–4
		Y, see ^{134}Ce	–	6E+2	2E–7	8E–10	–	–
58	Cerium–143	W, see ^{134}Ce	1E+3	2E+3	8E–7	3E–9	–	–
			LLI wall (1E+3)	–	–	–	2E–5	2E–4
		Y, see ^{134}Ce	–	2E+3	7E–7	2E–9	–	–
58	Cerium–144	W, see ^{134}Ce	2E+2	3E+1	1E–8	4E–11	–	–
			LLI wall (3E+2)	–	–	–	3E–6	3E–5
		Y, see ^{134}Ce	–	1E+1	6E–9	2E–11	–	–
59	Praseodymium–136[2]	W, all compounds except those given for Y	5E+4	2E+5	1E–4	3E–7	–	–
			St. wall (7E+4)	–	–	–	1E–3	1E–2
		Y, oxides, hydroxides, carbides, and fluorides	–	2E+5	9E–5	3E–7	–	–
59	Praseodymium–137[2]	W, see ^{136}Pr	4E+4	2E+5	6E–5	2E–7	5E–4	5E–3
		Y, see ^{136}Pr	–	1E+5	6E–5	2E–7	–	–
59	Praseodymium–138m	W, see ^{136}Pr	1E+4	5E+4	2E–5	8E–8	1E–4	1E–3
		Y, see ^{136}Pr	–	4E+4	2E–5	6E–8	–	–
59	Praseodymium–139	W, see ^{136}Pr	4E+4	1E+5	5E–5	2E–7	6E–4	6E–3
		Y, see ^{136}Pr	–	1E+5	5E–5	2E–7	–	–
59	Praseodymium–142m[2]	W, see ^{136}Pr	8E+4	2E+5	7E–5	2E–7	1E–3	1E–2
		Y, see ^{136}Pr	–	1E+5	6E–5	2E–7	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
59	Praseodymium–142	W, see ^{136}Pr	1E+3	2E+3	9E–7	3E–9	1E–5	1E–4
		Y, see ^{136}Pr	–	2E+3	8E–7	3E–9	–	–
59	Praseodymium–143	W, see ^{136}Pr	9E+2	8E+2	3E–7	1E–9	–	–
			LLI wall (1E+3)	–	–	–	2E–5	2E–4
		Y, see ^{136}Pr	–	7E+2	3E–7	9E–10	–	–
59	Praseodymium–144[2]	W, see ^{136}Pr	3E+4	1E+5	5E–5	2E–7	–	–
			St. wall (4E+4)	–	–	–	6E–4	6E–3
		Y, see ^{136}Pr	–	1E+5	5E–5	2E–7	–	–
59	Praseodymium–145	W, see ^{136}Pr	3E+3	9E+3	4E–6	1E–8	4E–5	4E–4
		Y, see ^{136}Pr	–	8E+3	3E–6	1E–8	–	–
59	Praseodymium–147[2]	W, see ^{136}Pr	5E+4	2E+5	8E–5	3E–7	–	–
			St. wall (8E+4)	–	–	–	1E–3	1E–2
		Y, see ^{136}Pr	–	2E+5	8E–5	3E–7	–	–
60	Neodymium–136[2]	W, all compounds except those given for Y	1E+4	6E+4	2E–5	8E–8	2E–4	2E–3
		Y, oxides, hydroxides, carbides, and fluorides	–	5E+4	2E–5	8E–8	–	–
60	Neodymium–138	W, see ^{136}Nd	2E+3	6E+3	3E–6	9E–9	3E–5	3E–4
		Y, see ^{136}Nd	–	5E+3	2E–6	7E–9	–	–
60	Neodymium–139m	W, see ^{136}Nd	5E+3	2E+4	7E–6	2E–8	7E–5	7E–4
		Y, see ^{136}Nd	–	1E+4	6E–6	2E–8	–	–
60	Neodymium–139[2]	W, see ^{136}Nd	9E+4	3E+5	1E–4	5E–7	1E–3	1E–2
		Y, see ^{136}Nd	–	3E+5	1E–4	4E–7	–	–
60	Neodymium–141	W, see ^{136}Nd	2E+5	7E+5	3E–4	1E–6	2E–3	2E–2
		Y, see ^{136}Nd	–	6E+5	3E–4	9E–7	–	–
60	Neodymium–147	W, see ^{136}Nd	1E+3	9E+2	4E–7	1E–9	–	–
			LLI wall (1E+3)	–	–	–	2E–5	2E–4
		Y, see ^{136}Nd	–	8E+2	4E–7	1E–9	–	–
60	Neodymium–149[2]	W, see ^{136}Nd	1E+4	3E+4	1E–5	4E–8	1E–4	1E–3
		Y, see ^{136}Nd	–	2E+4	1E–5	3E–8	–	–
60	Neodymium–151[2]	W, see ^{136}Nd	7E+4	2E+5	8E–5	3E–7	9E–4	9E–3
		Y, see ^{136}Nd	–	2E+5	8E–5	3E–7	–	–
61	Promethium–141[2]	W, all compounds except those given for Y	5E+4	2E+5	8E–5	3E–7	–	–
			St. wall (6E+4)	–	–	–	8E–4	8E–3
		Y, oxides, hydroxides, carbides, and fluorides	–	2E+5	7E–5	2E–7	–	–
61	Promethium–143	W, see ^{141}Pm	5E+3	6E+2	2E–7	8E–10	7E–5	7E–4
		Y, see ^{141}Pm	–	7E+2	3E–7	1E–9	–	–
61	Promethium–144	W, see ^{141}Pm	1E+3	1E+2	5E–8	2E–10	2E–5	2E–4
		Y, see ^{141}Pm	–	1E+2	5E–8	2E–10	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
61	Promethium–145	W, see ^{141}Pm	1E+4	2E+2 Bone surf	7E–8	–	1E–4	1E–3
			–	(2E+2)	–	3E–10	–	–
		Y, see ^{141}Pm	–	2E+2	8E–8	3E–10	–	–
61	Promethium–146	W, see ^{141}Pm	2E+3	5E+1	2E–8	7E–11	2E–5	2E–4
		Y, see ^{141}Pm	–	4E+1	2E–8	6E–11	–	–
61	Promethium–147	W, see ^{141}Pm	4E+3 LLI wall	1E+2 Bone surf	5E–8	–	–	–
			(5E+3)	(2E+2)	–	3E–10	7E–5	7E–4
		Y, see ^{141}Pm	–	1E+2	6E–8	2E–10	–	–
61	Promethium–148m	W, see ^{141}Pm	7E+2	3E+2	1E–7	4E–10	1E–5	1E–4
		Y, see ^{141}Pm	–	3E+2	1E–7	5E–10	–	–
61	Promethium–148	W, see ^{141}Pm	4E+2 LLI wall	5E+2	2E–7	8E–10	–	–
			(5E+2)	–	–	–	7E–6	7E–5
		Y, see ^{141}Pm	–	5E+2	2E–7	7E–10	–	–
61	Promethium–149	W, see ^{141}Pm	1E+3 LLI wall	2E+3	8E–7	3E–9	–	–
			(1E+3)	–	–	–	2E–5	2E–4
		Y, see ^{141}Pm	–	2E+3	8E–7	2E–9	–	–
61	Promethium–150	W, see ^{141}Pm	5E+3	2E+4	8E–6	3E–8	7E–5	7E–4
		Y, see ^{141}Pm	–	2E+4	7E–6	2E–8	–	–
61	Promethium–151	W, see ^{141}Pm	2E+3	4E+3	1E–6	5E–9	2E–5	2E–4
		Y, see ^{141}Pm	–	3E+3	1E–6	4E–9	–	–
62	Samarium–141m[2]	W, all compounds	3E+4	1E+5	4E–5	1E–7	4E–4	4E–3
62	Samarium–141[2]	W, all compounds	5E+4 St. wall	2E+5	8E–5	2E–7	–	–
			(6E+4)	–	–	–	8E–4	8E–3
62	Samarium–142[2]	W, all compounds	8E+3	3E+4	1E–5	4E–8	1E–4	1E–3
62	Samarium–145	W, all compounds	6E+3	5E+2	2E–7	7E–10	8E–5	8E–4
62	Samarium–146	W, all compounds	1E+1 Bone surf	4E2 Bone surf	1E–11	–	–	–
			(3E+1)	(6E–2)	–	9E–14	3E–7	3E–6
62	Samarium–147	W, all compounds	2E+1 Bone surf	4E2 Bone surf	2E–11	–	–	–
			(3E+1)	(7E–2)	–	1E–13	4E–7	4E–6
62	Samarium–151	W, all compounds	1E+4 LLI wall	1E+2 Bone surf	4E–8	–	–	–
			(1E+4)	(2E+2)	–	2E–10	2E–4	2E–3
62	Samarium–153	W, all compounds	2E+3 LLI wall	3E+3	1E–6	4E–9	–	–
			(2E+3)	–	–	–	3E–5	3E–4
62	Samarium–155[2]	W, all compounds	6E+4 St. wall	2E+5	9E–5	3E–7	–	–
			(8E+4)	–	–	–	1E–3	1E–2
62	Samarium–156	W, all compounds	5E+3	9E+3	4E–6	1E–8	7E–5	7E–4

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
63	Europium–145	W, all compounds	2E+3	2E+3	8E–7	3E–9	2E–5	2E–4
63	Europium–146	W, all compounds	1E+3	1E+3	5E–7	2E–9	1E–5	1E–4
63	Europium–147	W, all compounds	3E+3	2E+3	7E–7	2E–9	4E–5	4E–4
63	Europium–148	W, all compounds	1E+3	4E+2	1E–7	5E–10	1E–5	1E–4
63	Europium–149	W, all compounds	1E+4	3E+3	1E–6	4E–9	2E–4	2E–3
63	Europium–150 (12.62 h)	W, all compounds	3E+3	8E+3	4E–6	1E–8	4E–5	4E–4
63	Europium–150 (34.2 y)	W, all compounds	8E+2	2E+1	8E–9	3E–11	1E–5	1E–4
63	Europium–152m	W, all compounds	3E+3	6E+3	3E–6	9E–9	4E–5	4E–4
63	Europium–152	W, all compounds	8E+2	2E+1	1E–8	3E–11	1E–5	1E–4
63	Europium–154	W, all compounds	5E+2	2E+1	8E–9	3E–11	7E–6	7E–5
63	Europium–155	W, all compounds	4E+3	9E+1	4E–8	–	5E–5	5E–4
			–	Bone surf (1E+2)	–	2E–10	–	–
63	Europium–156	W, all compounds	6E+2	5E+2	2E–7	6E–10	8E–6	8E–5
63	Europium–157	W, all compounds	2E+3	5E+3	2E–6	7E–9	3E–5	3E–4
63	Europium–158[2]	W, all compounds	2E+4	6E+4	2E–5	8E–8	3E–4	3E–3
64	Gadolinium–145[2]	D, all compounds except those given for W	5E+4	2E+5	6E–5	2E–7	–	–
			St. wall (5E+4)	–	–	–	6E–4	6E–3
		W, oxides, hydroxides, and fluorides	–	2E+5	7E–5	2E–7	–	–
64	Gadolinium–146	D, see ^{145}Gd	1E+3	1E+2	5E–8	2E–10	2E–5	2E–4
		W, see ^{145}Gd	–	3E+2	1E–7	4E–10	–	–
64	Gadolinium–147	D, see ^{145}Gd	2E+3	4E+3	2E–6	6E–9	3E–5	3E–4
		W, see ^{145}Gd	–	4E+3	1E–6	5E–9	–	–
64	Gadolinium–148	D, see ^{145}Gd	1E+1	8E–3	3E–12	–	–	–
			Bone surf (2E+1)	Bone surf (2E+2)	–	2E–14	3E–7	3E–6
		W, see ^{145}Gd	–	3E–2	1E–11	–	–	–
			–	Bone surf (6E–2)	–	8E–14	–	–
64	Gadolinium–149	D, see ^{145}Gd	3E+3	2E+3	9E–7	3E–9	4E–5	4E–4
		W, see ^{145}Gd	–	2E+3	1E–6	3E–9	–	–
64	Gadolinium–151	D, see ^{145}Gd	6E+3	4E+2	2E–7	–	9E–5	9E–4
			–	Bone surf (6E+2)	–	9E–10	–	–
		W, see ^{145}Gd	–	1E+3	5E–7	2E–9	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
64	Gadolinium–152	D, see ^{145}Gd	2E+1 Bone surf (3E+1)	1E–2 Bone surf (2E–2)	4E–12 –	– 3E–14	– 4E–7	– 4E–6
		W, see ^{145}Gd	–	4E–2 Bone surf (8E–2)	2E–11 –	– 1E–13	– –	– –
64	Gadolinium–153	D, see ^{145}Gd	5E+3	1E+2 Bone surf (2E+2)	6E–8 –	– 3E–10	6E–5 –	6E–4 –
		W, see ^{145}Gd	–	6E+2	2E–7	8E–10	–	–
64	Gadolinium–159	D, see ^{145}Gd	3E+3	8E+3	3E–6	1E–8	4E–5	4E–4
		W, see ^{145}Gd	–	6E+3	2E–6	8E–9	–	–
65	Terbium–147[2]	W, all compounds	9E+3	3E+4	1E–5	5E–8	1E–4	1E–3
65	Terbium–149	W, all compounds	5E+3	7E+2	3E–7	1E–9	7E–5	7E–4
65	Terbium–150	W, all compounds	5E+3	2E+4	9E–6	3E–8	7E–5	7E–4
65	Terbium–151	W, all compounds	4E+3	9E+3	4E–6	1E–8	5E–5	5E–4
65	Terbium–153	W, all compounds	5E+3	7E+3	3E–6	1E–8	7E–5	7E–4
65	Terbium–154	W, all compounds	2E+3	4E+3	2E–6	6E–9	2E–5	2E–4
65	Terbium–155	W, all compounds	6E+3	8E+3	3E–6	1E–8	8E–5	8E–4
65	Terbium–156m (5.0 h)	W, all compounds	2E+4	3E+4	1E–5	4E–8	2E–4	2E–3
65	Terbium–156m (24.4 h)	W, all compounds	7E+3	8E+3	3E–6	1E–8	1E–4	1E–3
65	Terbium–156	W, all compounds	1E+3	1E+3	6E–7	2E–9	1E–5	1E–4
65	Terbium–157	W, all compounds	5E+4 LLI wall (5E+4)	3E+2 Bone surf (6E+2)	1E–7 –	– 8E–10	– 7E–4	– 7E–3
65	Terbium–158	W, all compounds	1E+3	2E+1	8E–9	3E–11	2E–5	2E–4
65	Terbium–160	W, all compounds	8E+2	2E+2	9E–8	3E–10	1E–5	1E–4
65	Terbium–161	W, all compounds	2E+3 LLI wall (2E+3)	2E+3 –	7E–7 –	2E–9 –	– 3E–5	– 3E–4
66	Dysprosium–155	W, all compounds	9E+3	3E+4	1E–5	4E–8	1E–4	1E–3
66	Dysprosium–157	W, all compounds	2E+4	6E+4	3E–5	9E–8	3E–4	3E–3
66	Dysprosium–159	W, all compounds	1E+4	2E+3	1E–6	3E–9	2E–4	2E–3
66	Dysprosium–165	W, all compounds	1E+4	5E+4	2E–5	6E–8	2E–4	2E–3

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
66	Dysprosium–166	W, all compounds	6E+2	7E+2	3E–7	1E–9	–	–
			LLI wall (8E+2)	–	–	–	1E–5	1E–4
67	Holmium–155[2]	W, all compounds	4E+4	2E+5	6E–5	2E–7	6E–4	6E–3
67	Holmium–157[2]	W, all compounds	3E+5	1E+6	6E–4	2E–6	4E–3	4E–2
67	Holmium–159[2]	W, all compounds	2E+5	1E+6	4E–4	1E–6	3E–3	3E–2
67	Holmium–161	W, all compounds	1E+5	4E+5	2E–4	6E–7	1E–3	1E–2
67	Holmium–162m[2]	W, all compounds	5E+4	3E+5	1E–4	4E–7	7E–4	7E–3
67	Holmium–162[2]	W, all compounds	5E+5	2E+6	1E–3	3E–6	–	–
			St. wall (8E+5)	–	–	–	1E–2	1E–1
67	Holmium–164m[2]	W, all compounds	1E+5	3E+5	1E–4	4E–7	1E–3	1E–2
67	Holmium–164[2]	W, all compounds	2E+5	6E+5	3E–4	9E–7	–	–
			St. wall (2E+5)	–	–	–	3E–3	3E–2
67	Holmium–166m	W, all compounds	6E+2	7E+0	3E–9	9E–12	9E–6	9E–5
67	Holmium–166	W, all compounds	9E+2	2E+3	7E–7	2E–9	–	–
			LLI wall (9E+2)	–	–	–	1E–5	1E–4
67	Holmium–167	W, all compounds	2E+4	6E+4	2E–5	8E–8	2E–4	2E–3
68	Erbium–161	W, all compounds	2E+4	6E+4	3E–5	9E–8	2E–4	2E–3
68	Erbium–165	W, all compounds	6E+4	2E+5	8E–5	3E–7	9E–4	9E–3
68	Erbium–169	W, all compounds	3E+3	3E+3	1E–6	4E–9	–	–
			LLI wall (4E+3)	–	–	–	5E–5	5E–4
68	Erbium–171	W, all compounds	4E+3	1E+4	4E–6	1E–8	5E–5	5E–4
68	Erbium–172	W, all compounds	1E+3	1E+3	6E–7	2E–9	–	–
			LLI wall (E+3)	–	–	–	2E–5	2E–4
69	Thulium–162[2]	W, all compounds	7E+4	3E+5	1E–4	4E–7	–	–
			St. wall (7E+4)	–	–	–	1E–3	1E–2
69	Thulium–166	W, all compounds	4E+3	1E+4	6E–6	2E–8	6E–5	6E–4
69	Thulium–167	W, all compounds	2E+3	2E+3	8E–7	3E–9	–	–
			LLI wall (2E+3)	–	–	–	3E–5	3E–4
69	Thulium–170	W, all compounds	8E+2	2E+2	9E–8	3E–10	–	–
			LLI wall (1E+3)	–	–	–	1E–5	1E–4

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
69	Thulium–171	W, all compounds	1E+4	3E+2	1E–7	–	–	–
			LLI wall (1E+4)	Bone surf (6E+2)	–	8E–10	2E–4	2E–3
69	Thulium–172	W, all compounds	7E+2	1E+3	5E–7	2E–9	–	–
			LLI wall (8E+2)	–	–	–	1E–5	1E–4
69	Thulium–173	W, all compounds	4E+3	1E+4	5E–6	2E–8	6E–5	6E–4
69	Thulium–175[2]	W, all compounds	7E+4	3E+5	1E–4	4E–7	–	–
			St. wall (9E+4)	–	–	–	1E–3	1E–2
70	Ytterbium–162[2]	W, all compounds except those given for Y	7E+4	3E+5	1E–4	4E–7	1E–3	1E–2
		Y, oxides, hydroxides, and fluorides	–	3E+5	1E–4	4E–7	–	–
70	Ytterbium–166	W, see ^{162}Yb	1E+3	2E+3	8E–7	3E–9	2E–5	2E–4
		Y, see ^{162}Yb	–	2E+3	8E–7	3E–9	–	–
70	Ytterbium–167[2]	W, see ^{162}Yb	3E+5	8E+5	3E–4	1E–6	4E–3	4E–2
		Y, see ^{162}Yb	–	7E+5	3E–4	1E–6	–	–
70	Ytterbium–169	W, see ^{162}Yb	2E+3	8E+2	4E–7	1E–9	2E–5	2E–4
		Y, see ^{162}Yb	–	7E+2	3E–7	1E–9	–	–
70	Ytterbium–175	W, see ^{162}Yb	3E+3	4E+3	1E–6	5E–9	–	–
			LLI wall (3E+3)	–	–	–	4E–5	4E–4
		Y, see ^{162}Yb	–	3E+3	1E–6	5E–9	–	–
70	Ytterbium–177[2]	W, see ^{162}Yb	2E+4	5E+4	2E–5	7E–8	2E–4	2E–3
		Y, see ^{162}Yb	–	5E+4	2E–5	6E–8	–	–
70	Ytterbium–178[2]	W, see ^{162}Yb	1E+4	4E+4	2E–5	6E–8	2E–4	2E–3
		Y, see ^{162}Yb	–	4E+4	2E–5	5E–8	–	–
71	Lutetium–169	W, all compounds except those given for Y	3E+3	4E+3	2E–6	6E–9	3E–5	3E–4
		Y, oxides, hydroxides, and fluorides	–	4E+3	2E–6	6E–9	–	–
71	Lutetium–170	W, see ^{169}Lu	1E+3	2E+3	9E–7	3E–9	2E–5	2E–4
		Y, see ^{169}Lu	–	2E+3	8E–7	3E–9	–	–
71	Lutetium–171	W, see ^{169}Lu	2E+3	2E+3	8E–7	3E–9	3E–5	3E–4
		Y, see ^{169}Lu	–	2E+3	8E–7	3E–9	–	–
71	Lutetium–172	W, see ^{169}Lu	1E+3	1E+3	5E–7	2E–9	1E–5	1E–4
		Y, see ^{169}Lu	–	1E+3	5E–7	2E–9	–	–
71	Lutetium–173	W, see ^{169}Lu	5E+3	3E+2	1E–7	–	7E–5	7E–4
			–	Bone surf (5E+2)	–	6E–10	–	–
		Y, see ^{169}Lu	–	3E+2	1E–7	4E–10	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
71	Lutetium–174m	W, see ^{169}Lu	2E+3	2E+2	1E–7	–	–	–
			LLI wall (3E+3)	Bone surf (3E+2)	–	5E–10	4E–5	4E–4
		Y, see ^{169}Lu	–	2E+2	9E–8	3E–10	–	–
71	Lutetium–174	W, see ^{169}Lu	5E+3	1E+2	5E–8	–	7E–5	7E–4
			–	Bone surf (2E+2)	–	3E–10	–	–
		Y, see ^{169}Lu	–	2E+2	6E–8	2E–10	–	–
71	Lutetium–176m	W, see ^{169}Lu	8E+3	3E+4	1E–5	3E–8	1E–4	1E–3
		Y, see ^{169}Lu	–	2E+4	9E–6	3E–8	–	–
71	Lutetium–176	W, see ^{169}Lu	7E+2	5E+0	2E–9	–	1E–5	1E–4
			–	Bone surf (1E+1)	–	2E–11	–	–
		Y, see ^{169}Lu	–	8E+0	3E–9	1E–11	–	–
71	Lutetium–177m	W, see ^{169}Lu	7E+2	1E+2	5E–8	–	1E–5	1E–4
			–	Bone surf (1E+2)	–	2E–10	–	–
		Y, see ^{169}Lu	–	8E+1	3E–8	1E–10	–	–
71	Lutetium–177	W, see ^{169}Lu	2E+3	2E+3	9E–7	3E–9	–	–
			LLI wall (3E+3)	–	–	–	4E–5	4E–4
		Y, see ^{169}Lu	–	2E+3	9E–7	3E–9	–	–
71	Lutetium–178m[2]	W, see ^{169}Lu	5E+4	2E+5	8E–5	3E–7	–	–
			St. wall (6E+4)	–	–	–	8E–4	8E–3
		Y, see ^{169}Lu	–	2E+5	7E–5	2E–7	–	–
71	Lutetium–178[2]	W, see ^{169}Lu	4E+4	1E+5	5E–5	2E–7	–	–
			St. wall (4E+4)	–	–	–	6E–4	6E–3
		Y, see ^{169}Lu	–	1E+5	5E–5	2E–7	–	–
71	Lutetium–179	W, see ^{169}Lu	6E+3	2E+4	8E–6	3E–8	9E–5	9E–4
		Y, see ^{169}Lu	–	2E+4	6E–6	3E–8	–	–
72	Hafnium–170	D, all compounds except those given for W	3E+3	6E+3	2E–6	8E–9	4E–5	4E–4
		W, oxides, hydroxides, carbides, and nitrates	–	5E+3	2E–6	6E–9	–	–
72	Hafnium–172	D, see ^{170}Hf	1E+3	9E+0	4E–9	–	2E–5	2E–4
			–	Bone surf (2E+1)	–	3E–11	–	–
		W, see ^{170}Hf	–	4E+1	2E–8	–	–	–
			–	Bone surf (6E+1)	–	8E–11	–	–
72	Hafnium–173	D, see ^{170}Hf	5E+3	1E+4	5E–6	2E–8	7E–5	7E–4
		W, see ^{170}Hf	–	1E+4	5E–6	2E–8	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values: Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values: Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values: Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations: Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations: Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers: Monthly Average Concentration (μCi/ml)
72	Hafnium–175	D, see ^{170}Hf	3E+3	9E+2 Bone surf	4E–7	–	4E–5	4E–4
			–	(1E+3)	–	1E–9	–	–
		W, see ^{170}Hf	–	1E+3	5E–7	2E–9	–	–
72	Hafnium–177m[2]	D, see ^{170}Hf	2E+4	6E+4	2E–5	8E–8	3E–4	3E–3
		W, see ^{170}Hf	–	9E+4	4E–5	1E–7	–	–
72	Hafnium–178m	D, see ^{170}Hf	3E+2	1E+0 Bone surf	5E–10	–	3E–6	3E–5
			–	(2E+0)	–	3E–12	–	–
		W, see ^{170}Hf	–	5E+0 Bone surf	2E–9	–	–	–
			–	(9E+0)	–	1E–11	–	–
72	Hafnium–179m	D, see ^{170}Hf	1E+3	3E+2 Bone surf	1E–7	–	1E–5	1E–4
			–	(6E+2)	–	8E–10	–	–
		W, see ^{170}Hf	–	6E+2	3E–7	8E–10	–	–
72	Hafnium–180m	D, see ^{170}Hf	7E+3	2E+4	9E–6	3E–8	1E–4	1E–3
		W, see ^{170}Hf	–	3E+4	1E–5	4E–8	–	–
72	Hafnium–181	D, see ^{170}Hf	1E+3	2E+2 Bone surf	7E–8	–	2E–5	2E–4
			–	(4E+2)	–	6E–10	–	–
		W, see ^{170}Hf	–	4E+2	2E–7	6E–10	–	–
72	Hafnium–182m[2]	D, see ^{170}Hf	4E+4	9E+4	4E–5	1E–7	5E–4	5E–3
		W, see ^{170}Hf	–	1E+5	6E–5	2E–7	–	–
72	Hafnium–182	D, see ^{170}Hf	2E+2 Bone surf (4E+2)	8E–1 Bone surf (2E+0)	3E–10 –	– 2E–12	– 5E–6	– 5E–5
		W, see ^{170}Hf	–	3E+0 Bone surf	1E–9	–	–	–
			–	(7E+0)	–	1E–11	–	–
72	Hafnium–183[2]	D, see ^{170}Hf	2E+4	5E+4	2E–5	6E–8	3E–4	3E–3
		W, see ^{170}Hf	–	6E+4	2E–5	8E–8	–	–
72	Hafnium–184	D, see ^{170}Hf	2E+3	8E+3	3E–6	1E–8	3E–5	3E–4
		W, see ^{170}Hf	–	6E+3	3E–6	9E–9	–	–
73	Tantalum–172[2]	W, all compounds except those given for Y	4E+4	1E+5	5E–5	2E–7	5E–4	5E–3
		Y, elemental Ta, oxides, hydroxides, halides, carbides, nitrates, and nitrides	–	1E+5	4E–5	1E–7	–	–
73	Tantalum–173	W, see ^{172}Ta	7E+3	2E+4	8E–6	3E–8	9E–5	9E–4
		Y, see ^{172}Ta	–	2E+4	7E–6	2E–8	–	–
73	Tantalum–174[2]	W, see ^{172}Ta	3E+4	1E+5	4E–5	1E–7	4E–4	4E–3
		Y, see ^{172}Ta	–	9E+4	4E–5	1E–7	–	–
73	Tantalum–175	W, see ^{172}Ta	6E+3	2E+4	7E–6	2E–8	8E–5	8E–4
		Y, see ^{172}Ta	–	1E+4	6E–6	2E–8	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
73	Tantalum–176	W, see ^{172}Ta	4E+3	1E+4	5E–6	2E–8	5E–5	5E–4
		Y, see ^{172}Ta	–	1E+4	5E–6	2E–8	–	–
73	Tantalum–177	W, see ^{172}Ta	1E+4	2E+4	8E–6	3E–8	2E–4	2E–3
		Y, see ^{172}Ta	–	2E+4	7E–6	2E–8	–	–
73	Tantalum–178	W, see ^{172}Ta	2E+4	9E+4	4E–5	1E–7	2E–4	2E–3
		Y, see ^{172}Ta	–	7E+4	3E–5	1E–7	–	–
73	Tantalum–179	W, see ^{172}Ta	2E+4	5E+3	2E–6	8E–9	3E–4	3E–3
		Y, see ^{172}Ta	–	9E+2	4E–7	1E–9	–	–
73	Tantalum–180m	W, see ^{172}Ta	2E+4	7E+4	3E–5	9E–8	3E–4	3E–3
		Y, see ^{172}Ta	–	6E+4	2E–5	8E–8	–	–
73	Tantalum–180	W, see ^{172}Ta	1E+3	4E+2	2E–7	6E–10	2E–5	2E–4
		Y, see ^{172}Ta	–	2E+1	1E–8	3E–11	–	–
73	Tantalum–182m[2]	W, see ^{172}Ta	2E+5 St. wall (2E+5)	5E+5 –	2E–4 –	8E–7 –	– 3E–3	– 3E–2
		Y, see ^{172}Ta	–	4E+5	2E–4	6E–7	–	–
73	Tantalum–182	W, see ^{172}Ta	8E+2	3E+2	1E–7	5E–10	1E–5	1E–4
		Y, see ^{172}Ta	–	1E+2	6E–8	2E–10	–	–
73	Tantalum–183	W, see ^{172}Ta	9E+2 LLI wall (1E+3)	1E+3 –	5E–7 –	2E–9 –	– 2E–5	– 2E–4
		Y, see ^{172}Ta	–	1E+3	4E–7	1E–9	–	–
73	Tantalum–184	W, see ^{172}Ta	2E+3	5E+3	2E–6	8E–9	3E–5	3E–4
		Y, see ^{172}Ta	–	5E+3	2E–6	7E–9	–	–
73	Tantalum–185[2]	W, see ^{172}Ta	3E+4	7E+4	3E–5	1E–7	4E–4	4E–3
		Y, see ^{172}Ta	–	6E+4	3E–5	9E–8	–	–
73	Tantalum–186[2]	W, see ^{172}Ta	5E+4 St. wall (7E+4)	2E+5 –	1E–4 –	3E–7 –	– 1E–3	– 1E–2
		Y, see ^{172}Ta	–	2E+5	9E–5	3E–7	–	–
74	Tungsten–176	D, all compounds	1E+4	5E+4	2E–5	7E–8	1E–4	1E–3
74	Tungsten–177	D, all compounds	2E+4	9E+4	4E–5	1E–7	3E–4	3E–3
74	Tungsten–178	D, all compounds	5E+3	2E+4	8E–6	3E–8	7E–5	7E–4
74	Tungsten–179[2]	D, all compounds	5E+5	2E+6	7E–4	2E–6	7E–3	7E–2
74	Tungsten–181	D, all compounds	2E+4	3E+4	1E–5	5E–8	2E–4	2E–3
74	Tungsten–185	D, all compounds	2E+3 LLI wall (3E+3)	7E+3 –	3E–6 –	9E–9 –	– 4E–5	– 4E–4
74	Tungsten–187	D, all compounds	2E+3	9E+3	4E–6	1E–8	3E–5	3E–4
74	Tungsten–188	D, all compounds	4E+2 LLI wall (5E+2)	1E+3 –	5E–7 –	2E–9 –	– 7E–6	– 7E–5

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
75	Rhenium–177[2]	D, all compounds except those given for W	9E+4	3E+5	1E–4	4E–7	–	–
			St. wall (1E+5)	–	–	–	2E–3	2E–2
		W, oxides, hydroxides, and nitrates	–	4E+5	1E–4	5E–7	–	–
75	Rhenium–178[2]	D, see ^{177}Re	7E+4	3E+5	1E–4	4E–7	–	–
			St. wall (1E+5)	–	–	–	1E–3	1E–2
		W, see ^{177}Re	–	3E+5	1E–4	4E–7	–	–
75	Rhenium–181	D, see ^{177}Re	5E+3	9E+3	4E–6	1E–8	7E–5	7E–4
		W, see ^{177}Re	–	9E+3	4E–6	1E–8	–	–
75	Rhenium–182 (12.7 h)	D, see ^{177}Re	7E+3	1E+4	5E–6	2E–8	9E–5	9E–4
		W, see ^{177}Re	–	2E+4	6E–6	2E–8	–	–
75	Rhenium–182 (64.0 h)	D, see ^{177}Re	1E+3	2E+3	1E–6	3E–9	2E–5	2E–4
		W, see ^{177}Re	–	2E+3	9E–7	3E–9	–	–
75	Rhenium–184m	D, see ^{177}Re	2E+3	3E+3	1E–6	4E–9	3E–5	3E–4
		W, see ^{177}Re	–	4E+2	2E–7	6E–10	–	–
75	Rhenium–184	D, see ^{177}Re	2E+3	4E+3	1E–6	5E–9	3E–5	3E–4
		W, see ^{177}Re	–	1E+3	6E–7	2E–9	–	–
75	Rhenium–186m	D, see ^{177}Re	1E+3	2E+3	7E–7	–	–	–
			St. wall (2E+3)	St. wall (2E+3)	–	3E–9	2E–5	2E–4
		W, see ^{177}Re	–	2E+2	6E–8	2E–10	–	–
75	Rhenium–186	D, see ^{177}Re	2E+3	3E+3	1E–6	4E–9	3E–5	3E–4
		W, see ^{177}Re	–	2E+3	7E–7	2E–9	–	–
75	Rhenium–187	D, see ^{177}Re	6E+5	8E+5	4E–4	–	8E–3	8E–2
			–	St. wall (9E+5)	–	1E–6	–	–
		W, see ^{177}Re	–	1E+5	4E–5	1E–7	–	–
75	Rhenium–188m[2]	D, see ^{177}Re	8E+4	1E+5	6E–5	2E–7	1E–3	1E–2
		W, see ^{177}Re	–	1E+5	6E–5	2E–7	–	–
75	Rhenium–188	D, see ^{177}Re	2E+3	3E+3	1E–6	4E–9	2E–5	2E–4
		W, see ^{177}Re	–	3E+3	1E–6	4E–9	–	–
75	Rhenium–189	D, see ^{177}Re	3E+3	5E+3	2E–6	7E–9	4E–5	4E–4
		W, see ^{177}Re	–	4E+3	2E–6	6E–9	–	–
76	Osmium–180[2]	D, all compounds except those given for W and Y	1E+5	4E+5	2E–4	5E–7	1E–3	1E–2
		W, halides and nitrates	–	5E+5	2E–4	7E–7	–	–
		Y, oxides and hydroxides	–	5E+5	2E–4	6E–7	–	–
76	Osmium–181[2]	D, see ^{180}Os	1E+4	4E+4	2E–5	6E–8	2E–4	2E–3
		W, see ^{180}Os	–	5E+4	2E–5	6E–8	–	–
		Y, see ^{180}Os	–	4E+4	2E–5	6E–8	–	–
76	Osmium–182	D, see ^{180}Os	2E+3	6E+3	2E–6	8E–9	3E–5	3E–4
		W, see ^{180}Os	–	4E+3	2E–6	6E–9	–	–
		Y, see ^{180}Os	–	4E+3	2E–6	6E–9	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
76	Osmium–185	D, see ^{180}Os	2E+3	5E+2	2E–7	7E–10	3E–5	3E–4
		W, see ^{180}Os	–	8E+2	3E–7	1E–9	–	–
		Y, see ^{180}Os	–	8E+2	3E–7	1E–9	–	–
76	Osmium–189m	D, see ^{180}Os	8E+4	2E+5	1E–4	3E–7	1E–3	1E–2
		W, see ^{180}Os	–	2E+5	9E–5	3E–7	–	–
		Y, see ^{180}Os	–	2E+5	7E–5	2E–7	–	–
76	Osmium–191m	D, see ^{180}Os	1E+4	3E+4	1E–5	4E–8	2E–4	2E–3
		W, see ^{180}Os	–	2E+4	8E–6	3E–8	–	–
		Y, see ^{180}Os	–	2E+4	7E–6	2E–8	–	–
76	Osmium–191	D, see ^{180}Os	2E+3	2E+3	9E–7	3E–9	–	–
			LLI wall (3E+3)	–	–	–	3E–5	3E–4
		W, see ^{180}Os	–	2E+3	7E–7	2E–9	–	–
		Y, see ^{180}Os	–	1E+3	6E–7	2E–9	–	–
76	Osmium–193	D, see ^{180}Os	2E+3	5E+3	2E–6	6E–9	–	–
			LLI wall (2E+3)	–	–	–	2E–5	2E–4
		W, see ^{180}Os	–	3E+3	1E–6	4E–9	–	–
		Y, see ^{180}Os	–	3E+3	1E–6	4E–9	–	–
76	Osmium–194	D, see ^{180}Os	4E+2	4E+1	2E–8	6E–11	–	–
			LLI wall (6E+2)	–	–	–	8E–6	8E–5
		W, see ^{180}Os	–	6E+1	2E–8	8E–11	–	–
		Y, see ^{180}Os	–	8E+0	3E–9	1E–11	–	–
77	Iridium–182[2]	D, all compounds except those given for W and Y	4E+4	1E+5	6E–5	2E–7	–	–
			St. wall (4E+4)	–	–	–	6E–4	6E–3
		W, halides, nitrates, and metallic iridium	–	2E+5	6E–5	2E–7	–	–
		Y, oxides and hydroxides	–	1E+5	5E–5	2E–7	–	–
77	Iridium–184	D, see ^{182}Ir	8E+3	2E+4	1E–5	3E–8	1E–4	1E–3
		W, see ^{182}Ir	–	3E+4	1E–5	5E–8	–	–
		Y, see ^{182}Ir	–	3E+4	1E–5	4E–8	–	–
77	Iridium–185	D, see ^{182}Ir	5E+3	1E+4	5E–6	2E–8	7E–5	7E–4
		W, see ^{182}Ir	–	1E+4	5E–6	2E–8	–	–
		Y, see ^{182}Ir	–	1E+4	4E–6	1E–8	–	–
77	Iridium–186	D, see ^{182}Ir	2E+3	8E+3	3E–6	1E–8	3E–5	3E–4
		W, see ^{182}Ir	–	6E+3	3E–6	9E–9	–	–
		Y, see ^{182}Ir	–	6E+3	2E–6	8E–9	–	–
77	Iridium–187	D, see ^{182}Ir	1E+4	3E+4	1E–5	5E–8	1E–4	1E–3
		W, see ^{182}Ir	–	3E+4	1E–5	4E–8	–	–
		Y, see ^{182}Ir	–	3E+4	1E–5	4E–8	–	–
77	Iridium–188	D, see ^{182}Ir	2E+3	5E+3	2E–6	6E–9	3E–5	3E–4
		W, see ^{182}Ir	–	4E+3	1E–6	5E–9	–	–
		Y, see ^{182}Ir	–	3E+3	1E–6	5E–9	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
77	Iridium–189	D, see ^{182}Ir	5E+3	5E+3	2E–6	7E–9	–	–
			LLI wall (5E+3)	–	–	–	7E–5	7E–4
		W, see ^{182}Ir	–	4E+3	3E–6	5E–9	–	–
		Y, see ^{182}Ir	–	4E+3	1E–6	5E–9	–	–
77	Iridium–190m[2]	D, see ^{182}Ir	2E+5	2E+5	8E–5	3E–7	2E–3	2E–2
		W, see ^{182}Ir	–	2E+5	9E–5	3E–7	–	–
		Y, see ^{182}Ir	–	2E+5	8E–5	3E–7	–	–
77	Iridium–190	D, see ^{182}Ir	1E+3	9E+2	4E–7	1E–9	1E–5	1E–4
		W, see ^{182}Ir	–	1E+3	4E–7	1E–9	–	–
		Y, see ^{182}Ir	–	9E+2	4E–7	1E–9	–	–
77	Iridium–192m	D, see ^{182}Ir	3E+3	9E+1	4E–8	1E–10	4E–5	4E–4
		W, see ^{182}Ir	–	2E+2	9E–8	3E–10	–	–
		Y, see ^{182}Ir	–	2E+1	6E–9	2E–11	–	–
77	Iridium–192	D, see ^{182}Ir	9E+2	3E+2	1E–7	4E–10	1E–5	1E–4
		W, see ^{182}Ir	–	4E+2	2E–7	6E–10	–	–
		Y, see ^{182}Ir	–	2E+2	9E–8	3E–10	–	–
77	Iridium–194m	D, see ^{182}Ir	6E+2	9E+1	4E–8	1E–10	9E–6	9E–5
		W, see ^{182}Ir	–	2E+2	7E–8	2E–10	–	–
		Y, see ^{182}Ir	–	1E+2	4E–8	1E–10	–	–
77	Iridium–194	D, see ^{182}Ir	1E+3	3E+3	1E–6	4E–9	1E–5	1E–4
		W, see ^{182}Ir	–	2E+3	9E–7	3E–9	–	–
		Y, see ^{182}Ir	–	2E+3	8E–7	3E–9	–	–
77	Iridium–195m	D, see ^{182}Ir	8E+3	2E+4	1E–5	3E–8	1E–4	1E–3
		W, see ^{182}Ir	–	3E+4	1E–5	4E–8	–	–
		Y, see ^{182}Ir	–	2E+4	9E–6	3E–8	–	–
77	Iridium–195	D, see ^{182}Ir	1E+4	4E+4	2E–5	6E–8	2E–4	2E–3
		W, see ^{182}Ir	–	5E+4	2E–5	7E–8	–	–
		Y, see ^{182}Ir	–	4E+4	2E–5	6E–8	–	–
78	Platinum–186	D, all compounds	1E+4	4E+4	2E–5	5E–8	2E–4	2E–3
78	Platinum–188	D, all compounds	2E+3	2E+3	7E–7	2E–9	2E–5	2E–4
78	Platinum–189	D, all compounds	1E+4	3E+4	1E–5	4E–8	1E–4	1E–3
78	Platinum–191	D, all compounds	4E+3	8E+3	4E–6	1E–8	5E–5	5E–4
78	Platinum–193m	D, all compounds	3E+3	6E+3	3E–6	8E–9	–	–
			LLI wall (3E+4)	–	–	–	4E–5	4E–4
78	Platinum–193	D, all compounds	4E+4	2E+4	1E–5	3E–8	–	–
			LLI wall (5E+4)	–	–	–	6E–4	6E–3
78	Platinum–195m	D, all compounds	2E+3	4E+3	2E–6	6E–9	–	–
			LLI wall (2E+3)	–	–	–	3E–5	3E–4
78	Platinum–197m[2]	D, all compounds	2E+4	4E+4	2E–5	6E–8	4E–4	2E–3
78	Platinum–197	D, all compounds	3E+3	1E+4	4E–6	1E–8	4E–5	4E–4
78	Platinum–199[2]	D, all compounds	5E+4	1E+5	6E–5	2E–7	7E–4	7E–3

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78	Platinum–200	D, all compounds	1E+3	3E+3	1E–6	5E–9	2E–5	2E–4
79	Gold–193	D, all compounds except those given for W and Y	9E+3	3E+4	1E–5	4E–8	1E–4	1E–3
		W, halides and nitrates	–	2E+4	9E–6	3E–8	–	–
		Y, oxides and hydroxides	–	2E+4	8E–6	3E–8	–	–
79	Gold–194	D, see ^{193}Au	3E+3	8E+3	3E–6	1E–8	4E–5	4E–4
		W, see ^{193}Au	–	5E+3	2E–6	8E–9	–	–
		Y, see ^{193}Au	–	5E+3	2E–6	7E–9	–	–
79	Gold–195	D, see ^{193}Au	5E+3	1E+4	5E–6	2E–8	7E–5	7E–4
		W, see ^{193}Au	–	1E+3	6E–7	2E–9	–	–
		Y, see ^{193}Au	–	4E+2	2E–7	6E–10	–	–
79	Gold–198m	D, see ^{193}Au	1E+3	3E+3	1E–6	4E–9	1E–5	1E–4
		W, see ^{193}Au	–	1E+3	5E–7	2E–9	–	–
		Y, see ^{193}Au	–	1E+3	5E–7	2E–9	–	–
79	Gold–198	D, see ^{193}Au	1E+3	4E+3	2E–6	5E–9	2E–5	2E–4
		W, see ^{193}Au	–	2E+3	8E–7	3E–9	–	–
		Y, see ^{193}Au	–	2E+3	7E–7	2E–9	–	–
79	Gold–199	D, see ^{193}Au	3E+3	9E+3	4E–6	1E–8	–	–
			LLI wall (3E+3)	–	–	–	4E–5	4E–4
		W, see ^{193}Au	–	4E+3	2E–6	6E–9	–	–
		Y, see ^{193}Au	–	4E+3	2E–6	5E–9	–	–
79	Gold–200m	D, see ^{193}Au	1E+3	4E+3	1E–6	5E–9	2E–5	2E–4
		W, see ^{193}Au	–	3E+3	1E–6	4E–9	–	–
		Y, see ^{193}Au	–	2E+4	1E–6	3E–9	–	–
79	Gold–200[2]	D, see ^{193}Au	3E+4	6E+4	3E–5	9E–8	4E–4	4E–3
		W, see ^{193}Au	–	8E+4	3E–5	1E–7	–	–
		Y, see ^{193}Au	–	7E+4	3E–5	1E–7	–	–
79	Gold–201[2]	D, see ^{193}Au	7E+4	2E+5	9E–5	3E–7	–	–
			St. wall (9E+4)	–	–	–	1E–3	1E–2
		W, see ^{193}Au	–	2E+5	1E–4	3E–7	–	–
		Y, see ^{193}Au	–	2E+5	9E–5	3E–7	–	–
80	Mercury–193m	Vapor	–	8E+3	4E–6	1E–8	–	–
		Organic D	4E+3	1E+4	5E–6	2E–8	6E–5	6E–4
		D, sulfates	3E+3	9E+3	4E–6	1E–8	4E–5	4E–4
		W, oxides, hydroxides, halides, nitrates, and sulfides	–	8E+3	3E–6	1E–8	–	–
80	Mercury–193	Vapor	–	3E+4	1E–5	4E–8	–	–
		Organic D	2E+4	6E+4	3E–5	9E–8	3E–4	3E–3
		D, see ^{193m}Hg	2E+4	4E+4	2E–5	6E–8	2E–4	2E–3
		W, see ^{193m}Hg	–	4E+4	2E–5	6E–8	–	–
80	Mercury–194	Vapor	–	3E+1	1E–8	4E–11	–	–
		Organic D	2E+1	3E+1	1E–8	4E–11	2E–7	2E–6
		D, see ^{193m}Hg	8E+2	4E+1	2E–8	6E–11	1E–5	1E–4
		W, see ^{193m}Hg	–	1E+2	5E–8	2E–10	–	–

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80	Mercury–195m	Vapor	–	4E+3	2E–6	6E–9	–	–
		Organic D	3E+3	6E+3	3E–6	8E–9	4E–5	4E–4
		D, see ^{193m}Hg	2E+3	5E+3	2E–6	7E–9	3E–5	3E–4
		W, see ^{193m}Hg	–	4E+3	2E–6	5E–9	–	–
80	Mercury–195	Vapor	–	3E+4	1E–5	4E–8	–	–
		Organic D	2E+4	5E+4	2E–5	6E–8	2E–4	2E–3
		D, see ^{193m}Hg	1E+4	4E+4	1E–5	5E–8	2E–4	2E–3
		W, see ^{193m}Hg	–	3E+4	1E–5	5E–8	–	–
80	Mercury–197m	Vapor	–	5E+3	2E–6	7E–9	–	–
		Organic D	4E+3	9E+3	4E–6	1E–8	5E–5	5E–4
		D, see ^{193m}Hg	3E+3	7E+3	3E–6	1E–8	4E–5	4E–4
		W, see ^{193m}Hg	–	5E+3	2E–6	7E–9	–	–
80	Mercury–197	Vapor	–	8E+3	4E–6	1E–8	–	–
		Organic D	7E+3	1E+4	6E–6	2E–8	9E–5	9E–4
		D, see ^{193m}Hg	6E+3	1E+4	5E–6	2E–8	8E–5	8E–4
		W, see ^{193m}Hg	–	9E+3	4E–6	1E–8	–	–
80	Mercury–199m[2]	Vapor	–	8E+4	3E–5	1E–7	–	–
		Organic D	6E+4	2E+5	7E–5	2E–7	–	–
			St. wall (1E+5)	–	–	–	1E–3	1E–2
		D, see ^{193m}Hg	6E+4	1E+5	6E–5	2E–7	8E–4	8E–3
		W, see ^{193m}Hg	–	2E+5	7E–5	2E–7	–	–
80	Mercury–203	Vapor	–	8E+2	4E–7	1E–9	–	–
		Organic D	5E+2	8E+2	3E–7	1E–9	7E–6	7E–5
		D, see ^{193m}Hg	2E+3	1E+3	5E–7	2E–9	3E–5	3E–4
		W, see ^{193m}Hg	–	1E+3	5E–7	2E–9	–	–
81	Thallium–194m[2]	D, all compounds	5E+4	2E+5	6E–5	2E–7	–	–
			St. wall (7E+4)	–	–	–	1E–3	1E–2
81	Thallium–194[2]	D, all compounds	3E+5	6E+5	2E–4	8E–7	–	–
			St. wall (3E+5)	–	–	–	4E–3	4E–2
81	Thallium–195[2]	D, all compounds	6E+4	1E+5	5E–5	2E–7	9E–4	9E–3
81	Thallium–197	D, all compounds	7E+4	1E+5	5E–5	2E–7	1E–3	1E–2
81	Thallium–198m[2]	D, all compounds	3E+4	5E+4	2E–5	8E–8	4E–4	4E–3
81	Thallium–198	D, all compounds	2E+4	3E+4	1E–5	5E–8	3E–4	3E–3
81	Thallium–199	D, all compounds	6E+4	8E+4	4E–5	1E–7	9E–4	9E–3
81	Thallium–200	D, all compounds	8E+3	1E+4	5E–6	2E–8	1E–4	1E–3
81	Thallium–201	D, all compounds	2E+4	2E+4	9E–6	3E–8	2E–4	2E–3
81	Thallium–202	D, all compounds	4E+3	5E+3	2E–6	7E–9	5E–5	5E–4
81	Thallium–204	D, all compounds	2E+3	2E+3	9E–7	3E–9	2E–5	2E–4
82	Lead–195m[2]	D, all compounds	6E+4	2E+5	8E–5	3E–7	8E–4	8E–3
82	Lead–198	D, all compounds	3E+4	6E+4	3E–5	9E–8	4E–4	4E–3
82	Lead–199[2]	D, all compounds	2E+4	7E+4	3E–5	1E–7	3E–4	3E–3

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
82	Lead–200	D, all compounds	3E+3	6E+3	3E–6	9E–9	4E–5	4E–4
82	Lead–201	D, all compounds	7E+3	2E+4	8E–6	3E–8	1E–4	1E–3
82	Lead–202m	D, all compounds	9E+3	3E+4	1E–5	4E–8	1E–4	1E–3
82	Lead–202	D, all compounds	1E+2	5E+1	2E–8	7E–11	2E–6	2E–5
82	Lead–203	D, all compounds	5E+3	9E+3	4E–6	1E–8	7E–5	7E–4
82	Lead–205	D, all compounds	4E+3	1E+3	6E–7	2E–9	5E–5	5E–4
82	Lead–209	D, all compounds	2E+4	6E+4	2E–5	8E–8	3E–4	3E–3
82	Lead–210	D, all compounds	6E–1 Bone surf (1E+0)	2E–1 Bone surf (4E–1)	1E–10 –	– 6E–13	– 1E–8	– 1E–7
82	Lead–211[2]	D, all compounds	1E+4	6E+2	3E–7	9E–10	2E–4	2E–3
82	Lead–212	D, all compounds	8E+1 Bone surf (1E+2)	3E+1 –	1E–8 –	5E–11 –	– 2E–6	– 2E–5
82	Lead–214[2]	D, all compounds	9E+3	8E+2	3E–7	1E–9	1E–4	1E–3
83	Bismuth–200[2]	D, nitrates W, all other compounds	3E+4 –	8E+4 1E+5	4E–5 4E–5	1E–7 1E–7	4E–4 –	4E–3 –
83	Bismuth–201[2]	D, see ^{200}Bi W, see ^{200}Bi	1E+4 –	3E+4 4E+4	1E–5 2E–5	4E–8 5E–8	2E–4 –	2E–3 –
83	Bismuth–202[2]	D, see ^{200}Bi W, see ^{200}Bi	1E+4 –	4E+4 8E+4	2E–5 3E–5	6E–8 1E–7	2E–4 –	2E–3 –
83	Bismuth–203	D, see ^{200}Bi W, see ^{200}Bi	2E+3 –	7E+3 6E+3	3E–6 3E–6	9E–9 9E–9	3E–5 –	3E–4 –
83	Bismuth–205	D, see ^{200}Bi W, see ^{200}Bi	1E+3 –	3E+3 1E+3	1E–6 5E–7	3E–9 2E–9	2E–5 –	2E–4 –
83	Bismuth–206	D, see ^{200}Bi W, see ^{200}Bi	6E+2 –	1E+3 9E+2	6E–7 4E–7	2E–9 1E–9	9E–6 –	9E–5 –
83	Bismuth–207	D, see ^{200}Bi W, see ^{200}Bi	1E+3 –	2E+3 4E+2	7E–7 1E–7	2E–9 5E–10	1E–5 –	1E–4 –
83	Bismuth–210m	D, see ^{200}Bi W, see ^{200}Bi	4E+1 Kidneys (6E+1) –	5E+0 Kidneys (6E+0) 7E–1	2E–9 – 3E–10	– 9E–12 9E–13	– 8E–7 –	– 8E–6 –
83	Bismuth–210	D, see ^{200}Bi W, see ^{200}Bi	8E+2 – –	2E+2 Kidneys (4E+2) 3E+1	1E–7 – 1E–8	– 5E–10 4E–11	1E–5 – –	1E–4 – –
83	Bismuth–212[2]	D, see ^{200}Bi W, see ^{200}Bi	5E+3 –	2E+2 3E+2	1E–7 1E–7	3E–10 4E–10	7E–5 –	7E–4 –
83	Bismuth–213[2]	D, see ^{200}Bi W, see ^{200}Bi	7E+3 –	3E+2 4E+2	1E–7 1E–7	4E–10 5E–10	1E–4 –	1E–3 –

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
83	Bismuth–214[2]	D, see ^{200}Bi	2E+4	8E+2	3E–7	1E–9	–	–
		St. wall	(2E+4)	–	–	–	3E–4	3E–3
		W, see ^{200}Bi	–	9E–2	4E–7	1E–9	–	–
84	Polonium–203[2]	D, all compounds except those given for W	3E+4	6E+4	3E–5	9E–8	3E–4	3E–3
		W, oxides, hydroxides, and nitrates	–	9E+4	4E–5	1E–7	–	–
84	Polonium–205[2]	D, see ^{203}Po	2E+4	4E+4	2E–5	5E–8	3E–4	3E–3
		W, see ^{203}Po	–	7E+4	3E–5	1E–7	–	–
84	Polonium–207	D, see ^{203}Po	8E+3	3E+4	1E–5	3E–8	1E–4	1E–3
		W, see ^{203}Po	–	3E+4	1E–5	4E–8	–	–
84	Polonium–210	D, see ^{203}Po	3E+0	6E–1	3E–10	9E–13	4E–8	4E–7
		W, see ^{203}Po	–	6E–1	3E–10	9E–13	–	–
85	Astatine–207[2]	D, halides	6E+3	3E+3	1E–6	4E–9	8E–5	8E–4
		W	–	2E+3	9E–7	3E–9	–	–
85	Astatine–211	D, halides	1E+2	8E+1	3E–8	1E–10	2E–6	2E–5
		W	–	5E+1	2E–8	8E–11	–	–
86	Radon–220	With daughters removed	–	2E+4	7E–6	2E–8	–	–
		With daughters present	– (or 12 working level months)	2E+1	9E–9 (or 1.0 working level)	3E–11	–	–
86	Radon–222	With daughters removed	–	1E+4	4E–6	1E–8	–	–
		With daughters present	–	1E+2 (or 4 working level months)	3E–8 (or 0.33 working level)	1E–10	–	–
87	Francium–222[2]	D, all compounds	2E+3	5E+2	2E–7	6E–10	3E–5	3E–4
87	Francium–223[2]	D, all compounds	6E+2	8E+2	3E–7	1E–9	8E–6	8E–5
88	Radium–223	W, all compounds	5E+0	7E–1	3E–10	9E–13	–	–
		Bone surf	(9E+0)	–	–	–	1E–7	1E–6
88	Radium–224	W, all compounds	8E+0	2E+0	7E–10	2E–12	–	–
		Bone surf	(2E+1)	–	–	–	2E–7	2E–6
88	Radium–225	W, all compounds	8E+0	7E–1	3E–10	9E–13	–	–
		Bone surf	(2E+1)	–	–	–	2E–7	2E–6
88	Radium–226	W, all compounds	2E+0	6E–1	3E–10	9E–13	–	–
		Bone surf	(5E+0)	–	–	–	6E–8	6E–7

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
88	Radium–227[2]	W, all compounds	2E+4 Bone surf (2E+4)	1E+4 Bone surf (2E+4)	6E–6 –	– 3E–8	– 3E–4	– 3E–3
88	Radium–228	W, all compounds	2E+0 Bone surf (4E+0)	1E+0 –	5E–10 –	2E–12 –	– 6E–8	– 6E–7
89	Actinium–224	D, all compounds except those given for W and Y	2E+3 LLI wall (2E+3)	3E+1 Bone surf (4E+1)	1E–8 –	– 5E–11	– 3E–5	– 3E–4
		W, halides and nitrates	–	5E+1	2E–8	7E–11	–	–
		Y, oxides and hydroxides	–	5E+1	2E–8	6E–11	–	–
89	Actinium–225	D, sec ^{224}Ac	5E+1 LLI wall (5E+1)	3E–1 Bone surf (5E–1)	1E–10 –	– 7E–13	– 7E–7	– 7E–6
		W, sec ^{224}Ac	–	6E–1	3E–10	9E–13	–	–
		Y, sec ^{224}Ac	–	6E–1	3E–10	9E–13	–	–
89	Actinium–226	D, sec ^{224}Ac	1E+2 LLI wall (1E+2)	3E+0 Bone surf (4E+0)	1E–9 –	– 5E–12	– 2E–6	– 2E–5
		W, sec ^{224}Ac	–	5E+0	2E–9	7E–12	–	–
		Y, sec ^{224}Ac	–	5E+0	2E–9	6E–12	–	–
89	Actinium–227	D, sec ^{224}Ac	2E–1 Bone surf (4E–1)	4E–4 Bone surf (8E–4)	2E–13 –	– 1E–15	– 5E–9	– 5E–8
		W, sec ^{224}Ac	–	2E–3 Bone surf (3E–3)	7E–13 –	– 4E–15	– –	– –
		Y, sec ^{224}Ac	–	4E–3	2E–12	6E–15	–	–
89	Actinium–228	D, sec ^{224}Ac	2E+3 –	9E+0 Bone surf (2E+1)	4E–9 –	– 2E–11	3E–5 –	3E–4 –
		W, sec ^{224}Ac	–	4E+1 Bone surf (6E+1)	2E–8 –	– 8E–11	– –	– –
		Y, sec ^{224}Ac	–	4E+1	2E–8	6E–11	–	–
90	Thorium–226[2]	W, all compounds except those given for Y	5E+3 St. wall (5E+3)	2E+2 –	6E–8 –	2E–10 –	– 7E–5	– 7E–4
		Y, oxides and hydroxides	–	1E+2	6E–8	2E–10	–	–
90	Thorium–227	W, sec ^{226}Th	1E+2	3E–1	1E–10	5E–13	2E–6	2E–5
		Y, sec ^{226}Th	–	3E–1	1E–10	5E–13	–	–
90	Thorium–228	W, sec ^{226}Th	6E+0 Bone surf (1E+1)	1E–2 Bone surf (2E–2)	4E–12 –	– 3E–14	– 2E–7	– 2E–6
		Y, sec ^{226}Th	–	2E–2	7E–12	2E–14	–	–
90	Thorium–229	W, sec ^{226}Th	6E–1 Bone surf (1E+0)	9E–4 Bone surf (2E–3)	4E–13 –	– 3E–15	– 2E–8	– 2E–7
		Y, sec ^{226}Th	–	2E–3 Bone surf (3E–3)	1E–12 –	– 4E–15	– –	– –

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
90	Thorium–230	W, see ^{226}Th	4E+0 Bone surf (9E+0)	6E–3 Bone surf (2E–2)	3E–12 –	– 2E–14	– 1E–7	– 1E–6
		Y, see ^{226}Th	– –	2E–2 Bone surf (2E–2)	6E–12 –	– 3E–14	– –	– –
90	Thorium–231	W, see ^{226}Th Y, see ^{226}Th	4E+3 –	6E+3 6E+3	3E–6 3E–6	9E–9 9E–9	5E–5 –	5E–4 –
90	Thorium–232	W, see ^{226}Th	7E–1 Bone surf (2E+0)	1E–3 Bone surf (3E–3)	5E–13 –	– 4E–15	– 3E–8	– 3E–7
		Y, see ^{226}Th	– –	3E–3 Bone surf (4E–3)	1E–12 –	– 6E–15	– –	– –
90	Thorium–234	W, see ^{226}Th	3E+2 LLI wall (4E+2)	2E+2 –	8E–8 –	3E–10 –	– 5E–6	– 5E–5
		Y, see ^{226}Th	–	2E+2	6E–8	2E–10	–	–
91	Protactinium–227[2]	W, all compounds except those given for Y	4E+3	1E+2	5E–8	2E–10	5E–5	5E–4
		Y, oxides and hydroxides	–	1E+2	4E–8	1E–10	–	–
91	Protactinium–228	W, see ^{227}Pa	1E+3	1E+1 Bone surf (2E+1)	5E–9 –	– 3E–11	2E–5 –	2E–4 –
		Y, see ^{227}Pa	–	1E+1	5E–9	2E–11	–	–
91	Protactinium–230	W, see ^{227}Pa	6E+2 Bone surf (9E+2)	5E+0 –	2E–9 –	7E–12 –	– 1E–5	– 1E–4
		Y, see ^{227}Pa	–	4E+0	1E–9	5E–12	–	–
91	Protactinium–231	W, see ^{227}Pa	2E–1 Bone surf (5E–1)	2E–3 Bone surf (4E–3)	6E–13 –	– 6E–15	– 6E–9	– 6E–8
		Y, see ^{227}Pa	– –	4E–3 Bone surf (6E–3)	2E–12 –	– 8E–15	– –	– –
91	Protactinium–232	W, see ^{227}Pa	1E+3	2E+1 Bone surf (6E+1)	9E–9 –	– 8E–11	2E–5 –	2E–4 –
		Y, see ^{227}Pa	– –	6E+1 Bone surf (7E+1)	2E–8 –	– 1E–10	– –	– –
91	Protactinium–233	W, see ^{227}Pa	1E+3 LLI wall (2E+3)	7E+2 –	3E–7 –	1E–9 –	– 2E–5	– 2E–4
		Y, see ^{227}Pa	–	6E+2	2E–7	8E–10	–	–
91	Protactinium–234	W, see ^{227}Pa Y, see ^{227}Pa	2E+3 –	8E+3 7E+3	3E–6 3E–6	1E–8 9E–9	3E–5 –	3E–4 –
92	Uranium–230	D, UF_6, UO_2F_2, $UO_2(NO_3)_2$	4E+0 Bone surf (6E+0)	4E–1 Bone surf (6E–1)	2E–10 –	– 8E–13	– 8E–8	– 8E–7
		W, UO^3, UF^4, UCl^4	–	4E–1	1E–10	5E–13	–	–
		Y, UO_2, U_3O_8	–	3E–1	1E–10	4E–13	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
92	Uranium–231	D, sec ^{230}U	5E+3	8E+3	3E–6	1E–8	–	–
			LLI wall (4E+3)	–	–	–	6E–5	6E–4
		W, sec ^{230}U	–	6E+3	2E–6	8E–9	–	–
		Y, sec ^{230}U	–	5E+3	2E–6	6E–9	–	–
92	Uranium–232	D, sec ^{230}U	2E+0	2E–1	9E–11	–	–	–
			Bone surf (4E+0)	Bone surf (4E–1)	–	6E–13	6E–8	6E–7
		W, sec ^{230}U	–	4E–1	2E–10	5E–13	–	–
		Y, sec ^{230}U	–	8E–3	3E–12	1E–14	–	–
92	Uranium–233	D, sec ^{230}U	1E+1	1E+0	5E–10	–	–	–
			Bone surf (2E+1)	Bone surf (2E+0)	–	3E–12	3E–7	3E–6
		W, sec ^{230}U	–	7E–1	3E–10	1E–12	–	–
		Y, sec ^{230}U	–	4E–2	2E–11	5E–14	–	–
92	Uranium–234[3]	D, sec ^{230}U	1E+1	1E+0	5E–10	–	–	–
			Bone surf (2E+1)	Bone surf (2E+0)	–	3E–12	3E–7	3E–6
		W, sec ^{230}U	–	7E–1	3E–10	1E–12	–	–
		Y, sec ^{230}U	–	4E–2	2E–11	5E–14	–	–
92	Uranium–235[(3)]	D, sec ^{230}U	1E+1	1E+0	6E–10	–	–	–
			Bone surf (2E+1)	Bone surf (2E+0)	–	3E–12	3E–7	3E–6
		W, sec ^{230}U	–	8E–1	3E–10	1E–12	–	–
		Y, sec ^{230}U	–	4E–2	2E–11	6E–14	–	–
92	Uranium–236	D, sec ^{230}U	1E+1	1E+0	5E–10	–	–	–
			Bone surf (2E+1)	Bone surf (2E+0)	–	3E–12	3E–7	3E–6
		W, sec ^{230}U	–	8E–1	3E–10	1E–12	–	–
		Y, sec ^{230}U	–	4E–2	2E–11	6E–14	–	–
92	Uranium–237	D, sec ^{230}U	2E+3	3E+3	1E–6	4E–9	–	–
			LLI wall (2E+3)	–	–	–	3E–5	3E–4
		W, sec ^{230}U	–	2E+3	7E–7	2E–9	–	–
		Y, sec ^{230}U	–	2E+3	6E–7	2E–9	–	–
92	Uranium–238[3]	D, sec ^{230}U	1E+1	1E+0	6E–10	–	–	–
			Bone surf (2E+1)	Bone surf (2E+0)	–	3E–12	3E–7	3E–6
		W, sec ^{230}U	–	8E–1	3E–10	1E–12	–	–
		Y, sec ^{230}U	–	4E–2	2E–11	6E–14	–	–
92	Uranium–239[2]	D, sec ^{230}U	7E+4	2E+5	8E–5	3E–7	9E–4	9E–3
		W, sec ^{230}U	–	2E+5	7E–5	2E–7	–	–
		Y, sec ^{230}U	–	2E+5	6E–5	2E–7	–	–
92	Uranium–240	D, sec ^{230}U	1E+3	4E+3	2E–6	5E–9	2E–5	2E–4
		W, sec ^{230}U	–	3E+3	1E–6	4E–9	–	–
		Y, sec ^{230}U	–	2E+3	1E–6	3E–9	–	–
92	Uranium–natural[3]	D, sec ^{230}U	1E+1	1E+0	5E–10	–	–	–
			Bone surf (2E+1)	Bone surf (2E+0)	–	3E–12	3E–7	3E–6
		W, sec ^{230}U	–	8E–1	3E–10	9E–13	–	–
		Y, sec ^{230}U	–	5E–2	2E–11	9E–14	–	–

			Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	
			Oral Ingestion	Inhalation				
Atomic No.	Radionuclide	Class	ALI (μCi)	ALI (μCi)	DAC (μCi/ml)	Air (μCi/ml)	Water (μCi/ml)	Monthly Average Concentration (μCi/ml)
93	Neptunium–232[2]	W, all compounds	1E+5	2E+3 Bone surf	7E–7	–	2E–3	2E–2
			–	(5E+2)	–	6E–9	–	–
93	Neptunium–233[2]	W, all compounds	8E+5	3E+6	1E–3	4E–6	1E–2	1E–1
93	Neptunium–234	W, all compounds	2E+3	3E+3	1E–6	4E–9	3E–5	3E–4
93	Neptunium–235	W, all compounds	2E+4 LLI wall	8E+2 Bone surf	3E–7	–	–	–
			(2E+4)	(1E+3)	–	2E–9	3E–4	3E–3
93	Neptunium–236 (1.15E+5 y)	W, all compounds	3E+0 Bone surf	2E–2 Bone surf	9E–12	–	–	–
			(6E+0)	(5E–2)	–	8E–14	9E–8	9E–7
93	Neptunium–236 (22.5 h)	W, all compounds	3E+3 Bone surf	3E+1 Bone surf	1E–8	–	–	–
			(4E+3)	(7E+1)	–	1E–10	5E–5	5E–4
93	Neptunium–237	W, all compounds	5E–1 Bone surf	4E–3 Bone surf	2E–12	–	–	–
			(1E+0)	(1E–2)	–	1E–14	2E–8	2E–7
93	Neptunium–238	W, all compounds	1E+3	6E+1 Bone surf	3E–8	–	2E–5	2E–4
			–	(2E+2)	–	2E–10	–	–
93	Neptunium–239	W, all compounds	2E+3 LLI wall	2E+3	9E–7	3E–9	–	–
			(2E+3)	–	–	–	2E–5	2E–4
93	Neptunium–240[2]	W, all compounds	2E+4	8E+4	3E–5	1E–7	3E–4	3E–3
94	Plutonium–234	W, all compounds except PuO_2	8E+3	2E+2	9E–8	3E–10	1E–4	1E–3
		Y, PuO_2	–	2E+2	8E–8	3E–10	–	–
94	Plutonium–235[2]	W, see ^{234}Pu	9E+5	3E+6	1E–3	4E–6	1E–2	1E–1
		Y, see ^{234}Pu	–	3E+6	1E–3	3E–6	–	–
94	Plutonium–236	W, see ^{234}Pu	2E+0 Bone surf	2E–2 Bone surf	8E–12	–	–	–
			(4E+0)	(4E–2)	–	5E–14	6E–8	6E–7
		Y, see ^{234}Pu	–	4E–2	2E–11	6E–14	–	–
94	Plutonium–237	W, see ^{234}Pu	1E+4	3E+3	1E–6	5E–9	2E–4	2E–3
		Y, see ^{234}Pu	–	3E+3	1E–6	4E–9	–	–
94	Plutonium–238	W, see ^{234}Pu	9E–1 Bone surf	7E–3 Bone surf	3E–12	–	–	–
			(2E+0)	(1E–2)	–	2E–14	2E–8	2E–7
		Y, see ^{234}Pu	–	2E–2	8E–12	2E–14	–	–
94	Plutonium–239	W, see ^{234}Pu	8E–1 Bone surf	6E–3 Bone surf	3E–12	–	–	–
			(1E+0)	(1E–2)	–	2E–14	2E–8	2E–7
		Y, see ^{234}Pu	–	2E–2 Bone surf	7E–12	–	–	–
			–	(2E–2)	–	2E–14	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
94	Plutonium–240	W, see ^{234}Pu	8E–1 Bone surf (1E+0)	6E–3 Bone surf (1E–2)	3E–12 –	– 2E–14	– 2E–8	– 2E–7
		Y, see ^{234}Pu	–	2E–2 Bone surf (2E–2)	7E–12 –	– 2E–14	– –	– –
94	Plutonium–241	W, see ^{234}Pu	4E+1 Bone surf (7E+1)	3E–1 Bone surf (6E–1)	1E–10 –	– 8E–13	– 1E–6	– 1E–5
		Y, see ^{234}Pu	–	8E–1 Bone surf (1E+0)	3E–10 –	– 1E–12	– –	– –
94	Plutonium–242	W, see ^{234}Pu	8E–1 Bone surf (1E+0)	7E–3 Bone surf (1E–2)	3E–12 –	– 2E–14	– 2E–8	– 2E–7
		Y, see ^{234}Pu	–	2E–2 Bone surf (2E–2)	7E–12 –	– 2E–14	– –	– –
94	Plutonium–243	W, see ^{234}Pu	2E+4	4E+4	2E–5	5E–8	2E–4	2E–3
		Y, see ^{234}Pu	–	4E+4	2E–5	5E–8	–	–
94	Plutonium–244	W, see ^{234}Pu	8E–1 Bone surf (2E+0)	7E–3 Bone surf (1E–2)	3E–12 –	– 2E–14	– 2E–8	– 2E–7
		Y, see ^{234}Pu	–	2E–2 Bone surf (2E–2)	7E–12 –	– 2E–14	– –	– –
94	Plutonium–245	W, see ^{234}Pu	2E+3	5E+3	2E–6	6E–9	3E–5	3E–4
		Y, see ^{234}Pu	–	4E+3	2E–6	6E–9	–	–
94	Plutonium–246	W, see ^{234}Pu	4E+2 LLI wall (4E+2)	3E+2 –	1E–7 –	4E–10 –	– 6E–6	– 6E–5
		Y, see ^{234}Pu	–	3E+2	1E–7	4E–10	–	–
95	Americium–237[2]	W, all compounds	8E+4	3E+5	1E–4	4E–7	1E–3	1E–2
95	Americium–238[2]	W, all compounds	4E+4	3E+3 Bone surf (6E+3)	1E–6 –	– 9E–9	5E–4 –	5E–3 –
95	Americium–239	W, all compounds	5E+3	1E+4	5E–6	2E–8	7E–5	7E–4
95	Americium–240	W, all compounds	2E+3	3E+3	1E–6	4E–9	3E–5	3E–4
95	Americium–241	W, all compounds	8E–1 Bone surf (1E+0)	6E–3 Bone surf (1E–2)	3E–12 –	– 2E–14	– 2E–8	– 2E–7
95	Americium–242m	W, all compounds	8E–1 Bone surf (1E+0)	6E–3 Bone surf (1E–2)	3E–12 –	– 2E–14	– 2E–8	– 2E–7
95	Americium–242	W, all compounds	4E+3	8E+1 Bone surf (9E+1)	4E–8 –	– 1E–10	5E–5 –	5E–4 –

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
95	Americium–243	W, all compounds	8E–1 Bone surf (1E+0)	6E–3 Bone surf (1E–2)	3E–12 –	– 2E–14	– 2E–8	– 2E–7
95	Americium–244m[2]	W, all compounds	6E+4 St. wall (8E+4)	4E+3 Bone surf (7E+3)	2E–6 –	– 1E–8	– 1E–3	– 1E–2
95	Americium–244	W, all compounds	3E+3 –	2E+2 Bone surf (3E+2)	8E–8 –	– 4E–10	4E–5 –	4E–4 –
95	Americium–245	W, all compounds	3E+4	8E+4	3E–5	1E–7	4E–4	4E–3
95	Americium–246m[2]	W, all compounds	5E+4 St. wall (6E+4)	2E+5 –	8E–5 –	3E–7 –	– 8E–4	– 8E–3
95	Americium–246[2]	W, all compounds	3E+4	1E+5	4E–5	1E–7	4E–4	4E–3
96	Curium–238	W, all compounds	2E+4	1E+3	5E–7	2E–9	2E–4	2E–3
96	Curium–240	W, all compounds	6E+1 Bone surf (8E+1)	6E–1 Bone surf (6E–1)	2E–10 –	– 9E–13	– 1E–6	– 1E–5
96	Curium–241	W, all compounds	1E+3 –	3E+1 Bone surf (4E+1)	1E–8 –	– 5E–11	2E–5 –	2E–4 –
96	Curium–242	W, all compounds	3E+1 Bone surf (5E+1)	3E–1 Bone surf (3E–1)	1E–10 –	– 4E–13	– 7E–7	– 7E–6
96	Curium–243	W, all compounds	1E+0 Bone surf (2E+0)	9E–3 Bone surf (2E–2)	4E–12 –	– 2E–14	– 3E–8	– 3E–7
96	Curium–244	W, all compounds	1E+0 Bone surf (3E+0)	1E–2 Bone surf (2E–2)	5E–12 –	– 3E–14	– 3E–8	– 3E–7
96	Curium–245	W, all compounds	7E–1 Bone surf (1E+0)	6E–3 Bone surf (1E–2)	3E–12 –	– 2E–14	– 2E–8	– 2E–7
96	Curium–246	W, all compounds	7E–1 Bone surf (1E+0)	6E–3 Bone surf (1E–2)	3E–12 –	– 2E–14	– 2E–8	– 2E–7
96	Curium–247	W, all compounds	8E–1 Bone surf (1E+0)	6E–3 Bone surf (1E–2)	3E–12 –	– 2E–14	– 2E–8	– 2E–7
96	Curium–248	W, all compounds	2E–1 Bone surf (4E–1)	2E–3 Bone surf (3E–3)	7E–13 –	– 4E–15	– 5E–9	– 5E–8
96	Curium–249[2]	W, all compounds	5E+4 –	2E+4 Bone surf (3E+4)	7E–6 –	– 4E–8	7E–4 –	7E–3 –

Atomic No.	Radionuclide	Class	Table 1 Occupational Values: Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values: Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values: Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations: Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations: Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers: Monthly Average Concentration (μCi/ml)
96	Curium–250	W, all compounds	4E–2 Bone surf (6E–2)	3E–4 Bone surf (5E–4)	1E–13 –	– 8E–16	– 9E–10	– 9E–9
97	Berkelium–245	W, all compounds	2E+3	1E+3	5E–7	2E–9	3E–5	3E–4
97	Berkelium–246	W, all compounds	3E+3	3E+3	1E–6	4E–9	4E–5	4E–4
97	Berkelium–247	W, all compounds	5E–1 Bone surf (1E+0)	4E–3 Bone surf (9E–3)	2E–12 –	– 1E–14	– 2E–8	– 2E–7
97	Berkelium–249	W, all compounds	2E+2 Bone surf (5E+2)	2E+0 Bone surf (4E+0)	7E–10 –	– 5E–12	– 6E–6	– 6E–5
97	Berkelium–250	W, all compounds	9E+3 –	3E+2 Bone surf (7E+2)	1E–7 –	– 1E–9	1E–4 –	1E–3 –
98	Californium–244[2]	W, all compounds except those given for Y	3E+4 St. wall (3E+4)	6E+2 –	2E–7 –	8E–10 –	– 4E–4	– 4E–3
		Y, oxides and hydroxides	–	6E+2	2E–7	8E–10	–	–
98	Californium–246	W, see ^{244}Cf	4E+2	9E+0	4E–9	1E–11	5E–6	5E–5
		Y, see ^{244}Cf	–	9E+0	4E–9	1E–11	–	–
98	Californium–248	W, see ^{244}Cf	8E+0 Bone surf (2E+1)	6E–2 Bone surf (1E–1)	3E–11 –	– 2E–13	– 2E–7	– 2E–6
		Y, see ^{244}Cf	–	1E–1	4E–11	1E–13	–	–
98	Californium–249	W, see ^{244}Cf	5E–1 Bone surf (1E+0)	4E–3 Bone surf (9E–3)	2E–12 –	– 1E–14	– 2E–8	– 2E–7
		Y, see ^{244}Cf	–	1E–2 Bone surf (1E–2)	4E–12 –	– 2E–14	–	–
98	Californium–250	W, see ^{244}Cf	1E+0 Bone surf (2E+0)	9E–3 Bone surf (2E–2)	4E–12 –	– 3E–14	– 3E–8	– 3E–7
		Y, see ^{244}Cf	–	3E–2	1E–11	4E–14	–	–
98	Californium–251	W, see ^{244}Cf	5E–1 Bone surf (1E+0)	4E–3 Bone surf (9E–3)	2E–12 –	– 1E–14	– 2E–8	– 2E–7
		Y, see ^{244}Cf	–	1E–2 Bone surf (1E–2)	4E–12 –	– 2E–14	–	–
98	Californium–252	W, see ^{244}Cf	2E+0 Bone surf (5E+0)	2E–2 Bone surf (4E–2)	8E–12 –	– 5E–14	– 7E–8	– 7E–7
		Y, see ^{244}Cf	–	3E–2	1E–11	5E–14	–	–
98	Californium–253	W, see ^{244}Cf	2E+2 Bone surf (4E+2)	2E+0 –	8E–10 –	3E–12 –	– 5E–6	– 5E–5
		Y, see ^{244}Cf	–	2E+0	7E–10	2E–12	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
98	Californium–254	W, see ^{244}Cf	2E+0	2E–2	9E–12	3E–14	3E–8	3E–7
		Y, see ^{244}Cf	–	2E–2	7E–12	2E–14	–	–
99	Einsteinium–250	W, all compounds	4E+4	5E+2	2E–7	–	6E–4	6E–3
			–	Bone surf (1E+3)	–	2E–9	–	–
99	Einsteinium–251	W, all compounds	7E+3	9E+2	4E–7	–	1E–4	1E–3
			–	Bone surf (1E+3)	–	2E–9	–	–
99	Einsteinium–253	W, all compounds	2E+2	1E+0	6E–10	2E–12	2E–6	2E–5
99	Einsteinium–254m	W, all compounds	3E+2	1E+1	4E–9	1E–11	–	–
			LLI wall (3E+2)	–	–	–	4E–6	4E–5
99	Einsteinium–254	W, all compounds	8E+0	7E–2	3E–11	–	–	–
			Bone surf (2E+1)	Bone surf (1E–1)	–	2E–13	2E–7	2E–6
100	Fermium–252	W, all compounds	5E+2	1E+1	5E–9	2E–11	6E–6	6E–5
100	Fermium–253	W, all compounds	1E+3	1E+1	4E–9	1E–11	1E–5	1E–4
100	Fermium–254	W, all compounds	3E+3	9E+1	4E–8	1E–10	4E–5	4E–4
100	Fermium–255	W, all compounds	5E+2	2E+1	9E–9	3E–11	7E–6	7E–5
100	Fermium–257	W, all compounds	2E+1	2E–1	7E–11	–	–	–
			Bone surf (4E+1)	Bone surf (2E–1)	–	3E–13	5E–7	5E–6
101	Mendelevium–257	W, all compounds	7E+3	8E+1	4E–8	–	1E–4	1E–3
			–	Bone surf (9E+1)	–	1E–10	–	–
101	Mendelevium–258	W, all compounds	3E+1	2E–1	1E–10	–	–	–
			Bone surf (5E+1)	Bone surf (3E–1)	–	5E–13	6E–7	6E–6
–	Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half–life less than 2 hours	Submersion[1]	–	2E+2	1E–7	1E–9	–	–
–	Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half–life greater than 2 hours		–	2E–1	1E–10	1E–12	1E–8	1E–7
–	Any single radionuclide not listed above that decays by alpha emission or spontaneous fission, or any mixture for which either the identity or the concentration of any radionuclide in the mixture is not known		–	4E–4	2E–13	1E–15	2E–9	2E–8

FOOTNOTES:

[1]"Submersion" means that values given are for submersion in a hemispherical semi–infinite cloud of airborne material.

[2]These radionuclides have radiological half–lives of less than 2 hours. The total effective dose equivalent received during operations with these radionuclides might include a significant contribution from external exposure. The DAC values for all radionuclides, other than those designated Class "Submersion," are based upon the committed effective dose equivalent due to the intake of the radionuclide into the body and do NOT include potentially significant contributions to dose equivalent from external exposures. The licensee may substitute 1E–7 μCi/ml for the listed DAC to account for the submersion dose prospectively, but should use individual monitoring devices or other radiation measuring instruments that measure external exposure to demonstrate compliance with the limits. (See § 20.1203.)

[3]For soluble mixtures of U–238, U–234, and U–235 in air, chemical toxicity may be the limiting factor (see § 20.1201(e)). If the percent by weight (enrichment) of U–235 is not greater than 5, the concentration value for a 40–hour workweek is 0.2 milligrams uranium per cubic meter of air average. For any enrichment, the product of the average concentration and time of exposure during a 40–hour workweek shall not exceed 8E–3 (SA) μCi–hr/ml, where SA is the specific activity of the uranium inhaled. The specific activity for natural uranium is 6.77E–7 curies per gram U. The specific activity for other mixtures of U–238, U–235, and U–234, if not known, shall be:

SA = 3.6E–7 curies/gram U U–depleted

SA = [0.4 + 0.38 (enrichment) + 0.0034 (enrichment)^2] E–6, enrichment $\geq$ 0.72

where enrichment is the percentage by weight of U–235, expressed as percent.

NOTE:

1. If the identity of each radionuclide in a mixture is known but the concentration of one or more of the radionuclides in the mixture is not known, the DAC for the mixture shall be the most restrictive DAC of any radionuclide in the mixture.

2. If the identity of each radionuclide in the mixture is not known, but it is known that certain radionuclides specified in this appendix are not present in the mixture, the inhalation ALI, DAC, and effluent and sewage concentrations for the mixture are the lowest values specified in this appendix for any radionuclide that is not known to be absent from the mixture; or

		Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
		Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	
		Oral Ingestion	Inhalation				
Atomic No.	Radionuclide Class	ALI (μCi)	ALI (μCi)	DAC (μCi/ml)	Air (μCi/ml)	Water (μCi/ml)	Monthly Average Concentration (μCi/ml)
If it is known that Ac–227–D and Cm–250–W are not present		–	7E–4	3E–13	–	–	–
If, in addition, it is known that Ac–227–W,Y, Th–229–W,Y, Th–230–W, Th–232–W,Y, Pa–231–W,Y, Np–237–W, Pu–239–W, Pu–240–W, Pu–242–W, Am–241–W, Am–242m–W, Am–243–W, Cm–245–W, Cm–246–W, Cm–247–W, Cm–248–W, Bk–247–W, Cf–249–W, and Cf–251–W are not present		–	7E–3	3E–12	–	–	–
If, in addition, it is known that Sm–146–W, Sm–147–W, Gd–148–D,W, Gd–152–D,W, Th–228–W,Y, Th–230–Y, U–232–Y, U–233–Y, U–234–Y, U–235–Y, U–236–Y, U–238–Y, Np–236–W, Pu–236–W,Y, Pu–238–W,Y, Pu–239–Y, Pu–240–Y, Pu–242–Y, Pu–244–W,Y, Cm–243–W, Cm–244–W, Cf–248–W, Cf–249–Y, Cf–250–W,Y, Cf–251–Y, Cf–252–W,Y, and Cf–254–W,Y are not present		–	7E–2	3E–11	–	–	–
If, in addition, it is known that Pb–210–D, Bi–210m–W, Po–210–D,W, Ra–223–W, Ra–225–W, Ra–226–W, Ac–225–D,W,Y, Th–227–W,Y, U–230–D,W,Y, U–232–D,W, Pu–241–W, Cm–240–W, Cm–242–W, Cf–248–Y, Es–254–W, Fm–257–W, and Md–258–W are not present		–	7E–1	3E–10	–	–	–
If, in addition, it is known that Si–32–Y, Ti–44–Y, Fe–60–D, Sr–90–Y, Zr–93–D, Cd–113m–D, Cd–113–D, In–115–D,W, La–138–D, Lu–176–W, Hf–178m–D,W, Hf–182–D,W, Bi–210m–D, Ra–224–W, Ra–228–W, Ac–226–D,W,Y, Pa–230–W,Y, U–233–D,W, U–234–D,W, U–235–D,W, U–236–D,W, U–238–D,W, Pu–241–Y, Bk–249–W, Cf–253–W,Y, and Es–253–W are not present		–	7E+0	3E–9	–	–	–
If it is known that Ac–227–D,W,Y, Th–229–W,Y, Th–232–W,Y, Pa–231–W,Y, Cm–248–W, and Cm–250–W are not present		–	–	–	1E–14	–	–

Atomic No.	Radionuclide	Class	Table 1 Occupational Values Col. 1 Oral Ingestion ALI (μCi)	Table 1 Occupational Values Col. 2 Inhalation ALI (μCi)	Table 1 Occupational Values Col. 3 Inhalation DAC (μCi/ml)	Table 2 Effluent Concentrations Col. 1 Air (μCi/ml)	Table 2 Effluent Concentrations Col. 2 Water (μCi/ml)	Table 3 Releases to Sewers Monthly Average Concentration (μCi/ml)
If, in addition, it is known that Sm–146–W, Gd–148–D,W, Gd–152–D, Th–228–W,Y, Th–230–W,Y, U–232–Y, U–233–Y, U–234–Y, U–235–Y, U–236–Y, U–238–Y, U–Nat–Y, Np–236–W, Np–237–W, Pu–236–W,Y, Pu–238–W,Y, Pu–239–W,Y, Pu–240–W,Y, Pu–242–W,Y, Pu–244–W,Y, Am–241–W, Am–242m–W, Am–243–W, Cm–243–W, Cm–244–W, Cm–245–W, Cm–246–W, Cm–247–W, Bk–247–W, Cf–249–W,Y, Cf–250–W,Y, Cf–251–W,Y, Cf–252–W,Y, and Cf–254–W,Y are not present			–	–	–	1E–13	–	–
If, in addition, it is known that Sm–147–W, Gd–152–W, Pb–210–D, Bi–210m–W, Po–210–D,W, Ra–223–W, Ra–225–W, Ra–226–W, Ac–225–D,W,Y, Th–227–W,Y, U–230–D,W,Y, U–232–D,W, U–Nat–W, Pu–241–W, Cm–240–W, Cm–242–W, Cf–248–W,Y, Es–254–W, Fm–257–W, and Md–258–W are not present			–	–	–	1E–12	–	–
If, in addition, it is known that Fe–60, Sr–90, Cd–113m, Cd–113, In–115, I–129, Cs–134, Sm–145, Sm–147, Gd–148, Gd–152, Hg–194 (organic), Bi–210m, Ra–223, Ra–224, Ra–225, Ac–225, Th–228, Th–230, U–233, U–234, U–235, U–236, U–238, U–Nat, Cm–242, Cf–248, Es–254, Fm–257, and Md–258 are not present			–	–	–	–	1E–6	1E–5

3. If a mixture of radionuclides consists of uranium and its daughters in ore dust (10 μm AMAD particle distribution assumed) prior to chemical separation of the uranium from the ore, the following values may be used for the DAC of the mixture: 6E–11 μCi of gross alpha activity from uranium–238, uranium–234, thorium–230, and radium–226 per milliliter of air; 3E–11 μCi of natural uranium per milliliter of air; or 45 micrograms of natural uranium per cubic meter of air.

4. If the identity and concentration of each radionuclide in a mixture are known, the limiting values should be derived as follows: determine, for each radionuclide in the mixture, the ratio between the concentration present in the mixture and the concentration otherwise established in Appendix B for the specific radionuclide when not in a mixture. The sum of such ratios for all of the radionuclides in the mixture may not exceed "1" (i.e., "unity").

Example: If radionuclides "A," "B," and "C" are present in concentrations C_A, C_B, and C_C, and if the applicable DACs are DAC_A, DAC_B, and DAC_C, respectively, then the concentrations shall be limited so that the following relationship exists:

$$\frac{C_A}{DAC_A} + \frac{C_B}{DAC_B} + \frac{C_C}{DAC_C} < 1$$

[56 FR 23409, May 21, 1991; 56 FR 23956, May 24, 1991; 56 FR 61352, Dec. 3, 1991; 57 FR 57879, Dec. 8, 1992; 58 FR 67658, Dec. 22, 1993; 71 FR 15007, March 27, 2006; 72 FR 55922, Oct. 1, 2007; 75 FR 73938, Nov. 30, 2010]

Appendix C to Part 20—Quantities[1] of Licensed Material Requiring Labeling

Radionuclide	Quantity (μCi)
Hydrogen–3	1,000
Beryllium–7	1,000
Beryllium–10	1
Carbon–11	1,000
Carbon–14	100
Fluorine–18	1,000
Sodium–22	10
Sodium–24	100
Magnesium–28	100
Aluminum–26	10
Silicon–31	1,000
Silicon–32	1
Phosphorus–32	10
Phosphorus–33	100
Sulfur–35	100
Chlorine–36	10
Chlorine–38	1,000
Chlorine–39	1,000
Argon–39	1,000
Argon–41	1,000
Potassium–40	100
Potassium–42	1,000
Potassium–43	1,000
Potassium–44	1,000
Potassium–45	1,000
Calcium–41	100
Calcium–45	100
Calcium–47	100
Scandium–43	1,000
Scandium–44m	100
Scandium–44	100
Scandium–46	10
Scandium–47	100
Scandium–48	100
Scandium–49	1,000
Titanium–44	1
Titanium–45	1,000
Vanadium–47	1,000
Vanadium–48	100
Vanadium–49	1,000
Chromium–48	1,000
Chromium–49	1,000
Chromium–51	1,000
Manganese–51	1,000
Manganese–52m	1,000
Manganese–52	100
Manganese–53	1,000
Manganese–54	100
Manganese–56	1,000
Iron–52	100
Iron–55	100
Iron–59	10
Iron–60	1
Cobalt–55	100
Cobalt–56	10
Cobalt–57	100
Cobalt–58m	1,000
Cobalt–58	100
Cobalt–60m	1,000
Cobalt–60	1
Cobalt–61	1,000
Cobalt–62m	1,000
Nickel–56	100
Nickel–57	100
Nickel–59	100
Nickel–63	100
Nickel–65	1,000
Nickel–66	10
Copper–60	1,000
Copper–61	1,000
Copper–64	1,000
Copper–67	1,000
Zinc–62	100
Zinc–63	1,000
Zinc–65	10
Zinc–69m	100
Zinc–69	1,000
Zinc–71m	1,000
Zinc–72	100
Gallium–65	1,000
Gallium–66	100
Gallium–67	1,000
Gallium–68	1,000
Gallium–70	1,000
Gallium–72	100
Gallium–73	1,000
Germanium–66	1,000
Germanium–67	1,000
Germanium–68	10
Germanium–69	1,000
Germanium–71	1,000
Germanium–75	1,000
Germanium–77	1,000
Germanium–78	1,000
Arsenic–69	1,000
Arsenic–70	1,000
Arsenic–71	100

Radionuclide	Quantity (μCi)
Arsenic–72	100
Arsenic–73	100
Arsenic–74	100
Arsenic–76	100
Arsenic–77	100
Arsenic–78	1,000
Selenium–70	1,000
Selenium–73m	1,000
Selenium–73	100
Selenium–75	100
Selenium–79	100
Selenium–81m	1,000
Selenium–81	1,000
Selenium–83	1,000
Bromine–74m	1,000
Bromine–74	1,000
Bromine–75	1,000
Bromine–76	100
Bromine–77	1,000
Bromine–80m	1,000
Bromine–80	1,000
Bromine–82	100
Bromine–83	1,000
Bromine–84	1,000
Krypton–74	1,000
Krypton–76	1,000
Krypton–77	1,000
Krypton–79	1,000
Krypton–81	1,000
Krypton–83m	1,000
Krypton–85m	1,000
Krypton–85	1,000
Krypton–87	1,000
Krypton–88	1,000
Rubidium–79	1,000
Rubidium–81m	1,000
Rubidium–81	1,000
Rubidium–82m	1,000
Rubidium–83	100
Rubidium–84	100

Radionuclide	Quantity (μCi)
Rubidium–86	100
Rubidium–87	100
Rubidium–88	1,000
Rubidium–89	1,000
Strontium–80	100
Strontium–81	1,000
Strontium–83	100
Strontium–85m	1,000
Strontium–85	100
Strontium–87m	1,000
Strontium–89	10
Strontium–90	0.1
Strontium–91	100
Strontium–92	100
Yttrium–86m	1,000
Yttrium–86	100
Yttrium–87	100
Yttrium–88	10
Yttrium–90m	1,000
Yttrium–90	10
Yttrium–91m	1,000
Yttrium–91	10
Yttrium–92	100
Yttrium–93	100
Yttrium–94	1,000
Yttrium–95	1,000
Zirconium–86	100
Zirconium–88	10
Zirconium–89	100
Zirconium–93	1
Zirconium–95	10
Zirconium–97	100
Niobium–88	1,000
Niobium–89 (66 min)	1,000
Niobium–89 (122 min)	1,000
Niobium–90	100
Niobium–93m	10
Niobium–94	1
Niobium–95m	100
Niobium–95	100
Niobium–96	100
Niobium–97	1,000
Niobium–98	1,000
Molybdenum–90	100

Radionuclide	Quantity (μCi)
Molybdenum–93m	100
Molybdenum–93	10
Molybdenum–99	100
Molybdenum–101	1,000
Technetium–93m	1,000
Technetium–93	1,000
Technetium–94m	1,000
Technetium–94	1,000
Technetium–96m	1,000
Technetium–96	100
Technetium–97m	100
Technetium–97	1,000
Technetium–98	10
Technetium–99m	1,000
Technetium–99	100
Technetium–101	1,000
Technetium–104	1,000
Ruthenium–94	1,000
Ruthenium–97	1,000
Ruthenium–103	100
Ruthenium–105	1,000
Ruthenium–106	1
Rhodium–99m	1,000
Rhodium–99	100
Rhodium–100	100
Rhodium–101m	1,000
Rhodium–101	10
Rhodium–102m	10
Rhodium–102	10
Rhodium–103m	1,000
Rhodium–105	100
Rhodium–106m	1,000
Rhodium–107	1,000
Palladium–100	100
Palladium–101	1,000
Palladium–103	100
Palladium–107	10
Palladium–109	100
Silver–102	1,000
Silver–103	1,000
Silver–104m	1,000
Silver–104	1,000
Silver–105	100
Silver–106m	100
Silver–106	1,000
Silver–108m	1
Silver–110m	10
Silver–111	100
Silver–112	100
Silver–115	1,000
Cadmium–104	1,000
Cadmium–107	1,000
Cadmium–109	1
Cadmium–113m	0.1
Cadmium–113	100
Cadmium–115m	10
Cadmium–115	100
Cadmium–117m	1,000
Cadmium–117	1,000
Indium–109	1,000
Indium–110 (69.1min.)	1,000
Indium–110 (4.9h)	1,000
Indium–111	100
Indium–112	1,000
Indium–113m	1,000
Indium–114m	10
Indium–115m	1,000
Indium–115	100
Indium–116m	1,000
Indium–117m	1,000
Indium–117	1,000
Indium–119m	1,000
Tin–110	100
Tin–111	1,000
Tin–113	100
Tin–117m	100
Tin–119m	100
Tin–121m	100
Tin–121	1,000
Tin–123m	1,000
Tin–123	10
Tin–125	10
Tin–126	10
Tin–127	1,000
Tin–128	1,000
Antimony–115	1,000
Antimony–116m	1,000

Radionuclide	Quantity (μCi)
Antimony–116	1,000
Antimony–117	1,000
Antimony–118m	1,000
Antimony–119	1,000
Antimony–120 (16min.)	1,000
Antimony–120 (5.76d)	100
Antimony–122	100
Antimony–124m	1,000
Antimony–124	10
Antimony–125	100
Antimony–126m	1,000
Antimony–126	100
Antimony–127	100
Antimony–128 (10.4min.)	1,000
Antimony–128 (9.01h)	100
Antimony–129	100
Antimony–130	1,000
Antimony–131	1,000
Tellurium–116	1,000
Tellurium–121m	10
Tellurium–121	100
Tellurium–123m	10
Tellurium–123	100
Tellurium–125m	10
Tellurium–127m	10
Tellurium–127	1,000
Tellurium–129m	10
Tellurium–129	1,000
Tellurium–131m	10
Tellurium–131	100
Tellurium–132	10
Tellurium–133m	100
Tellurium–133	1,000
Tellurium–134	1,000
Iodine–120m	1,000
Iodine–120	100
Iodine–121	1,000
Iodine–123	100
Iodine–124	10
Iodine–125	1
Iodine–126	1
Iodine–128	1,000
Iodine–129	1
Iodine–130	10
Iodine–131	1
Iodine–132m	100
Iodine–132	100
Iodine–133	10
Iodine–134	1,000
Iodine–135	100
Xenon–120	1,000
Xenon–121	1,000
Xenon–122	1,000
Xenon–123	1,000
Xenon–125	1,000
Xenon–127	1,000
Xenon–129m	1,000
Xenon–131m	1,000
Xenon–133m	1,000
Xenon–133	1,000
Xenon–135m	1,000
Xenon–135	1,000
Xenon–138	1,000
Cesium–125	1,000
Cesium–127	1,000
Cesium–129	1,000
Cesium–130	1,000
Cesium–131	1,000
Cesium–132	100
Cesium–134m	1,000
Cesium–134	10
Cesium–135m	1,000
Cesium–135	100
Cesium–136	10
Cesium–137	10
Cesium–138	1,000
Barium–126	1,000
Barium–128	100
Barium–131m	1,000
Barium–131	100
Barium–133m	100
Barium–133	100
Barium–135m	100
Barium–139	1,000
Barium–140	100
Barium–141	1,000
Barium–142	1,000
Lanthanum–131	1,000
Lanthanum–132	100
Lanthanum–135	1,000
Lanthanum–137	10
Lanthanum–138	100

Radionuclide	Quantity (μCi)
Lanthanum–140	100
Lanthanum–141	100
Lanthanum–142	1,000
Lanthanum–143	1,000
Cerium–134	100
Cerium–135	100
Cerium–137m	100
Cerium–137	1,000
Cerium–139	100
Cerium–141	100
Cerium–143	100
Cerium–144	1
Praseodymium–136	1,000
Praseodymium–137	1,000
Praseodymium–138m	1,000
Praseodymium–139	1,000
Praseodymium–142m	1,000
Praseodymium–142	100
Praseodymium–143	100
Praseodymium–144	1,000
Praseodymium–145	100
Praseodymium–147	1,000
Neodymium–136	1,000
Neodymium–138	100
Neodymium–139m	1,000
Neodymium–139	1,000
Neodymium–141	1,000
Neodymium–147	100
Neodymium–149	1,000
Neodymium–151	1,000
Promethium–141	1,000
Promethium–143	100
Promethium–144	10
Promethium–145	10
Promethium–146	1
Promethium–147	10
Promethium–148m	10
Promethium–148	10
Promethium–149	100
Promethium–150	1,000
Promethium–151	100
Samarium–141m	1,000
Samarium–141	1,000

Radionuclide	Quantity (μCi)
Samarium–142	1,000
Samarium–145	100
Samarium–146	1
Samarium–147	100
Samarium–151	10
Samarium–153	100
Samarium–155	1.000
Samarium–156	1.000
Europium–145	100
Europium–146	100
Europium–147	100
Europium–148	10
Europium–149	100
Europium–150 (12.62h)	100
Europium–150 (34.2y)	1
Europium–152m	100
Europium–152	1
Europium–154	1
Europium–155	10
Europium–156	100
Europium–157	100
Europium–158	1,000
Gadolinium–145	1,000
Gadolinium–146	10
Gadolinium–147	100
Gadolinium–148	0.001
Gadolinium–149	100
Gadolinium–151	10
Gadolinium–152	100
Gadolinium–153	10
Gadolinium–159	100
Terbium–147	1,000
Terbium–149	100
Terbium–150	1,000
Terbium–151	100
Terbium–153	1,000
Terbium–154	100
Terbium–155	1,000
Terbium–156m (5.0h)	1,000
Terbium–156m (24.4h)	1,000
Terbium–156	100
Terbium–157	10
Terbium–158	1
Terbium–160	10
Terbium–161	100
Dysprosium–155	1,000
Dysprosium–157	1,000
Dysprosium–159	100
Dysprosium–165	1,000

Radionuclide	Quantity (μCi)
Dysprosium–166	100
Holmium–155	1,000
Holmium–157	1,000
Holmium–159	1,000
Holmium–161	1,000
Holmium–162m	1,000
Holmium–162	1,000
Holmium–164m	1,000
Holmium–164	1,000
Holmium–166m	1
Holmium–166	100
Holmium–167	1,000
Erbium–161	1,000
Erbium–165	1,000
Erbium–169	100
Erbium–171	100
Erbium–172	100
Thulium–162	1,000
Thulium–166	100
Thulium–167	100
Thulium–170	10
Thulium–171	10
Thulium–172	100
Thulium–173	100
Thulium–175	1,000
Ytterbium–162	1,000
Ytterbium–166	100
Ytterbium–167	1,000
Ytterbium–169	100
Ytterbium–175	100
Ytterbium–177	1,000
Ytterbium–178	1,000
Lutetium–169	100
Lutetium–170	100
Lutetium–171	100
Lutetium–172	100
Lutetium–173	10
Lutetium–174m	10
Lutetium–174	10
Lutetium–176m	1,000
Lutetium–176	100
Lutetium–177m	10
Lutetium–177	100
Lutetium–178m	1,000
Lutetium–178	1,000
Lutetium–179	1,000
Hafnium–170	100
Hafnium–172	1
Hafnium–173	1,000
Hafnium–175	100
Hafnium–177m	1,000
Hafnium–178m	0.1
Hafnium–179m	10
Hafnium–180m	1,000
Hafnium–181	10
Hafnium–182m	1,000
Hafnium–182	0.1
Hafnium–183	1,000
Hafnium–184	100
Tantalum–172	1,000
Tantalum–173	1,000
Tantalum–174	1,000
Tantalum–175	1,000
Tantalum–176	100
Tantalum–177	1,000
Tantalum–178	1,000
Tantalum–179	100
Tantalum–180m	1,000
Tantalum–180	100
Tantalum–182m	1,000
Tantalum–182	10
Tantalum–183	100
Tantalum–184	100
Tantalum–185	1,000
Tantalum–186	1,000
Tungsten–176	1,000
Tungsten–177	1,000
Tungsten–178	1,000
Tungsten–179	1,000
Tungsten–181	1,000
Tungsten–185	100
Tungsten–187	100
Tungsten–188	10
Rhenium–177	1,000
Rhenium–178	1,000
Rhenium–181	1,000
Rhenium–182 (12.7h)	1,000
Rhenium–182 (64.0h)	100
Rhenium–184m	10

Radionuclide	Quantity (μCi)
Rhenium–184	100
Rhenium–186m	10
Rhenium–186	100
Rhenium–187	1,000
Rhenium–188m	1,000
Rhenium–188	100
Rhenium–189	100
Osmium–180	1,000
Osmium–181	1,000
Osmium–182	100
Osmium–185	100
Osmium–189m	1,000
Osmium–191m	1,000
Osmium–191	100
Osmium–193	100
Osmium–194	1
Iridium–182	1,000
Iridium–184	1,000
Iridium–185	1,000
Iridium–186	100
Iridium–187	1,000
Iridium–188	100
Iridium–189	100
Iridium–190m	1,000
Iridium–190	100
Iridium–192 (73.8d)	1
Iridium–192m (1.4min.)	10
Iridium–194m	10
Iridium–194	100
Iridium–195m	1,000
Iridium–195	1,000
Platinum–186	1,000
Platinum–188	100
Platinum–189	1,000
Platinum–191	100
Platinum–193m	100
Platinum–193	1,000
Platinum–195m	100
Platinum–197m	1,000
Platinum–197	100
Platinum–199	1,000
Platinum–200	100
Gold–193	1,000
Gold–194	100
Gold–195	10
Gold–198m	100
Gold–198	100
Gold–199	100
Gold–200m	100
Gold–200	1,000
Gold–201	1,000
Mercury–193m	100
Mercury–193	1,000
Mercury–194	1
Mercury–195m	100
Mercury–195	1,000
Mercury–197m	100
Mercury–197	1,000
Mercury–199m	1,000
Mercury–203	100
Thallium–194m	1,000
Thallium–194	1,000
Thallium–195	1,000
Thallium–197	1,000
Thallium–198m	1,000
Thallium–198	1,000
Thallium–199	1,000
Thallium–200	1,000
Thallium–201	1,000
Thallium–202	100
Thallium–204	100
Lead–195m	1,000
Lead–198	1,000
Lead–199	1,000
Lead–200	100
Lead–201	1,000
Lead–202m	1,000
Lead–202	10
Lead–203	1,000
Lead–205	100
Lead–209	1,000
Lead–210	0.01
Lead–211	100
Lead–212	1
Lead–214	100
Bismuth–200	1,000
Bismuth–201	1,000
Bismuth–202	1,000
Bismuth–203	100
Bismuth–205	100
Bismuth–206	100

Radionuclide	Quantity (μCi)
Bismuth–207	10
Bismuth–210m	0.1
Bismuth–210	1
Bismuth–212	10
Bismuth–213	10
Bismuth–214	100
Polonium–203	1,000
Polonium–205	1,000
Polonium–207	1,000
Polonium–210	0.1
Astatine–207	100
Astatine–211	10
Radon–220	1
Radon–222	1
Francium–222	100
Francium–223	100
Radium–223	0.1
Radium–224	0.1
Radium–225	0.1
Radium–226	0.1
Radium–227	1,000
Radium–228	0.1
Actinium–224	1
Actinium–225	0.01
Actinium–226	0.1
Actinium–227	0.001
Actinium–228	1
Thorium–226	10
Thorium–227	0.01
Thorium–228	0.001
Thorium–229	0.001
Thorium–230	0.001
Thorium–231	100
Thorium–232	100
Thorium–234	10
Thorium–natural	100
Protactinium–227	10
Protactinium–228	1
Protactinium–230	0.1
Protactinium–231	0.001
Protactinium–232	1
Protactinium–233	100
Protactinium–234	100
Uranium–230	0.01
Uranium–231	100
Uranium–232	0.001
Uranium–233	0.001
Uranium–234	0.001
Uranium–235	0.001
Uranium–236	0.001
Uranium–237	100
Uranium–238	100
Uranium–239	1,000
Uranium–240	100
Uranium–natural	100
Neptunium–232	100
Neptunium–233	1,000
Neptunium–234	100
Neptunium–235	100
Neptunium–236 (1.15×10^5 y)	0.001
Neptunium–236 (22.5h)	1
Neptunium–237	0.001
Neptunium–238	10
Neptunium–239	100
Neptunium–240	1,000
Plutonium–234	10
Plutonium–235	1,000
Plutonium–236	0.001
Plutonium–237	100
Plutonium–238	0.001
Plutonium–239	0.001
Plutonium–240	0.001
Plutonium–241	0.01
Plutonium–242	0.001
Plutonium–243	1,000
Plutonium–244	0.001
Plutonium–245	100
Americium–237	1,000
Americium–238	100
Americium–239	1,000
Americium–240	100
Americium–241	0.001

Radionuclide	Quantity (μCi)
Americium–242m	0.001
Americium–242	10
Americium–243	0.001
Americium–244m	100
Americium–244	10
Americium–245	1,000
Americium–246m	1,000
Americium–246	1,000
Curium–238	100
Curium–240	0.1
Curium–241	1
Curium–242	0.01
Curium–243	0.001
Curium–244	0.001
Curium–245	0.001
Curium–246	0.001
Curium–247	0.001
Curium–248	0.001
Curium–249	1,000
Berkelium–245	100
Berkelium–246	100
Berkelium–247	0.001
Berkelium–249	0.1
Berkelium–250	10
Californium–244	100
Californium–246	1
Californium–248	0.01
Californium–249	0.001
Californium–250	0.001
Californium–251	0.001
Californium–252	0.001
Californium–253	0.1
Californium–254	0.001
Any alpha emitting radionuclide not listed above or mixtures of alpha emitters of unknown composition	0.001
Einsteinium–250	100
Einsteinium–251	100
Einsteinium–253	0.1
Einsteinium–254m	1
Einsteinium–254	0.01
Fermium–252	1
Fermium–253	1
Fermium–254	10
Fermium–255	1
Fermium–257	0.01
Mendelevium–257	10
Mendelevium–258	0.01
Any radionuclide other than alpha emitting radionuclides not listed above, or mixtures of beta emitters of unknown composition	0.01

[1]The quantities listed above were derived by taking 1/10th of the most restrictive ALI listed in table 1, columns 1 and 2, of appendix B to §§ 20.1001–20.2401 of this part, rounding to the nearest factor of 10, and arbitrarily constraining the values listed between 0.001 and 1,000 μCi. Values of 100 μCi have been assigned for radionuclides having a radioactive half–life in excess of 10^9 years (except rhenium, 1000 μCi) to take into account their low specific activity.

NOTE: For purposes of §§ 20.1902(e), 20.1905(a), and 20.2201(a) where there is involved a combination of radionuclides in known amounts, the limit for the combination should be derived as follows: determine, for each radionuclide in the combination, the ratio between the quantity present in the combination and the limit otherwise established for the specific radionuclide when not in combination. The sum of such ratios for all radionuclides in the combination may not exceed "1" (i.e., "unity").

[56 FR 23465, May 21, 1991; 56 FR 23956, May 24, 1991; 56 FR 61352, Dec. 3, 1991; 58 FR 67659, Dec. 22, 1993; 60 FR 20186, April 25, 1995]

Appendix D to Part 20. United States Nuclear Regulatory Commission Regional Offices

Region	*Address*	*Telephone (24 hours)*	*E–Mail*
NRC Headquarters Operations Center	USNRC, Division of Incident Response Operations, Washington, DC 20555–0001	(301) 816–5100 (301) 951–0550 (301) 816–5151 (fax)	H001@nrc.gov
Region I: Connecticut, Deleware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.	USNRC, Region I, 2100 Renaissance Boulevard, Suite 100, King of Prussia, PA 19406–2713	(610) 337–5000, (800) 432–1156 TDD: (301) 415–5575	RidsRgn1MailCenter@nrc.gov.
Region II: Alabama, Florida, Georgia, Kentucky, North Carolina, Puerto Rico, South Carolina, Tennessee, Virginia, Virgin Islands, and West Virginia	USNRC, Region II, 245 Peachtree Center Avenue, NE., Suite 1200, Atlanta, GA 30303–1257	(404) 997–4000 (800) 877–8510 TDD: (301) 415–5575	RidsRgn2MailCenter@nrc.gov
Region III: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio and Wisconsin	USNRC, Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532–4352	(630) 829–9500 (800) 522–3025 TDD: (301) 415–5575	RidsRgn3MailCenter@nrc.gov
Region IV: Alaska, Arizona, Arkansas, California, Colorado, Hawaii, Idaho, Kansas, Louisiana, Mississippi, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, Wyoming, and the U.S. territories and possessions in the Pacific	US NRC, Region IV, 1600 E. Lamar Blvd., Arlington, TX 76011–4511	(817) 860–8100 (800) 952–9677 TDD: (301) 415–5575	RidsRgn4MailCenter@nrc.gov

[56 FR 23468, May 21, 1991; 56 FR 23956, May 24, 1991; 56 FR 41449, Aug. 21, 1991; 56 FR 61352, Dec. 3, 1991; 58 FR 64111, Dec. 6, 1993; 58 FR 67659, Dec. 22, 1993; 59 FR 17465, April 13, 1994; 60 FR 24551, May 9, 1995; 62 FR 22880, April 28, 1997; 67 FR 57092, Sept. 6, 2002; 67 FR 72091, Dec. 4, 2002; 67 FR 77652, Dec. 19, 2002; 68 FR 58802, Oct. 10, 2003; 71 FR 15007, March 27, 2006; 73 FR 30457, May 28, 2008; 75 FR 21980, April 27, 2010; 76 FR 72084, Nov. 22, 2011; 77 FR 39905, July 6, 2012; 79 FR 66602, Nov. 10, 2014]

Appendixes E–F to Part 20. [Reserved]

Appendix G to Part 20. Requirements for Transfers of Low-Level Radioactive Waste Intended for Disposal at Licensed Land Disposal Facilities and Manifests

I. Manifest

A waste generator, collector, or processor who transports, or offers for transportation, low–level radioactive waste intended for ultimate disposal at a licensed low–level radioactive waste land disposal facility must prepare a Manifest (OMB Control Numbers 3150–0164, –0165, and –0166) reflecting information requested on applicable NRC Forms 540 (Uniform Low–Level Radioactive Waste Manifest (Shipping Paper)) and 541 (Uniform Low–Level Radioactive Waste Manifest (Container and Waste Description)) and, if necessary, on an applicable NRC Form 542 (Uniform Low–Level Radioactive Waste Manifest (Manifest Index and Regional Compact Tabulation)). NRC Forms 540 and 540A must be completed and must physically accompany the pertinent low–level waste shipment. Upon agreement between shipper and consignee, NRC Forms 541 and 541A and 542 and 542A may be completed, transmitted, and stored in electronic media with the capability for producing legible, accurate, and complete records on the respective forms. Licensees are not required by NRC to comply with the manifesting requirements of this part when they ship:

(a) LLW for processing and expect its return (i.e., for storage under their license) prior to disposal at a licensed land disposal facility;

(b) LLW that is being returned to the licensee who is the "waste generator" or "generator," as defined in this part; or

(c) Radioactively contaminated material to a "waste processor" that becomes the processor's "residual waste."

For guidance in completing these forms, refer to the instructions that accompany the forms. Copies of manifests required by this appendix may be legible carbon copies, photocopies, or computer printouts that reproduce the data in the format of the uniform manifest.

NRC Forms 540, 540A, 541, 541A, 542 and 542A, and the accompanying instructions, in hard copy, may be obtained by writing or calling the Office of Information Services, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, telephone (301) 415–7232, or by visiting the NRC's Web site at http://www.nrc.gov and selecting forms from the index found on the home page.

This appendix includes information requirements of the Department of Transportation, as codified in 49 CFR part 172. Information on hazardous, medical, or other waste, required to meet Environmental Protection Agency regulations, as codified in 40 CFR parts 259, 261 or elsewhere, is not addressed in this section, and must be provided on the required EPA forms. However, the required EPA forms must accompany the Uniform Low–Level Radioactive Waste Manifest required by this chapter.

As used in this appendix, the following definitions apply:

Chelating agent has the same meaning as that given in § 61.2 of this chapter.

Chemical description means a description of the principal chemical characteristics of a low–level radioactive waste.

Computer–readable medium means that the regulatory agency's computer can transfer the information from the medium into its memory.

Consignee means the designated receiver of the shipment of low–level radioactive waste.

Decontamination facility means a facility operating under a Commission or Agreement State license whose principal purpose is decontamination of equipment or materials to accomplish recycle, reuse, or other waste management objectives, and, for purposes of this part, is not considered to be a consignee for LLW shipments.

Disposal container means a container principally used to confine low–level radioactive waste during disposal operations at a land disposal facility (also see "high integrity container"). Note that for some shipments, the disposal container may be the transport package.

EPA identification number means the number received by a transporter following application to the Administrator of EPA as required by 40 CFR part 263.

Generator means a licensee operating under a Commission or Agreement State license who (1) is a waste generator as defined in this part, or (2) is the licensee to whom waste can be attributed within the context of the Low–Level Radioactive Waste Policy Amendments Act of 1985 (e.g., waste generated as a result of decontamination or recycle activities).

High integrity container (HIC) means a container commonly designed to meet the structural stability requirements of § 61.56 of this chapter, and to meet Department of Transportation requirements for a Type A package.

Land disposal facility has the same meaning as that given in § 61.2 of this chapter.

NRC Forms 540, 540A, 541, 541A, 542, and 542A are official NRC Forms referenced in this appendix. Licensees need not use originals of these NRC Forms as long as any substitute forms are equivalent to the original documentation in respect to content, clarity, size, and location of information. Upon agreement between the shipper and consignee, NRC Forms 541 (and 541A) and NRC Forms 542 (and 542A) may be completed, transmitted, and stored in electronic media. The electronic media must have the capability for producing legible, accurate, and complete records in the format of the uniform manifest.

Package means the assembly of components necessary to ensure compliance with the packaging requirements of DOT regulations, together with its radioactive contents, as presented for transport.

Physical description means the items called for on NRC Form 541 to describe a low–level radioactive waste.

Residual waste means low–level radioactive waste resulting from processing or decontamination activities that cannot be easily separated into distinct batches attributable to specific waste generators. This waste is attributable to the processor or decontamination facility, as applicable.

Shipper means the licensed entity (i.e., the waste generator, waste collector, or waste processor) who offers low–level radioactive waste for transportation, typically consigning this type of waste to a licensed waste collector, waste processor, or land disposal facility operator.

Shipping paper means NRC Form 540 and, if required, NRC Form 540A which includes the information required by DOT in 49 CFR part 172.

Source material has the same meaning as that given in § 40.4 of this chapter.

Special nuclear material has the same meaning as that given in § 70.4 of this chapter.

Uniform Low–Level Radioactive Waste Manifest or uniform manifest means the combination of NRC Forms 540, 541, and, if necessary, 542, and their respective continuation sheets as needed, or equivalent.

Waste collector means an entity, operating under a Commission or Agreement State license, whose principal purpose is to collect and consolidate waste generated by others, and to transfer this waste, without processing or repackaging the collected waste, to another licensed waste collector, licensed waste processor, or licensed land disposal facility.

Waste description means the physical, chemical and radiological description of a low–level radioactive waste as called for on NRC Form 541.

Waste generator means an entity, operating under a Commission or Agreement State license, who (1) possesses any material or component that contains radioactivity or is radioactively contaminated for which the licensee foresees no further use, and (2) transfers this material or component to a licensed land disposal facility or to a licensed waste collector or processor for handling or treatment prior to disposal. A licensee performing processing or decontamination services may be a "waste generator" if the transfer of low–level radioactive waste from its facility is defined as "residual waste."

Waste processor means an entity, operating under a Commission or Agreement State license, whose principal purpose is to process, repackage, or otherwise treat low–level radioactive material or waste generated by others prior to eventual transfer of waste to a licensed low–level radioactive waste land disposal facility.

Waste type means a waste within a disposal container having a unique physical description (i.e., a specific waste descriptor code or description; or a waste sorbed on or solidified in a specifically defined media).

Information Requirements

A. General Information

The shipper of the radioactive waste, shall provide the following information on the uniform manifest:

1. The name, facility address, and telephone number of the licensee shipping the waste;

2. An explicit declaration indicating whether the shipper is acting as a waste generator, collector, processor, or a combination of these identifiers for purposes of the manifested shipment; and

3. The name, address, and telephone number, or the name and EPA identification number for the carrier transporting the waste.

B. Shipment Information

The shipper of the radioactive waste shall provide the following information regarding the waste shipment on the uniform manifest:

1. The date of the waste shipment;

2. The total number of packages/disposal containers;

3. The total disposal volume and disposal weight in the shipment;

4. The total radionuclide activity in the shipment;

5. The activity of each of the radionuclides H–3, C–14, Tc–99, and I–129 contained in the shipment; and

6. The total masses of U–233, U–235, and plutonium in special nuclear material, and the total mass of uranium and thorium in source material.

C. Disposal Container and Waste Information

The shipper of the radioactive waste shall provide the following information on the uniform manifest regarding the waste and each disposal container of waste in the shipment:

1. An alphabetic or numeric identification that uniquely identifies each disposal container in the shipment;

2. A physical description of the disposal container, including the manufacturer and model of any high integrity container;

3. The volume displaced by the disposal container;

4. The gross weight of the disposal container, including the waste;

5. For waste consigned to a disposal facility, the maximum radiation level at the surface of each disposal container;

6. A physical and chemical description of the waste;

7. The total weight percentage of chelating agent for any waste containing more than 0.1% chelating agent by weight, plus the identity of the principal chelating agent;

8.The approximate volume of waste within a container;

9.The sorbing or solidification media, if any, and the identity of the solidification media vendor and brand name;

10. The identities and activities of individual radionuclides contained in each container, the masses of U–233, U–235, and plutonium in special nuclear material, and the masses of uranium and thorium in source material. For discrete waste types (i.e., activated materials, contaminated equipment, mechanical filters, sealed source/devices, and wastes in solidification/stabilization media), the identities and activities of individual radionuclides associated with or contained on these waste types within a disposal container shall be reported;

11. The total radioactivity within each container; and

12. For wastes consigned to a disposal facility, the classification of the waste pursuant to § 61.55 of this chapter. Waste not meeting the structural stability requirements of § 61.56(b) of this chapter must be identified.

D. Uncontainerized Waste Information

The shipper of the radioactive waste shall provide the following information on the uniform manifest regarding a waste shipment delivered without a disposal container:

1. The approximate volume and weight of the waste;

2. A physical and chemical description of the waste;

3. The total weight percentage of chelating agent if the chelating agent exceeds 0.1% by weight, plus the identity of the principal chelating agent;

4. For waste consigned to a disposal facility, the classification of the waste pursuant to § 61.55 of this chapter. Waste not meeting the structural stability requirements of § 61.56(b) of this chapter must be identified;

5. The identities and activities of individual radionuclides contained in the waste, the masses of U–233, U–235, and plutonium in special nuclear material, and the masses of uranium and thorium in source material; and

6. For wastes consigned to a disposal facility, the maximum radiation levels at the surface of the waste.

E. Multi–Generator Disposal Container Information

This section applies to disposal containers enclosing mixtures of waste originating from different generators. (Note: The origin of the LLW resulting from a processor's activities may be attributable to one or more "generators" (including "waste generators") as defined in this part). It also applies to mixtures of wastes shipped in an uncontainerized form, for which portions of the mixture within the shipment originate from different generators.

1. For homogeneous mixtures of waste, such as incinerator ash, provide the waste description applicable to the mixture and the volume of the waste attributed to each generator.

2. For heterogeneous mixtures of waste, such as the combined products from a large compactor, identify each generator contributing waste to the disposal container, and, for discrete waste types (i.e., activated materials, contaminated equipment, mechanical filters, sealed source/devices, and wastes in solidification/stabilization media), the identities and activities of individual radionuclides contained on these waste types within the disposal container. For each generator, provide the following:

(a) The volume of waste within the disposal container;

(b) A physical and chemical description of the waste, including the solidification agent, if any;

(c) The total weight percentage of chelating agents for any disposal container containing more than 0.1% chelating agent by weight, plus the identity of the principal chelating agent;

(d) The sorbing or solidification media, if any, and the identity of the solidification media vendor and brand name if the media is claimed to meet stability requirements in 10 CFR 61.56(b); and

(e) Radionuclide identities and activities contained in the waste, the masses of U–233, U–235, and plutonium in special nuclear material, and the masses of uranium and thorium in source material if contained in the waste.

II. Certification

An authorized representative of the waste generator, processor, or collector shall certify by signing and dating the shipment manifest that the transported materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the Commission. A collector in signing the certification is certifying that nothing has been done to the collected waste which would invalidate the waste generator's certification.

III. Control and Tracking

A. Any licensee who transfers radioactive waste to a land disposal facility or a licensed waste collector shall comply with the requirements in paragraphs A.1 through 9 of this section. Any licensee who transfers waste to a licensed waste processor for waste treatment or repackaging shall comply with the requirements of paragraphs A.4 through 9 of this section. A licensee shall:

1. Prepare all wastes so that the waste is classified according to § 61.55 and meets the waste characteristics requirements in § 61.56 of this chapter;

2. Label each disposal container (or transport package if potential radiation hazards preclude labeling of the individual disposal container) of waste to identify whether it is Class A waste, Class B waste, Class C waste, or greater then Class C waste, in accordance with § 61.55 of this chapter;

3. Conduct a quality assurance program to assure compliance with §§ 61.55 and 61.56 of this chapter (the program must include management evaluation of audits);

4. Prepare the NRC Uniform Low–Level Radioactive Waste Manifest as required by this appendix;

5. Forward a copy or electronically transfer the Uniform Low–Level Radioactive Waste Manifest to the intended consignee so that either (i) receipt of the manifest precedes the LLW shipment or (ii) the manifest is delivered to the consignee with the waste at the time the waste is transferred to the consignee. Using both (i) and (ii) is also acceptable;

6. Include NRC Form 540 (and NRC Form 540A, if required) with the shipment regardless of the option chosen in paragraph A.5 of this section;

7. Receive acknowledgement of the receipt of the shipment in the form of a signed copy of NRC Form 540;

8. Retain a copy of or electronically store the Uniform Low–Level Radioactive Waste Manifest and documentation of acknowledgement

of receipt as the record of transfer of licensed material as required by 10 CFR parts 30, 40, and 70 of this chapter; and

9. For any shipments or any part of a shipment for which acknowledgement of receipt has not been received within the times set forth in this appendix, conduct an investigation in accordance with paragraph E of this appendix.

B. Any waste collector licensee who handles only prepackaged waste shall:

1. Acknowledge receipt of the waste from the shipper within one week of receipt by returning a signed copy of NRC Form 540;

2. Prepare a new manifest to reflect consolidated shipments that meet the requirements of this appendix. The waste collector shall ensure that, for each container of waste in the shipment, the manifest identifies the generator of that container of waste;

3. Forward a copy or electronically transfer the Uniform Low–Level Radioactive Waste Manifest to the intended consignee so that either: (i) Receipt of the manifest precedes the LLW shipment or (ii) the manifest is delivered to the consignee with the waste at the time the waste is transferred to the consignee. Using both (i) and (ii) is also acceptable;

4. Include NRC Form 540 (and NRC Form 540A, if required) with the shipment regardless of the option chosen in paragraph B.3 of this section;

5. Receive acknowledgement of the receipt of the shipment in the form of a signed copy of NRC Form 540;

6. Retain a copy of or electronically store the Uniform Low–Level Radioactive Waste Manifest and documentation of acknowledgement of receipt as the record of transfer of licensed material as required by 10 CFR parts 30, 40, and 70 of this chapter;

7. For any shipments or any part of a shipment for which acknowledgement of receipt has not been received within the times set forth in this appendix, conduct an investigation in accordance with paragraph E of this appendix; and

8. Notify the shipper and the Administrator of the nearest Commission Regional Office listed in appendix D of this part when any shipment, or part of a shipment, has not arrived within 60 days after receipt of an advance manifest, unless notified by the shipper that the shipment has been cancelled.

C. Any licensed waste processor who treats or repackages waste shall:

1. Acknowledge receipt of the waste from the shipper within one week of receipt by returning a signed copy of NRC Form 540;

2. Prepare a new manifest that meets the requirements of this appendix. Preparation of the new manifest reflects that the processor is responsible for meeting these requirements. For each container of waste in the shipment, the manifest shall identify the waste generators, the preprocessed waste volume, and the other information as required in paragraph I.E. of this appendix;

3. Prepare all wastes so that the waste is classified according to § 61.55 of this chapter and meets the waste characteristics requirements in § 61.56 of this chapter;

4. Label each package of waste to identify whether it is Class A waste, Class B waste, or Class C waste, in accordance with §§ 61.55 and 61.57 of this chapter;

5. Conduct a quality assurance program to assure compliance with §§ 61.55 and 61.56 of this chapter (the program shall include management evaluation of audits);

6. Forward a copy or electronically transfer the Uniform Low–Level Radioactive Waste Manifest to the intended consignee so that either: (i) Receipt of the manifest precedes the LLW shipment or (ii) the manifest is delivered to the consignee with the waste at the time the waste is transferred to the consignee. Using both (i) and (ii) is also acceptable;

7. Include NRC Form 540 (and NRC Form 540A, if required) with the shipment regardless of the option chosen in paragraph C.6 of this section;

8. Receive acknowledgement of the receipt of the shipment in the form of a signed copy of NRC Form 540;

9. Retain a copy of or electronically store the Uniform Low–Level Radioactive Waste Manifest and documentation of acknowledgement of receipt as the record of transfer of licensed material as required by 10 CFR parts 30, 40, and 70 of this chapter;

10. For any shipment or any part of a shipment for which acknowledgement of receipt has not been received within the times set forth in this appendix, conduct an investigation in accordance with paragraph E of this appendix; and

11. Notify the shipper and the Administrator of the nearest Commission Regional Office listed in appendix D of this part when any shipment, or part of a shipment, has not arrived within 60 days after receipt of an advance manifest, unless notified by the shipper that the shipment has been cancelled.

D. The land disposal facility operator shall:

1. Acknowledge receipt of the waste within one week of receipt by returning, as a minimum, a signed copy of NRC Form 540 to the shipper. The shipper to be notified is the licensee who last possessed the waste and transferred the waste to the operator. If any discrepancy exists between materials listed on the Uniform Low–Level Radioactive Waste Manifest and materials received, copies or electronic transfer of the affected forms must be returned indicating the discrepancy;

2. Maintain copies of all completed manifests and electronically store the information required by 10 CFR 61.80(l) until the Commission terminates the license; and

3. Notify the shipper and the Administrator of the nearest Commission Regional Office listed in appendix D of this part when any shipment, or part of a shipment, has not arrived within 60 days after receipt of an advance manifest, unless notified by the shipper that the shipment has been cancelled.

E. Any shipment or part of a shipment for which acknowledgement is not received within the times set forth in this section must:

1. Be investigated by the shipper if the shipper has not received notification or receipt within 20 days after transfer; and

2. Be traced and reported. The investigation shall include tracing the shipment and filing a report with the nearest Commission Regional Office listed in appendix D to this part. Each licensee who conducts a trace investigation shall file a written report with the appropriate NRC Regional Office within 2 weeks of completion of the investigation.

[60 FR 15664, March 27, 1995; 60 FR 25983, May 16, 1995; 67 FR 57092, Sept. 6, 2002; 67 FR 72901, Dec. 4, 2002; 68 FR 58802, Oct. 10, 2003; 73 FR 30457, May 28, 2008]

Subchapter 4. Radiation

Subchapter 4.5. Radiologic Technology

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Subchapter 4. Radiation

Group 1. General

Article 1. Definitions

§ 30100. General Definitions.

As used in subchapter 4:

(a) "Act" means the "Radiation Control Law," Health and Safety Code, Division 104, Part 9, chapter 8, sections 114960 et seq.

(b) "Agreement State" means any state with which the United States Atomic Energy Commission or Nuclear Regulatory Commission has entered into an effective agreement under section 274b of the Atomic Energy Act of 1954, Title 42, United States Code, section 2021(b) (formerly section 274(b)).

(c) "Decommission" means to remove safely from service and reduce residual radioactivity to a level that permits release of the property for unrestricted use and termination of the license.

(d) "Department" means the California Department of Public Health.

(e) "Depleted uranium" means the source material uranium in which the isotope uranium–235 is less than 0.711 weight percent of the total uranium present. Depleted uranium does not include special nuclear material.

(f) "Hazardous radioactive material," as used in section 33000 of the California Vehicle Code and 114820(d) of the Health and Safety Code means any "highway route controlled quantity" of radioactive material as such material is defined in title 49, Code of Federal Regulations, section173.403.

(g) "Human use" means the internal or external administration of radiation or radioactive materials to human beings.

(h) "Installation" means the location where one or more reportable sources of radiation are possessed.

(i) "License," except where otherwise specified, means a license issued pursuant to group 2, Licensing of Radioactive Material.

(j) "Other official agency specifically designated by the Department" means an agency with which the Department has entered into an agreement pursuant to section 114990 of the Health and Safety Code.

(k) "Person" means any individual, corporation, partnership, limited liability company, firm, association, trust, estate, public or private institution, group, agency, political subdivision of this State, any other state or political subdivision or agency thereof, and any legal successor, representative, agent, or agency of the foregoing, other than the United States Nuclear Regulatory Commission, the United States Department of Energy, or any successor thereto, and other than Federal Government agencies licensed by the United States Nuclear Regulatory Commission, under prime contract to the United States Department of Energy, or any successor thereto.

(*l*) "Personnel monitoring equipment" means devices designed to be worn or carried by an individual for the purpose of measuring the dose received by that individual (e.g., film badges, pocket chambers, pocket dosimeters, film rings, etc.).

(m) "Possess" means to receive, possess, use, transfer or dispose of radioactive material pursuant to this regulation.

(n) "Possessing a reportable source of radiation" means having physical possession of, or otherwise having control of, a reportable source of radiation in the State of California.

(o) "Radiation" (ionizing radiation) means gamma rays and X–rays; alpha and beta particles, high–speed electrons, neutrons, protons, and other nuclear particles; but not sound or radio waves, or visible, infrared, or ultraviolet light.

(p) "Radiation machine" means any device capable of producing radiation when the associated control devices are operated, but excluding devices which produce radiation only by the use of radioactive material.

(q) "Radioactive material" means any material which emits radiation spontaneously.

(r) "Registrant" means any person who is registering or who has registered with the Department pursuant to group 1.5, Registration of Sources of Radiation.

(s) "Reportable sources of radiation" means either of the following:

(1) Radiation machines, when installed in such manner as to be capable of producing radiation.

(2) Radioactive material contained in devices possessed pursuant to a general license under provisions of sections 30192.1 and 30192.6.

(t) "Research and development" means theoretical analysis, exploration, experimentation or the extension of investigative findings and scientific or technical theories into practical application for experimental or demonstration purposes, including the experimental production and testing of models, prototype devices, materials and processes; but shall not include human use.

(u) "Sealed source" means any radioactive material that is permanently encapsulated in such manner that the radioactive material will not be released under the most severe conditions likely to be encountered by the source.

(v) "Source of radiation" means a discrete or separate quantity of radioactive material or a single radiation machine.

(w) "Special nuclear material" means:

(1) Plutonium, uranium 233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Department declares by rule to be special nuclear material after the United States Nuclear Regulatory Commission, or any successor thereto, has determined the material to be such, but does not include source material; or

(2) Any material artificially enriched by any of the foregoing, but does not include source material.

(x) "Specific license" means a license or the equivalent document issued to a named person by the Department or by the Nuclear Regulatory Commission or by any other Agreement State.

(y) "This regulation" means: California Code of Regulations, Title 17, Division 1, Chapter 5, Subchapter 4.

(z) "User" means any person who is licensed to possess radioactive material or who has registered as possessing a reportable source of radiation pursuant to groups 1.5 and 2 of this subchapter, or who otherwise possesses a source of radiation which is subject to such licensure or registration.

(aa) "Worker" means any individual engaged in activities subject to this regulation and controlled by a user, but does not include the user.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 114985, 115060, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Repealer of group 1 and new group 1 (sections 30100 through 30146) filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For prior histories, see Registers 62, No. 1 and 62, No. 8.
2. Repealer and new section filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).
3. Change without regulatory effect of subsection (ac)(2) (Register 88, No. 6).
4. Amendment of subsection (j), relettering of former subsections (p)–(ap) to subsections (q)–(aq), and new subsection (p) filed 9–5–89; operative 10–5–89 (Register 89, No. 36).
5. New subsection (k) and redesignation of former sections (k) through (aq) to subsections (*l*) through (ar) filed 4–19–91; operative 5–19–91 (Register 91, No. 20).
6. Editorial correction of printing error in subsections (q)–(ar) (Register 91, No. 30).
7. Change without regulatory effect amending subsection (an) filed 11–1–91 pursuant to section 100, title 1, California Code of Regulations (Register 92, No. 5).
8. Amendment of section and NOTE filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
9. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
10. Amendment of subsection (a), new subsection (c) and subsection relettering filed 10–16–95 as an emergency; operative 10–16–95 (Register 95, No. 42). A

Certificate of Compliance must be transmitted to OAL by 2–13–96 or emergency language will be repealed by operation of law on the following day.

11. Certificate of Compliance as to 10–16–95 order, including amendment of subsections (a), (f) and (k) and of NOTE, transmitted to OAL 2–9–96 and filed 3–25–96 (Register 96, No. 13).

12. Amendment of subsection (q) and NOTE filed 6–22–2005 as an emergency; operative 6–22–2005 (Register 2005, No. 25). A Certificate of Compliance must be transmitted to OAL by 10–20–2005 or emergency language will be repealed by operation of law on the following day.

13. Certificate of Compliance as to 6–22–2005 order transmitted to OAL 9–20–2005 and filed 10–18–2005 (Register 2005, No. 42).

14. Amendment of subsection (a) filed 7–20–2006; operative 8–19–2006 (Register 2006, No. 29).

15. Amendment of subsections (d) and (f) and NOTE filed 4–24–2009; operative 5–24–2009 (Register 2009, No. 17).

16. Repealer of subsections (j)–(j)(6), subsection relettering, amendment of newly designated subsections (k), (s)(2), (y) and (aa) and amendment of NOTE filed 10–13–2010; operative 1–1–2011 (Register 2010, No. 42).

§ 30102. Registration Requirement. [Repealed]

HISTORY

1. Renumbering and amendment of former Section 30102 to Section 30108 filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).

§ 30103. Communications. [Repealed]

HISTORY

1. Amendment filed 1–22–76; effective thirtieth day thereafter (Register 76, No. 4).
2. Repealer filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).

Article 2. Exemptions and Enforcement

§ 30104. Exemptions.

(a) The Department may, upon application by any user, or upon its own initiative, grant such exemptions from the requirements of this regulation as it determines are authorized by law and will not result in undue hazard to health, life or property. Applications for exemptions shall specify why such exemption is necessary.

(b) Before granting an exemption, the Department shall determine that there is reasonable and adequate assurance that:

(1) the doses to any individual in any controlled area will not exceed those specified in Section 30265;

(2) the dose to the whole body of any individual in an uncontrolled area will not exceed 0.5 rem in a year;

(3) The deposition of radioactive material in the body of any individual will not likely result in a greater risk to the individual than would be expected from the dose specified in Section 30104 (b)(1) or (2), as appropriate, based on guidance from such bodies as the International Commission on Radiological Protection, and the National Council on Radiation Protection and Measurements; and

(4) there is no significant hazard to life or property.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 115060, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Renumbering and amendment of former section 30345 to article 2 (section 30104) filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).
2. Change without regulatory effect of subsection (b)(3) (Register 87, No. 4).
3. Change without regulatory effect amending subsections (b) and (b)(3) filed 11–1–91 pursuant to section 100, title 1, California Code of Regulations (Register 92, No. 5).
4. Repealer and new NOTE filed 6–15–2015; operative 6–15–2015. Submitted to OAL for filing and printing only pursuant to Health and Safety Code section 100425 (Register 2015, No. 25).

§ 30105. Deliberate Misconduct.

(a) A user, applicant for a license or registration, employee of a user or applicant, or any contractor (including a supplier or consultant), subcontractor, employee of a contractor or subcontractor of any user or applicant for a license or registration, who knowingly provides to any user, applicant, contractor, or subcontractor, any components, equipment, materials, or other goods or services that relate to a user's or applicant's activities subject to this regulation, shall not:

(1) Engage in deliberate misconduct, as defined in subsection (c), that causes or would have caused, if not detected, a user or applicant to be in violation of any rule, regulation, or order; or any term, condition, or limitation of any license issued by the Department; or

(2) Deliberately submit to the Department, a user, an applicant, or a user's or applicant's contractor or subcontractor, information that the person submitting the information knows to be incomplete or inaccurate in some respect material to the Department.

(b) A person who violates subsection (a) shall be subject to enforcement action in accordance with the Act.

(c) For the purposes of subsection (a), deliberate misconduct by a person means an intentional act or omission that the person knows:

(1) Would cause a user or applicant to be in violation of any rule, regulation, or order, or any term, condition, or limitation, or any license or registration issued by the Department; or

(2) Constitutes a violation of a requirement, procedure, instruction, contract, purchase order, or policy of a user, applicant, contractor, or subcontractor.

NOTE: Authority cited: Sections 100170, 100275, 115000, 115230 and 115235, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115215, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 12–29–2005; operative 1–28–2006 (Register 2005, No. 52). For prior history of former article 2 (section 30105), see Register 85, No. 48.

Group 1.5. Registration of Sources of Radiation

Article 1. Registration Procedure

§ 30108. Registration Requirement.

Every person possessing a reportable source of radiation shall register with the Department in accordance with the provisions of this Group.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 115060, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Renumbering and amendment of former Section 30102 to Section 30108 and designation of new Group 1.5 (Sections 30108–30146, not consecutive) filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).
2. Amendment of section and NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).

§ 30108.1. Registration and General Provisions for Persons Possessing Devices Under Sections 30192.1 and 30192.6.

(a) A person required to register pursuant to sections 30192.1(d)(1) or 30192.6(b)(1) shall, within 30 calendar days of taking possession of a device or product, submit to the Department the following:

(1) Legal name, mailing address, and telephone number of the registering person. If renewing registration, the registration number previously issued to the registrant shall also be included;

(2) For each device subject to section 30192.1:

(A) The manufacturer's name, serial number, model number, the radioisotope, and the radioisotope's activity (as indicated on the device's label). For devices used in a fixed location, the physical address of each location where a device is used and the total number of devices at each location shall be submitted. For portable devices, the physical address of each primary place of storage and the total number of devices stored at each location shall be submitted. If renewing registration and there has been no change in the previously indicated devices, indicate that no change has occurred;

(B) Name, title, and telephone number, if different than the number specified in subsection (a)(1), of the individual appointed pursuant to section 30192.1(d)(15);

(C) Name and license number of the distributor from whom the device was obtained; and

(D) Signature and date of signature of the individual identified in subsection (a)(2)(B), attesting to the following statement:

"I [insert name as it appears in response to subsection (a)(2)(B)] attest that I am aware of the requirements of the general license specified in section 30192.1 of title 17, California Code of Regulations, and that the information provided concerning the device or product has been verified through a physical inventory and checking of label information."

(3) For persons possessing devices subject to section 30192.6:

(A) A statement that the registrant has, pursuant to section 30192.6(b)(3), developed, implemented, and will continue to maintain procedures designed to establish physical control over the depleted uranium described in section 30192.6(a), and designed also so as to prevent transfer of such depleted uranium in any form, including metal scrap, to persons not authorized to receive the depleted uranium; and

(B) Name, title, and telephone number, if different than the number specified in subsection (a)(1), of the individual appointed pursuant to section 30192.6(b)(4);

(4) Except for persons possessing devices pursuant to section 30192.6, the registration fee specified in section 30145.

(b) Each person shall renew registration annually on or before the current registration's expiration date, by submitting to the Department all required items in subsection (a).

(c) In lieu of the requirements in section 30115, within 30 calendar days of the occurrence of the event, each person registered pursuant to this section shall notify the Department of any change in the information submitted in response to subsection (a), including discontinuance of use of a device or product.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 115000, 115060, 115065, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).

§ 30110. Initial Registration.

(a) Every person not already registered who acquires a reportable source of radiation shall register with and pay the fee as specified in Section 30145 to the Department within 30 days of the date of acquisition.

(b) Every person who intends to acquire a radiation machine capable of operating at a potential in excess of 500 kVp shall notify the Department at least 60 days prior to his/her possession of the machine or at least 60 days prior to the commencement of construction or reconstruction of the room which will house the machine, whichever occurs first. This equipment shall not be used to treat patients until written approval of provisions for radiation safety has been obtained by the user from the Department.

(c) Every person who registers or renews a registration shall complete a separate registration form furnished by the Department for each separate installation.

NOTE: Authority cited: Sections 114975, 115000(c), 115080, 115085 and 131200, Health and Safety Code. Reference: Sections 115060(b), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment filed 6–24–80; effective thirtieth day thereafter (Register 80, No. 26).
2. Amendment filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).
3. Amendment of subsection (a) filed 11–1–93 as an emergency; operative 11–1–93 (Register 93, No. 45). A Certificate of Compliance must be transmitted to OAL by 3–1–94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 11–1–93 order transmitted to OAL 2–24–94; disapproved by OAL 4–7–94 (Register 94, No. 27).
5. Amendment of subsection (a) refiled 7–6–94 as an emergency; operative 7–6–94 (Register 94, No. 27). A Certificate of Compliance must be transmitted to OAL by 11–3–94 or emergency language will be repealed by operation of law on the following day.
6. Certificate of Compliance as to 7–6–94 order transmitted to OAL 6–30–94 and filed 7–20–94 (Register 94, No. 29).
7. Repealer and new NOTE filed 6–15–2015; operative 6–15–2015. Submitted to OAL for filing and printing only pursuant to Health and Safety Code section 100425 (Register 2015, No. 25).

§ 30111. Renewal of Registration.

Every person already registered pursuant to 30110 shall renew such registration annually and pay the fee as specified in Section 30145 to the Department on or before the registration renewal date.

NOTE: Authority cited: Sections 100275 and 115000(c), Health and Safety Code. Reference: Section 115060(b), Health and Safety Code.

HISTORY

1. Amendment filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).
2. Repealer and new section and amendment of NOTE filed 1–20–99; operative 2–19–99 (Register 99, No. 4).

§ 30112. Registration Form. [Repealed]

HISTORY

1. Repealer filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).

§ 30113. Separate Installations. [Repealed]

HISTORY

1. Repealer filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).

§ 30115. Report of Change.

Except for persons subject to section 30108.1, the registrant shall report in writing to the Department, within 30 days, any change in: registrant's name, registrant's address, location of the installation, or receipt, sale, transfer, disposal, or discontinuance of use of any reportable source of radiation.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 115060, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment filed 6–24–80; effective thirtieth day thereafter (Register 80, No. 26).
2. Amendment filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).
3. Amendment of section and NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).

§ 30116. Report of Discontinuance. [Repealed]

HISTORY

1. Repealer filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).

§ 30117. Registration Shall Not Imply Approval. [Repealed]

HISTORY

1. Repealer filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).

§ 30118. Vendor Obligation.

(a) Any manufacturer, distributor, retailer, agent, or any other person who sells, leases, transfers or lends a radiation machine to any person who may be required to register such machine shall notify the Department on a form approved by the Department no later than 30 days after the end of each calendar quarter of:

(1) The names and addresses of persons who have received such machines.

(2) The manufacturer and model of each such machine.

(3) The date of transfer of each radiation machine.

(4) Other related information as may be required by the Department.

(b) The vendor shall inform the receiver of each machine of the registration requirements of Section 30108 of these regulations.

NOTE: Authority cited: Sections 114975, 115000(c) and 131200, Health and Safety Code. Reference: Sections 115060(b), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 9–4–73 as an emergency; effective upon filing (Register 73, No. 36). Approved by State Building Standards Commission 11–30–73.
2. Certificate of Compliance filed 12–28–73 (Register 73, No. 52).
3. Editorial correction of NOTE filed 7–12–84 (Register 84, No. 28).
4. Change without regulatory effect of subsection (b) (Register 88, No. 6).
5. Repealer and new NOTE filed 6–15–2015; operative 6–15–2015. Submitted to OAL for filing and printing only pursuant to Health and Safety Code section 100425 (Register 2015, No. 25).

§ 30120. Reportable Sources of Radiation. [Repealed]

HISTORY

1. Repealer of Article 4 (Section 30120) filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).

Article 2. Exclusions from Registration

§ 30125. Excluded Material and Devices.

The following devices and materials do not require registration:

(a) Electrical equipment that produces radiation incidental to its operation for other purposes, but which does not produce radiation in any area accessible to individuals such that there is a reasonable likelihood that any individual will receive a radiation dose to the whole body, head and trunk, gonads, or lens of the eye or active blood–forming organs in excess of 0.5 rem in a year.

(b) All radioactive materials except as specified in sections 30192.1 and 30192.6.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 115060(c), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New NOTE filed 7–12–84 (Register 84, No. 28).
2. Editorial renumbering of former article 5 to article 2 (Register 85, No. 48).
3. Change without regulatory effect amending subsection (b) filed 11–1–91 pursuant to section 100, title 1, California Code of Regulations (Register 92, No. 5).
4. Amendment of section and NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).

§ 30126. Exempt Possessors.

Common and contract carriers are exempt from the requirement to register to the extent that they transport or store reportable sources of radiation in the regular course of their carriage for another or storage incident thereto.

NOTE: Authority cited: Sections 114975, 115000(c) and 131200, Health and Safety Code. Reference: Sections 115060(b), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).
2. Repealer and new NOTE filed 6–15–2015; operative 6–15–2015. Submitted to OAL for filing and printing only pursuant to Health and Safety Code section 100425 (Register 2015, No. 25).

Article 3. Records [Repealed]

§ 30130. Radiation Protection Standards. [Repealed]

HISTORY

1. Repealer of Section 30130 and renumbering of Article 6 to Article 3 filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).

§ 30131. Records to be Maintained. [Repealed]

NOTE: Authority cited: Sections 100275 and 115000, Health and Safety Code. Reference: Section 115060, Health and Safety Code.

HISTORY

1. Amendment filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).
2. Repealer of section and amendment of NOTE filed 9–9–97; operative 10–9–97 (Register 97, No. 37).

§ 30140. Violations. [Repealed]

HISTORY

1. Repealer of Article 7 (Section 30140) filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).

Article 4. Fees

§ 30145. Registration Fees.

(a) Each radiation machine that is a reportable source of radiation as defined in section 30100, is classified as one of the following:

(1) "High priority radiation machine," a radiation machine, which has high potential for exposing humans by means of heavy use, high radiation exposure, specialized use for radiosensitive areas of the human body, or misadjustment or malfunction of radiation safety features. A high priority radiation machine is further defined as one of the following machine types, or a machine that is used by any of the following categories of users:

(A) Orthopedist.

(B) Radiologist or roentgenogoloist.

(C) Chiropractor.

(D) Hospital.

(E) Medical clinic.

(F) Portable X–ray service (human use).

(G) Fluoroscope used on humans.

(H) Chest photofluorography (minifilm unit).

(I) Non–human use particle accelerator with maximum energy capable of equaling or exceeding 10 MeV.

(J) Non–human use radiation machine used in field radiography, as defined in Section 30336(c).

(2) "Medium priority radiation machine," a radiation machine not covered by subsections (a)(1), (a)(3) or (a)(4).

(3) "Dental priority radiation machine," a radiation machine used exclusively in dental radiography of human beings.

(4) "Special priority radiation machine," a radiation machine used for mammography.

(b) When a radiation machine is equipped with two or more tubes that can be used separately, each tube shall be considered as a single radiation machine.

(c) For registration or renewal of registration as a general licensee pursuant to section 30192.1, the fee shall be $82.00 for each device in possession, except that persons possessing such devices under a specific license shall be exempt from this fee.

(d) Except as provided in subsection (e), initial registration shall be valid for a period of one year.

(e) The initial registration period for a reportable source of radiation being registered by a person who has a reportable source of radiation already registered with the Department shall be coterminous with the existing registration.

(f) Any fees collected for a radiation machine or a device for any registration period shall be transferred to any replacement radiation machine or device for the remainder of the registration period.

(g) For initial registration or renewal of registration, the fees shall be $252.00 annually for each high priority radiation machine, $202.00 annually for each medium priority radiation machine, $93.00 annually for each dental priority radiation machine and, except as provided in section 30145.1, $559.00 annually for each special priority radiation machine. Where the initial registration period is less than one year pursuant to subsection (e), the initial registration fee shall be prorated, based on the priority classification and number of full months in the initial registration period in accordance with the following formula:

Initial Registration Fee = A x [B/ (12 Months)]

Where:

A = Annual fee as specified above, dollars per year

B = Number of full months remaining in coterminous period

(h) The total registration fee paid by a registrant for high priority, medium priority, special priority, and dental priority radiation machines, which are at the same installation, shall not exceed $7,060.00 per year.

(i) A late fee of 25% of the annual fee shall be charged for any registration fee which is 30 days past due.

(j) Fees required by this section shall be nonrefundable.

NOTE: Authority cited: Sections 114975, 115000, 115060, 115065, 115080, 115085 and 131200, Health and Safety Code. Reference: Sections 114980, 115065, 115080, 115085, 115165, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of subsection (a) filed 7–1–75; effective thirtieth day thereafter (Register 75, No. 27).

2. Amendment filed 4–30–76; effective thirtieth day thereafter (Register 76, No. 18).
3. Amendment filed 7–3–79 as an emergency; effective upon filing (Register 79, No. 27).
4. Certificate of Compliance transmitted to OAL 10–26–79 and filed 11–2–79 (Register 79, No. 44).
5. Amendment filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).
6. Change without regulatory effect of subsections (a) and (a)(1)(k) (Register 88, No. 6).
7. Amendment of subsection (a) filed 4–19–91; operative 5–19–91 (Register 91, No. 20).
8. Amendment of subsection (a) and NOTE, and adoption of subsections (d)–(f) filed 11–1–93 as an emergency; operative 11–1–93 (Register 93, No. 45). A Certificate of Compliance must be transmitted to OAL by 3–1–94 or emergency language will be repealed by operation of law on the following day.
9. Certificate of Compliance as to 11–1–93 order transmitted to OAL 2–24–94; disapproved by OAL 4–7–94 (Register 94, No. 27).
10. Amendment of subsection (a) and NOTE and new subsections (d)–(f) refiled 7–6–94 as an emergency; operative 7–6–94 (Register 94, No. 27). A Certificate of Compliance must be transmitted to OAL by 11–3–94 or emergency language will be repealed by operation of law on the following day.
11. Certificate of Compliance as to 7–6–94 order transmitted to OAL 6–30–94 and filed 7–20–94 (Register 94, No. 29).
12. Amendment of section and NOTE filed 1–20–99; operative 2–19–99 (Register 99, No. 4).
13. Amendment of section heading, section and NOTE filed 6–22–2005 as an emergency; operative 6–22–2005 (Register 2005, No. 25). A Certificate of Compliance must be transmitted to OAL by 10–20–2005 or emergency language will be repealed by operation of law on the following day.
14. Certificate of Compliance as to 6–22–2005 order transmitted to OAL 9–20–2005 and filed 10–18–2005 (Register 2005, No. 42).
15. New subsection (c), subsection relettering, amendment of newly designated subsections (d), (f) and (g) and amendment of NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).
16. Amendment of subsections (a), (c), (g) and (h) filed 6–15–2015; operative 6–15–2015. Submitted to OAL for filing and printing only pursuant to Health and Safety Code section 100425 (Register 2015, No. 25).

§ 30145.1. Registration Fee, Mammography Exception.

The fee shall be $332.00 annually for each special priority radiation machine accredited by an independent accrediting agency recognized under the federal Mammography Quality Standards Act [42 U.S.C. 263(b)].

NOTE: Authority cited: Sections 114975, 115000(c), 115080, 115085 and 131200, Health and Safety Code. Reference: Sections 115080, 115085, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 1–20–99; operative 2–19–99 (Register 99, No. 4).
2. Amendment filed 6–22–2005 as an emergency; operative 6–22–2005 (Register 2005, No. 25). A Certificate of Compliance must be transmitted to OAL by 10–20–2005 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 6–22–2005 order transmitted to OAL 9–20–2005 and filed 10–18–2005 (Register 2005, No. 42).
4. Amendment of section and NOTE filed 6–15–2015; operative 6–15–2015. Submitted to OAL for filing and printing only pursuant to Health and Safety Code section 100425 (Register 2015, No. 25).

§ 30146. Payment of Fee.

Each registration or registration renewal which reports possession of a radiation machine, and each report of change reporting the receipt of an additional radiation machine, shall be accompanied by an amount to pay the fee for the period to the next regularly scheduled registration renewal date.

NOTE: Authority cited: Sections 114975, 115000(c) and 131200, Health and Safety Code. Reference: Sections 115080, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment filed 7–1–75; effective thirtieth day thereafter (Register 75, No. 27).
2. Amendment filed 4–30–76; effective thirtieth day thereafter (Register 76, No. 18).
3. New NOTE filed 7–12–84 (Register 84, No. 28).
4. Repealer and new NOTE filed 6–15–2015; operative 6–15–2015. Submitted to OAL for filing and printing only pursuant to Health and Safety Code section 100425 (Register 2015, No. 25).

Group 2. Licensing of Radioactive Materials

Article 1. General [Repealed]

HISTORY

1. Repealer of Article 1 (Sections 30170 through 30173) and new Article 1 (Sections 30170, 30172 and 30173) filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For prior history, see Registers 62, No. 1 and 62, No. 8.
2. Repealer of article 1 (Sections 30170–30173) filed 7–8–87; operative 8–7–87 (Register 87, No. 29).

Article 2. Definitions [Repealed]

HISTORY

1. Repealer and new section filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For prior history, see Registers 62, No. 1 and 62, No. 8.
2. Amendment filed 1–22–76; effective thirtieth day thereafter (Register 76, No. 4).
3. Repealer of article 2 (section 30175) filed 7–8–87; operative 8–7–87 (Register 87, No. 29).

Article 3. Exemptions

§ 30180. Carriers, Federal Licensees and Prime Contractors.

(a) Common and contract carriers, freight forwarders, warehousemen, and the U.S. Postal Service are exempt from the requirements for a license specified in section 30190 and sections 30191 through 30235, and from Group 3 of this subchapter, to the extent that they transport or store radioactive material in the regular course of carriage for another entity or storage incident thereto. Such carriers are subject to the provisions of Group 4, Transportation of Radioactive Material. This exemption does not authorize the export from, or import into, the United States of byproduct, source, or special nuclear material.

(b) A person is exempt from this Group if that person is licensed by the United States Nuclear Regulatory Commission (NRC) under Title 10, Code of Federal Regulations, Part 150, Section 150.15, Continued Commission Regulatory Authority in Agreement States, or as otherwise specified per an agreement between the Department and NRC.

(c) A person is exempt from the requirements for a license set forth in the Act and from section 30190 and sections 30191 through 30235, and from Group 3 of this subchapter to the extent that such person, operating within the confines of the person's prime contract with the NRC or the United States Department of Energy (DOE), manufactures, produces, transfers, receives, acquires, owns, possesses, or uses radioactive material for:

(1) The performance of work for the NRC or DOE at a United States Government–owned (federally–owned) or controlled site, including the transportation of radioactive material to or from such site;

(2) The performance of contract services during temporary interruptions of the transportation of radioactive material under paragraph (1);

(3) Research in, or development, manufacture, storage, testing or transportation of, atomic weapons or components thereof; or

(4) The operation of nuclear reactors or other nuclear devices in a federally–owned vehicle or vessel.

(d) In addition to subsection (c), a prime contractor or subcontractor of the NRC or DOE is exempt from the requirements for a license set forth in the Act and from section 30190 and sections 30191 through 30235, and from Group 3 of this subchapter, to the extent that such prime contractor or subcontractor manufactures, produces, transfers, receives, acquires, owns, possesses, or uses radioactive material under his prime contract or subcontract, or to the extent that the Department and NRC or DOE jointly determine that the exemption of the prime contractor or subcontractor is authorized by law and that, under the terms of the contract or subcontract, there is adequate assurance that the work thereunder can be accomplished without undue risk to the public health and safety.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of subsection (c)(1) and new subsection (d)(7) filed 10–12–72; effective thirtieth day thereafter (Register 72, No. 42). For prior history, see Register 71, No. 30.
2. Amendment filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
3. Change without regulatory effect of subsections (b)(15) and (c)(2)–(4) (Register 88, No. 6).
4. Change without regulatory effect amending subsections (b)(1), (b)(17), (b)(28), and (d)(2) filed 11–1–91 pursuant to section 100, title 1, California Code of Regulations (Register 92, No. 5).
5. Editorial correction reinserting inadvertently omitted subsections (c)–(c)(4) (Register 92, No. 44).
6. Editorial correction of subsection (b)(28)(B) (Register 2003, No. 29).
7. Amendment of section and repealer and new NOTE filed 7–28–2006; operative 8–27–2006 (Register 2006, No. 30).
8. Amendment of section heading, repealer and new section and amendment of NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30180.1. Exempt Concentrations.

(a) A person is exempt from the requirements for a license specified in section 30190, sections 30191 through 30235, and from Group 3 of this subchapter, to the extent that such person receives, possesses, uses, transfers, owns or acquires products or materials containing radioactive material in concentrations not in excess of those listed in section 30237.

(b) This section shall not be deemed to authorize the import of radioactive material or products containing radioactive material.

(c) A manufacturer, processor, or producer of a product or material is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30235, and from Group 3 of this subchapter, to the extent that such person transfers radioactive material contained in a product or material in concentrations not in excess of those specified in section 30237 and introduced into the product or material by a licensee holding a specific license issued by the U.S. Nuclear Regulatory Commission (NRC), expressly authorizing such introduction.

(d) The exemptions in this section do not apply to the transfer of radioactive material contained in any food, beverage, cosmetic, drug, or other commodity or product designed for ingestion or inhalation by, or application to, a human being.

(e) A person may not introduce radioactive material into a product or material, knowing or having reason to believe that it will be transferred to persons exempt under this section, except in accordance with a specific license issued by the NRC pursuant to section 32.11 in title 10, Code of Federal Regulations, Part 32 (10 CFR 32). This provision shall not be construed to incorporate by reference 10 CFR 32, section 32.11.

(f) A person is exempt from this subchapter to the extent that such person receives, possesses, uses, transfers, owns or acquires naturally occurring radioactive material in concentrations which occur naturally. Refining and processing are not exempt.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30180.2. Certain Items Containing Radioactive Material.

(a) A person who possesses or transfers a timepiece, or a component thereof, which is described as follows is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter, notwithstanding the fact that the timepiece or component contains radioactive material:

(1) The timepieces or its component hands or dials contains tritium which does not exceed:

(A) 25 millicuries of tritium per timepiece;

(B) Five millicuries of tritium per hand;

(C) 15 millicuries of tritium per dial (bezels when used shall be considered as part of the dial).

(2) The timepiece, or its component hands or dials, contains promethium 147 which does not exceed:

(A) 100 microcuries per watch or 200 microcuries per any other timepiece;

(B) 20 microcuries per watch hand or 40 microcuries per other timepiece hand;

(C) 60 microcuries per watch dial or 120 microcuries per other timepiece dial (bezels when used shall be considered as part of the dial).

(3) The hands or dials of the timepiece contain promethium 147 which, when measured through 50 milligrams per square centimeter of absorber, does not exceed:

(A) 0.1 millirad per hour at 10 centimeters from any surface for wrist watches;

(B) 0.1 millirad per hour at one centimeter from any surface for pocket watches; and

(C) 0.2 millirad per hour at 10 centimeters from any surface for any other timepiece.

(4) An intact timepiece manufactured prior to November 30, 2007 containing radium–226 which does not exceed one microcurie.

(b) A person who possesses or transfers a device described as follows, or who possesses such a device received or acquired before December 30, 2014, under the general license then provided in section 30192, is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter:

(1) Static elimination devices containing not more than 500 microcuries of polonium–210 per device;

(2) Ion generating tubes designed for ionization of air containing not more than 500 microcuries of polonium–210 per device or not more than 50 millicuries of hydrogen–3 (tritium) per device;

(c) A person who possesses or transfers a balance of precision containing radioactive tritium is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter, provided that the balance contains no more than 0.1 millicurie of tritium or no more than 0.5 millicurie of tritium per balance part, and was manufactured before December 17, 2007.

(d) A person who possesses or transfers a marine compass, or other marine navigational instrument, is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter, provided that the marine compass contains no more than 750 millicuries of tritium gas and other marine navigational instruments contain no more than 250 millicuries of tritium gas, and was manufactured before December 17, 2007.

(e) A person who possesses or transfers a smoke detector containing americium–241 is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter, provided that not more than one microcurie of americium–241 is incorporated into the detector in the form of a foil and designed to protect life and property from fires.

(f) A person who possesses or transfers an electron tube (tube) containing radioactive material is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter:

(1) Provided that the tube does not exceed the following microcurie limits:

(A) 10 millicuries for tubes containing tritium; except, if the tube is a microwave receiver protector tube, 150 millicuries of tritium;

(B) 1 microcurie for tubes containing cobalt–60;

(C) 5 microcuries for tubes containing nickel–63;

(D) 30 microcuries for tubes containing krypton–85;

(E) 5 microcuries for tubes containing cesium–137;

(F) 30 microcuries for tubes containing promethium–147; and

(2) Provided that the levels of radiation from the electron tube containing radioactive material do not exceed one millirad per hour at one centimeter from any surface when measured through seven milligrams per square centimeter of absorber.

(3) For purposes of subsection (f) "electron tubes" include spark gap tubes, power tubes, gas tubes including glow lamps, receiving tubes, microwave tubes, indicator tubes, pickup tubes, radiation detection tubes, and any other completely sealed tube that is designed to conduct or control electrical currents.

(g) A person who possesses or transfers a measuring instrument, which contains one or more sources of radioactivity for purposes of internal calibration or standardization is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter, provided that:

(1) Each source of radioactivity in the instrument which is comprised of a single radionuclide does not exceed the limit set forth in section 30235 for that radionuclide; and

(2) Each instrument contains no more than 10 of the radionuclides listed in section 30235;

(3) For purposes of this subsection, an instrument's radioactive source(s) may contain either one type or different types of radionuclides and an individual exempt quantity may be composed of fractional parts of one or more of the exempt quantities in section 30235, provided that the sum of such fractions shall not exceed unity;

(4) For purposes of the exemptions provided in this subsection, the limit for a radioactive source consisting of americium–241 is 0.05 microcuries, and this limit is deemed to be an exempt quantity under section 30235.

(h) The exemptions provided in this section do not apply to persons who apply or incorporate radioactive material into any product described in this section during the manufacture of such product, or who transfer

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or transport such a product up through its first sale. This subsection does not apply to subsequent transfers or sales of such a product.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30180.3. Exempt Quantities.

(a) Except as provided in subsections (c), (d) and (e), a person is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30231 and 30237, and from Group 3 of this subchapter, to the extent that such person receives, possesses, uses, transfers, owns, or acquires radioactive material in individual quantities, each of which does not exceed the applicable quantity set forth in section 30235.

(b) A person, who possesses radioactive material received or acquired before November 12, 1972, under the general license then provided in section 30192(a)(2), is exempt from the requirements for a license specified in section 30190, sections 30191 through 30237, and from Group 3 of this subchapter to the extent that this person possesses, uses, transfers, or owns radioactive material.

(c) This section does not authorize, for purposes of commercial distribution, the packaging, repackaging, or transfer of radioactive material, or the incorporation of radioactive material into a product intended for commercial distribution.

(d) A person may not, for purposes of commercial distribution, transfer radioactive material in the individual quantities set forth in section 30235, knowing or having reason to believe that such quantities of radioactive material will be transferred to persons exempt under this section, except in accordance with a specific license issued by the U.S. Nuclear Regulatory Commission pursuant to section 32.18 in title 10, Code of Federal Regulations, Part 32 (10 CFR 32). This provision shall not be construed to incorporate by reference 10 CFR 32, section 32.18.

(e) A person may not, for purposes of producing an increased radiation level, combine quantities of radioactive material covered by this exemption so that the aggregate quantity exceeds the limits set forth in section 30235, except for radioactive material combined within a device placed in use before May 3, 1999, or as otherwise specified in this regulation.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30180.4. Self–Luminous Products Containing Tritium, Krypton–85, or Promethium–147.

(a) A person is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter, to the extent that such person receives, possesses, uses, transfers, owns, or acquires a self–luminous product containing tritium, krypton–85, or promethium–147, provided that such product was manufactured, processed, produced, or initially transferred in accordance with a specific license issued by the U.S. Nuclear Regulatory Commission pursuant to section 32.22 in title 10, Code of Federal Regulations, Part 32 (10 CFR 32). This provision shall not be construed to incorporate by reference 10 CFR 32, section 32.22.

(b) The exemption provided in subsection (a) does not apply to persons who manufacture or process such a product for sale or distribution.

(c) The exemption provided in subsection (a) does not apply to products primarily used for frivolous purposes or as toys or adornments, containing tritium, krypton–85, or promethium–147.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30180.5. Gas and Aerosol Detectors Containing Radioactive Material.

(a) A person is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter, to the extent that such person possesses or transfers radioactive material in gas and aerosol detectors designed to protect health, safety, or property, provided the detector is manufactured, processed, produced, or initially transferred in accordance with either a specific license issued by the Department prior to November 30, 2007, or by the U.S. Nuclear Regulatory Commission issued in accordance with section 32.26 in title 10, Code of Federal Regulations, Part 32 (10 CFR 32). This provision shall not be construed to incorporate by reference 10 CFR 32, section 32.26.

(b) The exemption in subsection (a) does not apply to persons who manufacture, process, or produce the product specified in subsection (a), or who initially transfer or distribute such a product.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30180.6. Radioactive Drug: Capsules Containing Carbon–14 Urea for "In Vivo" Diagnostic Use for Humans.

(a) A person who receives, possesses, uses, transfers, owns, or acquires capsules containing urea impregnated with carbon–14, which are manufactured for "in vivo" diagnostic use in humans, is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter, provided that each capsule does not exceed one microcurie (allowing for nominal variation that may occur during the manufacturing process) of carbon–14.

(b) Any person who desires to use a capsule described in subsection (a) for research involving human subjects shall hold a specific license issued pursuant to section 30195 authorizing the medical use of radioactive material.

(c) This section shall not be deemed to authorize the manufacturing, preparation, processing, producing, packaging, repackaging, or transferring for commercial distribution of such capsules.

(d) Nothing in this section relieves persons from complying with applicable U.S. Food and Drug Administration requirements, or other Federal and State requirements, governing the receipt, administration, and use of drugs.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30180.7. Certain Industrial Products.

(a) A person is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter, to the extent that such person possesses or transfers radioactive material in industrial devices designed and manufactured for detecting, measuring, gauging or controlling thickness, density, level, interface location, radiation, leakage, or qualitative or quantitative chemical composition, or for producing an ionized atmosphere, provided the device is manufactured, processed, produced, or initially transferred in accordance with a specific license issued by the U.S. Nuclear Regulatory Commission in accordance with section 32.30 in title 10, Code of Federal Regulations, Part 32 (10 CFR 32). This provision shall not be construed to incorporate by reference 10 CFR 32, section 32.30.

(b) The exemption in subsection (a):

(1) Does not cover radioactive material not incorporated into a device, such as calibration and reference sources; and

(2) Does not apply to persons who manufacture, process, or produce the device specified in subsection (a), or who initially transfer or distribute such a product.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30181. Products Containing and Quantities of Source Material.

(a) A person is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter, to the extent that such person receives, possesses, uses, transfers or delivers source material in any chemical mixture, compound, solution, or alloy in which the source material is by weight less than one-twentieth of one percent (0.05 percent) of the mixture, compound, solution or alloy.

(b) A person is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter, to the extent that such person receives, possesses, uses, or transfers unrefined and unprocessed ore containing source material, provided that, except as authorized in a specific license, such person shall not refine or process such ore.

(c) A person is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter, to the extent that such person receives, possesses, uses, or transfers:

(1) The following items or materials containing thorium or uranium:

(A) Incandescent gas mantles, vacuum tubes, welding rods, or electric lamps for illuminating purposes, which do not contain more than 50 milligrams of thorium per item;

(B) Germicidal lamps, sunlamps, and lamps for outdoor or industrial lighting, which do not contain more than 2 grams of thorium per item;

(C) Rare earth metals and compounds, mixtures, and products, which do not contain more than 0.25 percent by weight of thorium, uranium, or any combination of these two radioactive materials; or

(D) Neutron–detecting dosimeters, which do not contain more than 50 milligrams of thorium per dosimeter.

(2) Source material contained in the following products:

(A) Glazed ceramic tableware, provided that the glaze contains not more than 20 percent by weight source material;

(B) Piezoelectric ceramic containing not more than 2 percent by weight source material;

(C) Glassware containing not more than 10 percent by weight source material; but not including commercially manufactured glass brick, pane glass, ceramic tile, or other glass or ceramic used in construction;

(D) Glass enamel or glass enamel frit containing not more than 10 percent by weight source material imported or ordered for importation into the United States, or initially distributed by manufacturers in the United States, before July 25, 1983.

(3) Photographic film, negatives, and prints containing uranium or thorium.

(4) Any finished product or part fabricated of, or containing tungsten or magnesium–thorium alloys, provided that the thorium content of the alloy does not exceed 4 percent by weight. The exemption contained in this subparagraph shall not be deemed to authorize the chemical, physical or metallurgical treatment or processing of any such product or part.

(5) Subject to subsection (d), counterweights which contain uranium and which are designed for installation in aircraft, rockets, projectiles, and missiles, or stored or handled in connection with installation or removal of such counterweights, provided that the following requirements are met:

(A) The counterweights are manufactured in accordance with a specific license issued by the Department;

(B) Each counterweight manufactured on or after December 31, 1969 has been impressed with the following legend clearly legible through any plating or other covering: "Depleted Uranium"; and

(C) Each counterweight manufactured on or after December 31, 1969 is durably and legibly labeled or marked with the identification of the manufacturer, and the statement: "Unauthorized Alterations Prohibited";

(6) A shipping container, or part thereof, containing uranium, whether or not depleted, provided that:

(A) The shipping container is conspicuously and legibly impressed with the legend: "CAUTION—RADIOACTIVE SHIELDING—URANIUM"; and

(B) The uranium metal is encased in mild steel or equally fire resistant metal of minimum wall thickness of one–eighth inch (3.2 mm);

(7) Subject to subsection (e), finished optical lenses containing thorium, provided that each lens does not contain more than 30 percent by weight of thorium.

(8) Any finished aircraft engine part containing thorium in a nickel–thoria alloy, provided that:

(A) The thorium is dispersed in the nickel–thoria alloy in the form of finely divided thoria (thorium dioxide); and

(B) The thorium content in the nickel–thoria alloy does not exceed four percent by weight.

(d) The exemption contained in subsection (c)(5) shall not be deemed to authorize the chemical, physical, or metallurgical treatment or processing of any such counterweights, other than the repair or restoration of any plating or other covering.

(e) The exemption contained in subsection (c)(7) shall not be deemed to authorize either:

(1) The shaping, grinding or polishing of such lens or manufacturing processes, other than the assembly of such lens into optical systems and devices without any alteration of the lens; or

(2) The receipt, possession, use, or transfer, of thorium contained in contact lenses, or in spectacles, or in eyepieces in binoculars or other optical instruments.

(f) The exemptions in subsection (c) do not authorize the manufacture of any of the products described therein.

(g) A person is exempt from the requirements for a license specified in section 30190 and sections 30191 through 30237, and from Group 3 of this subchapter, to the extent that such person receives, possesses, uses, or transfers detector heads, used in fire detection units, which contain uranium, provided that each detector head contains not more than 0.005 microcurie of uranium. This exemption does not authorize the manufacture of any detector head containing uranium.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1). For prior history, see Register 86, No. 28.

§ 30182. Other Exemptions. [Repealed]

HISTORY

1. Repealer filed 11–25–85; effective thirtieth day thereafter (Register 85, No. 48).

Article 4. Licenses

§ 30190. Types of Licenses.

(a) Department licenses for radioactive material are of two types: general and specific.

(b) General licenses provided in this regulation are effective without the filing of an application with the Department or the issuance of licensing documents to particular persons, except that any person to whom a general license is issued pursuant to sections 30192.1 and 30192.6 shall be subject to the registration requirements specified in section 30108.1.

(c) Specific licenses are issued to named persons upon approval of an application filed pursuant to this regulation. A specific license issued by the Department is required by any person to possess any radioactive material in this state, except as otherwise provided in sections 30180, 30180.1, 30180.2, 30180.3, 30180.4, 30180.5, 30180.6, 30180.7, 30181, 30191, 30192.1, 30192.2, 30192.3, 30192.4, 30192.5, 30192.6, 30192.7, 30225, or 30226.

(d) Every specific and general license is subject to all applicable provisions of this regulation and, except as otherwise specified, to the provisions of Group 3 of this subchapter (Standards for Protection Against Radiation).

NOTE: Authority cited: Sections 114970, 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114970, 115060, 115165, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Repealer of Article 4 (Sections 30190 through 30205) and new Article 4 (Sections 30190 through 30198 and 30205) filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For prior history, see Register 62, No. 1.
2. Amendment of subsections (b) and (c) and new NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).
3. Amendment subsection (c) filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30191. General Licenses–Source Material.

(a) A general license is hereby issued to commercial firms, educational institutions, and medical institutions and government agencies, authorizing the possession, use, and transfer of not more than 15 pounds of source material at any one time, for research, development, educational, commercial or operational purposes. Persons authorized to possess, use, or transfer source material pursuant to this general license may not receive more than a total of 150 pounds of source material in any one calendar year. With respect to such source material, any person shall be exempt from the provisions of Group 3 of this subchapter, except for sections 30254 and 30293(a), unless such person also possesses source material under a specific license.

(b) A general license described in subsection (a) shall not authorize human use, or the use in any device or article which is intended to be placed on or in the human body, or the use of any instrument or apparatus (including component parts and accessories thereto) intended for human use.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 114985(g), 115000, 115060, 115165, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New NOTE filed 8–22–84 (Register 84, No. 34).
2. Amendment filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
3. Change without regulatory effect inserting (a) to first paragraph filed 11–1–91 pursuant to section 100, title 1, California Code of Regulations (Register 92, No. 5).
4. Amendment of subsection (a) and NOTE filed 9–9–97; operative 10–9–97 (Register 97, No. 37).
5. Amendment of section and NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).

§ 30192. General Licenses—Static Elimination or Ion Generation Devices. [Repealed]

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 114985(g), 115060, 115165, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of subsection (c) and new subsection (f) filed 11–16–67; effective thirtieth day thereafter (Register 67, No. 46).
2. Amendment of subsection (c)(1) filed 5–13–66; effective thirtieth day thereafter (Register 69, No. 20).
3. Repealer of subsections (a)(1)(B) and (a)(1)(C), renumbering of (a)(1)(D) to (a)(1)(B), new subsection (a)(3) and amendment of subsection (b) filed 7–22–71; effective thirtieth day thereafter (Register 71, No. 30).
4. Repealer of subsections (a)(2) and (b)(2) filed 10–12–72; effective thirtieth day thereafter (Register 72, No. 42).
5. Amendment of subsection (a)(3) filed 10–11–74; effective thirtieth day thereafter (Register 74, No. 41).
6. Repealer and new section filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
7. Amendment of subsection (b) and NOTE filed 9–9–97; operative 10–9–97 (Register 97, No. 37).
8. Editorial correction restoring inadvertently deleted HISTORIES (Register 97, No. 45).
9. Amendment of section and NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).
10. Repealer filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30192.1. General Licenses—Gauging and Controlling.

(a) A general license is hereby issued to commercial and industrial firms, research, educational and medical institutions, individuals in the conduct of their business, and government agencies, to acquire, receive, possess, use or transfer, in accordance with this section, radioactive material contained in devices designed and manufactured for the purpose of detecting, measuring, gauging or controlling thickness, density, level, interface location, radiation, leakage, or qualitative or quantitative chemical composition, or for producing light or an ionized atmosphere.

(b) The general license issued pursuant to subsection (a) applies only to radioactive material contained in devices which have been manufactured or initially transferred and labeled in accordance with the provisions of:

(1) A specific license, which authorizes distribution of the device, issued by the Department pursuant to section 30196;

(2) An equivalent specific license issued by an Agreement State other than this State; or

(3) A specific license issued by the United States Nuclear Regulatory Commission (NRC) under section 32.51 of title 10, Code of Federal Regulations (10 CFR), Part 32.

(c) Devices described in subsection (a) shall have been received from one of the specific licensees described in subsection (b), or through a transfer made pursuant to subsection (d)(12).

(d) Persons who acquire, receive, possess, use or transfer a device under the general license issued pursuant to subsection (a) shall:

(1) Register and renew registration pursuant to section 30108.1 any devices containing at least 10 millicuries (mCi) of cesium–137, 0.1 mCi of strontium–90, 1 mCi of cobalt–60, 0.1 mCi of radium–226, or 1 mCi of americium–241 or any other transuranic (i.e., an element with atomic number greater than uranium (92)), based on the activity indicated on the label. The licensee shall be subject to the reporting requirement in section 30108.1(c) for such devices;

(2) Ensure that all labels affixed to the device at the time of receipt and bearing a statement that removal of the label is prohibited are maintained thereon, and comply with all instructions and precautions provided by such labels;

(3) Ensure that the device is tested for leakage of radioactive material and that the on–off mechanism and indicator, if any, operate as designed. These tests shall be performed at intervals no longer than six months or at such other intervals as are specified in the device's label. However:

(A) Devices containing only krypton need not be tested for leakage; and

(B) Devices containing only tritium, or not more than 100 microcuries (uCi) of other beta and/or gamma emitting material or 10 uCi of alpha emitting material, and devices held in storage in the original shipping container prior to initial installation, need not be tested for any purpose;

(4) Ensure that the tests required by subsection (d)(3) and any testing, installation, servicing, and removal from installation involving the radioactive material, its shielding, or containment, are performed:

(A) In accordance with the instructions provided by the device's labels; or

(B) By a person holding a specific license issued by the Department or an Agreement State other than this State, authorizing the licensee to perform those activities;

(5) Maintain records showing compliance with the requirements of subsections (d)(3) and (d)(4), to include the results of tests, the dates of performance of tests, and the names of the persons performing testing, installing, servicing, and removing from the installation radioactive material, its shielding, or containment. The licensee shall retain records of tests required by:

(A) Subsection (d)(3) for three years after the next required test for leakage and test of the on–off mechanism and indicator is performed, or until the sealed source is transferred or disposed of; and

(B) Subsection (d)(4) for three years from the date of the recorded event or other test, or until the device is transferred or disposed of;

(6) Immediately suspend operation of the device if there is a failure of, or damage to, or any indication of a possible failure of or damage to, the shielding of the radioactive material or the on–off mechanism or indicator, or upon the detection of 0.005 uCi or more of removable radioactive material. The device shall not be operated until it has been repaired by the manufacturer or a person holding a specific license issued by the Department, the NRC, or an Agreement State other than this State, authorizing the licensee to repair the device. The device, and any radioactive material from the device, may only be disposed of in accordance with subsection (d)(10);

(7) Within 30 calendar days of an event specified in subsection (d)(6), submit a report to the Department containing:

(A) A brief description of the event and the remedial action taken; and

(B) If removable radioactive material greater than or equal to 0.005 uCi has been detected, or failure of or damage to a sealed source is likely to result in contamination of the premises or the environs, a plan to ensure that the premises and environs are acceptable for unrestricted use;

(8) Not abandon the device;

(9) Not export the device except in accordance with an export license issued by the NRC pursuant to 10 CFR, Part 110. This provision shall not be construed to incorporate by reference 10 CFR, Part 110;

(10) Transfer or dispose of the device only:

(A) By export as provided by subsection (d)(9);

(B) By transfer to a specific licensee authorized to receive such device or another general licensee as authorized in subsection (d)(12); or

(C) After obtaining written Department approval authorizing transfer or disposal to any other specific licensee not specifically identified in subsection (d)(10)(A) or (B), except that a holder of a specific license may transfer a device for possession and use under its own specific license without prior approval, if the holder:

1. Verifies that the specific license authorizes the possession and use, or pursuant to section 30194.2 applies for and obtains an amendment to the license authorizing the possession and use;

2. Removes, alters, covers, or clearly and unambiguously augments the existing label (otherwise required by subsection (d)(2)), so that the device is labeled in compliance with section 20.1904 of 10 CFR, Part 20, incorporated by reference in section 30253; however, the manufacturer, model number, and serial number shall be retained;

3. Obtains the manufacturer's or initial transferor's information concerning maintenance that would be applicable under the specific license (such as leak testing procedures); and

4. Reports the transfer under subsection (d)(11);

(11) Within 30 calendar days after transfer of a device pursuant to subsection (d)(10), submit a report to the Department containing the:

(A) Identification of the device by manufacturer's (or initial transferor's) name, model number, and serial number;

(B) Name, address, and license number of the person receiving the device (license number not applicable if exported); and

(C) Date of the transfer;

(12) Transfer the device to another general licensee only if:

(A) The device remains in use at a particular location. In this case, the transferor shall give the transferee a copy of this section, sections 30108.1, 30254, 30257 and 30293(a) of this subchapter, sections 20.2201 and 20.2202 of 10 CFR, Part 20, incorporated by reference in section 30253, and any safety documents identified in the label of the device. Within 30 calendar days of the transfer, the transferor shall submit a report to the Department containing:

1. The manufacturer's (or initial transferor's) name;

2. The model number and the serial number of the device transferred;

3. The transferee's name and mailing address for the location of use; and

4. The name, title, and phone number of the responsible individual identified by the transferee pursuant to subsection (d)(15); or

(B) The device is held in storage by an intermediate person in the original shipping container at its intended location of use, prior to initial use by a general licensee;

(13) Comply with sections 20.2201 and 20.2202 of 10 CFR, Part 20, incorporated by reference in section 30253, for reporting radiation incidents, theft or loss of licensed material, but shall be exempt from other requirements in Group 3 of this subchapter, except for sections 30257 and 30293(a);

(14) Upon Department request, provide information relating to the general license within 30 calendar days of the date of the request, or other time specified in the request. If the general licensee is unable to provide the requested information within the allotted time, a request for extending that time shall be submitted prior to the end of the allotted time, and the request for an extension of time shall include a written justification as to why the allotted time should be extended;

(15) Appoint an individual responsible for having knowledge of required actions and authority for taking required actions, so as to comply with this section and all sections cited or referenced within this section. Appointment of the responsible individual does not relieve the general licensee of any of its own responsibility for complying with the Act and this subchapter; and

(16) Not hold devices that are not in use for longer than two years. If devices with shutters are not being used, the shutter shall be locked in the closed position. The testing required by subsection (d)(3) need not be performed during the period of storage. However, when devices are put back into service or transferred to another person, and have not been tested within the required test interval, they shall be tested for leakage before use or transfer, and the shutter tested before use. Devices kept in standby for future use are excluded from the two–year time limit if the general licensee performs quarterly physical inventories of these devices while they are in standby.

(e) The general license issued pursuant to this section does not authorize the manufacture or import of devices containing radioactive material.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 114985(g), 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
2. Change without regulatory effect of subsection (b)(5) (Register 88, No. 6).
3. Amendment of subsection (c) and NOTE filed 9–9–97; operative 10–9–97 (Register 97, No. 37).
4. Repealer and new section and amendment of NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).
5. Amendment subsection (b)(1) filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30192.2. General Licenses—Aircraft Safety Devices.

(a) A general license is hereby issued to any person to possess, own, receive, acquire and use tritium or promethium–147 contained within luminous safety devices designed for use in aircraft, provided that each such device contains not more than 10 curies of tritium or 300 millicuries of promethium–147 and provided further that each such device has been manufactured, assembled, initially transferred or imported in accordance with a specific license authorizing distribution to general licensees.

(b) The general license issued pursuant to subsection (a) does not authorize:

(1) The manufacture, assembly, disassembly, repair, import or disposal of such devices;

(2) The export of luminous safety devices containing tritium or promethium–147;

(3) The use of such devices other than in aircraft; and

(4) The possession, ownership, receipt, acquisition, or use of promethium–147 contained in instrument dials.

(c) Persons who possess a device under the general license issued pursuant to subsection (a) shall, with respect thereto, be exempt from the requirements of Group 3 of this subchapter except for sections 30254 and 30293(a) of this subchapter and sections 20.2201 and 20.2202 of title 10, Code of Federal Regulations, Part 20, incorporated by reference in section 30253.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 114985(g), 115000, 115060, 115165, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
2. Amendment of subsection (c) and NOTE filed 9–9–97; operative 10–9–97 (Register 97, No. 37).
3. Amendment of section and NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).

§ 30192.3. General Licenses—Calibration or Reference Sources.

(a) A general license is hereby issued to persons who hold either a specific license issued by the Department for any radioactive material, or a specific license issued by the United States Nuclear Regulatory Commission for any radioactive material, to possess americium–241, plutonium, or radium 226 in the form of calibration or reference sources. Calibration or reference sources shall be manufactured in accordance with the specifications contained in an appropriate specific license, which authorizes distribution under a general license. Each source possessed pursuant to the general license or its storage container shall bear a label, which includes the information required in the following statement:

"The receipt, possession, use and transfer of this source, Model ____, Serial No. ____, are subject to a general license or its equivalent, and are further subject to the regulations of the United States Nuclear Regulatory Commission or a state with which the United States Nuclear Regulatory Commission has entered into an agreement for the exercise of regulatory authority. Removal of this label is prohibited.

CAUTION: RADIOACTIVE MATERIAL THIS SOURCE CONTAINS (AMERICIUM–241, PLUTONIUM, OR RADIUM–226, whichever is appropriate). DO NOT TOUCH RADIOACTIVE PORTION OF THIS SOURCE.

_____"

(Name of Manufacturer or Importer)

(b) Persons who possess a source under the general license issued pursuant to subsection (a) shall:

(1) Not have, at any one time, at any one location of storage or use, more than 5 microcuries of americium–241, 5 microcuries of plutonium, or 5 microcuries of radium–226 contained in such sources.

(2) Not transfer, abandon or dispose of such sources, except by transfer to a person authorized by a license to receive the source.

(3) With respect to each such source when not in use, store the source in a closed container adequately designed and constructed to contain any of the radioactive material in the event the source is ruptured or leaks.

(4) Not use such source for any purpose other than calibration of radiation detectors or standardization of other sources.

(c) Persons who possess a source under the general license issued pursuant to subsection (a) shall, with respect thereto, be exempt from the requirement of Group 3 of this subchapter, except for sections 30253, 30254, 30255, 30275(a) and (b), 30293, and 30295.

(d) The general license issued pursuant to subsection (a) does not authorize the manufacture, import, or export of calibration or reference sources containing americium 241, plutonium, or radium–226 or the introduction of americium 241, plutonium, or radium 226 into any product or material.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 114985(g), 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
2. Amendment of subsection (c) and NOTE filed 9–9–97; operative 10–9–97 (Register 97, No. 37).
3. Amendment of section and NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).

§ 30192.4. General Licenses—Ice Detection Devices.

(a) A general license is hereby issued to any person to possess, own, receive, acquire, use, or transfer strontium–90 contained in ice detection devices, provided that each device contains not more than 50 microcuries of strontium–90, and provided further that each device has been manufactured or imported in accordance with a specific license which authorizes distribution under a general license.

(b) Persons who possess, own, receive, acquire, use or transfer a device under the general license issued pursuant to subsection (a) shall:

(1) Assure that all labels affixed to the device at the time of receipt, and which bear a statement that prohibits removal of the labels, are maintained thereon; and

(2) Immediately upon occurrence of damage, discontinue use of the device until it has been inspected, tested for leakage, and repaired by a person holding a specific license authorizing such testing or repair; or dispose of the device pursuant to section 20.2001 of title 10, Code of Federal Regulations, Part 20 (10 CFR 20), incorporated by reference in section 30253.

(c) Persons who possess, own, receive, acquire, use, or transfer a device under the general license issued pursuant to subsection (a) shall, with respect thereto, be exempt from the requirements of Group 3 of this subchapter, except for sections 30254 and 30293(a) of this subchapter and sections 20.2001, 20.2201 and 20.2202 of 10 CFR 20, incorporated by reference in section 30253.

(d) This general license does not authorize the manufacture, assembly, disassembly, repair, or import of ice detection devices containing strontium–90.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 114985(g), 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
2. Amendment of subsection (c) and NOTE filed 9–9–97; operative 10–9–97 (Register 97, No. 37).
3. Amendment of section and NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).

§ 30192.5. General Licenses—In Vitro Testing.

(a) A general license is hereby issued to any physician, veterinarian, clinical laboratory or hospital to possess and use radioactive material in prepackaged units for in vitro clinical testing, not exceeding the following:

Radionuclide	*Maximum uCi* per unit*	*Maximum uCi total*
Tritium	50	2,000
Carbon–14	10	2,000
Iron–59	20	200
Selenium–75	10	200
Cobalt–57	10	200
Iodine–125 or Iodine–131	10	200
Mock Iodine–125 Reference Source		
Iodine–129	0.05	
Americium–241	0.005	

* microcurie (uCi)

(b) The general licensee shall not possess or use radioactive material under the general license issued pursuant to subsection (a):

(1) Except as prepackaged units which are labeled in accordance with the provisions of a specific license issued by the United States Nuclear Regulatory Commission or a state with which the United States Nuclear Regulatory Commission has entered into an agreement for the exercise of regulatory authority; and

(2) Unless the prepackaged unit bears a label or is accompanied by a package insert containing the following or a substantially similar statement:

"This radioactive material may be received and used only by physicians, veterinarians, clinical laboratories or hospitals, and only for in vitro clinical or laboratory tests not involving internal or external administration of the material or the radiation therefrom to human beings or

animals. The receipt, possession, use and transfer of this material is subject to the regulations and general license of the United States Nuclear Regulatory Commission or a state with which the Commission has entered into an agreement for the exercise of regulatory authority."

(c) Persons who possess radioactive material under the general license issued pursuant to subsection (a), shall, with respect thereto, be exempt from the requirements of Group 3 of this subchapter, except that persons using Mock Iodine–125 shall comply with sections 20.2001, 20.2201 and 20.2202 of title 10, Code of Federal Regulations, Part 20, incorporated by reference in section 30253.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 114985(g), 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
2. Amendment of subsection (c) and NOTE filed 9–9–97; operative 10–9–97 (Register 97, No. 37).
3. Amendment of section and NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).
4. Editorial correction amending column heading in subsection (a) (Register 2011, No. 24).

§ 30192.6. General Licenses—Depleted Uranium.

(a) A general license is hereby issued to any person to receive, acquire, transfer, possess or use depleted uranium contained in industrial products or devices, for the purpose of providing a concentrated mass of the product or device, when such products or devices are manufactured pursuant to a specific license authorizing distribution to general licensees.

(b) Persons who receive, acquire, use, transfer or possess depleted uranium under the general license issued pursuant to subsection (a) shall:

(1) Register in accordance with section 30108.1;

(2) Not introduce such depleted uranium into any chemical, physical or metallurgical treatment or process, other than a treatment or process for repair or restoration of any plating or other covering of the depleted uranium;

(3) Develop, implement and maintain procedures designed to establish physical control over such depleted uranium in order to prevent its unauthorized use or transfer in any form, including metal scrap;

(4) Appoint an individual responsible for having knowledge of required actions and authority for taking required actions, so as to comply with this section and all sections cited or referenced within this section. Appointment of the responsible individual does not relieve the general licensee of any of its own responsibility for complying with the Act and this subchapter;

(5) Not abandon such depleted uranium;

(6) Transfer or dispose of such depleted uranium only by transfer in accordance with sections 30210 and 30210.1.

(7) Within 30 calendar days of any transfer, report in writing to the Department the transferee's name and address.

(c) Persons who possess, receive, acquire, transfer or use depleted uranium under the general license issued pursuant to subsection (a) shall, with respect thereto, be exempt from the requirements of Group 3 of this subchapter.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 114985(g), 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
2. Amendment of subsection (c) and NOTE filed 9–9–97; operative 10–9–97 (Register 97, No. 37).
3. Amendment of section and NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).

§ 30192.7. General Licenses — Items and Self–Luminous Products Containing Radium–226.

(a) A general license is hereby issued to any person to acquire, receive, possess, use, or transfer, in accordance with subsections (b), (c), and (d), radium–226 contained in the following products manufactured prior to November 30, 2007:

(1) Antiquities originally intended for use by the general public. For the purposes of this paragraph, antiquities mean products originally intended for use by the general public and distributed in the late 19th and early 20th centuries, such as radium emanator jars, revigators, radium water jars, radon generators, refrigerator cards, radium bath salts, and healing pads;

(2) Intact timepieces containing greater than one microcurie, nonintact timepieces, and timepiece hands and dials no longer installed in timepieces;

(3) Luminous items installed in air, marine, or land vehicles;

(4) All other luminous products, provided that no more than 100 items are used or stored at the same location at any one time; and

(5) Small radium sources containing not more than one microcurie of radium–226. For purposes of this paragraph, "small radium sources" means discrete survey instrument check sources, sources contained in radiation measuring instruments, sources used in educational demonstrations (such as cloud chambers and spinthariscopes), electron tubes, lightning rods, ionization sources, static eliminators, or other sources as designated by the U.S. Nuclear Regulatory Commission (NRC).

(b) Persons who acquire, receive, possess, use, or transfer radioactive material under the general license issued pursuant to this section are exempt from the provisions of Group 3 of this subchapter, to the extent that the receipt, possession, use, or transfer of radioactive material is within the terms of the general license; provided, however, that this exemption shall not be deemed to apply to any such person specifically licensed under this subchapter.

(c) Any person who acquires, receives, possesses, uses, or transfers radioactive material in accordance with the general license issued pursuant to subsection (a) shall:

(1) Notify the Department should there be any indication of possible damage to the product so that it appears it could result in a loss of the radioactive material. A report containing a brief description of the event, and the remedial action taken, shall be submitted within 30 days of the event;

(2) Not abandon products containing radium–226. The product, and any radioactive material from the product, may only be disposed of by transfer to a person authorized pursuant to a specific license to receive the radium–226 in the product, or as otherwise approved by the Department;

(3) Not export products containing radium–226 except in accordance with an export license issued by NRC pursuant to 10 CFR Part 110. This provision shall not be construed to incorporate by reference 10 CFR Part 110;

(4) Dispose of products containing radium–226 by transfer to a person authorized to receive radium–226 pursuant to a specific license issued by the Department or NRC, or equivalent regulations of an Agreement State, or as otherwise approved by the Department; and

(5) Upon Department request, provide information relating to the general license within 30 calendar days of the date of the request, or such other time specified in the request. If the general licensee is unable to provide the requested information within the allotted time, a request for extending that time shall be submitted prior to the end of the allotted time, and the request for an extension of time shall include a written justification as to why the allotted time should be extended.

(d) The general license issued pursuant to this section does not authorize the manufacture, assembly, disassembly, repair, or import of products containing radium–226, except that timepieces may be disassembled and repaired.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 114985(g), 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30193. Application for Specific Licenses and Amendments. [Repealed]

NOTE: Authority cited: Sections 102, 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25805, 25815, 25855, 25875 and 25876, Health and Safety Code.

HISTORY

1. Repealer filed 7–8–87; operative 8–7–87 (Register 87, No. 29).

§ 30194. Approval of Applications and Specific Terms and Conditions for Specific Licenses.

(a) An application for a new specific license or for renewal or amendment of an existing license will be approved if the Department determines that:

(1) the applicant or his specified personnel are qualified by reason of training and experience to use radioactive material of the kinds and quantities and for the purposes requested, in such a manner as to provide reasonable and adequate assurance of protection to health, life, and property;

(2) the applicant's equipment, facilities, proposed uses and procedures are such as to provide reasonable and adequate assurance of protection to health, life, and property;

(3) the issuance of the license will not jeopardize the health and safety of the public;

(4) the applicant satisfies all applicable requirements of the Act and regulations thereunder.

(b) Prior to issuing, amending or renewing a license pursuant to the provisions of this subchapter, the Department may inspect at any reasonable time the place of business, or premises and facilities of any applicant in order to verify information contained in the application or to obtain additional information for the purpose of completing the application.

(c) No license or any right under a license shall be assigned or otherwise transferred unless approved in advance by the Department. The request for transfer of a license shall include the identity and technical and financial qualifications of the proposed transferee, and the financial assurance for decommissioning information required by section 30195.1.

(d) Each licensee shall restrict possession of licensed material to the locations and conditions of the use authorized in the license.

(e) Each specific license shall expire on the expiration date specified as a condition of the license. However, the license shall continue to be valid if a timely application for renewal is filed. An application for renewal shall be timely if filed at least 30 days prior to the expiration date. The existing license shall not expire until the department has taken final action on the timely filed application for renewal.

(f) Applications and documents submitted shall be made available for public inspection except where the applicant identifies portions of the application as "trade secret" and the Department finds that the information is "trade secret" pursuant to provisions of the Public Records Act and Evidence Code Section 1060.

(g) As provided by Section 30195.1, certain applications for specific licenses filed under Group 2 shall contain a proposed decommissioning funding plan or a certification of financial assurance for decommissioning.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment filed 7–8–87; operative 8–7–87 (Register 87, No. 29).
2. New subsection (g) filed 10–16–95 as an emergency; operative 10–16–95 (Register 95, No. 42). A Certificate of Compliance must be transmitted to OAL by 2–13–96 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 10–16–95 order, including amendment of NOTE, transmitted to OAL 2–9–96 and filed 3–25–96 (Register 96, No. 13).
4. Amendment section heading, subsections (c) and (g) and NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30194.1. Criteria for Authorizing Multiple Locations of Use.

Criteria for authorizing more than one location of use on a specific license shall be as follows:

(a) All locations shall be under the same business entity.

(b) The radiation protection program required by section 20.1101 of Title 10, Code of Federal Regulations, Part 20 as incorporated by reference in section 30253 shall demonstrate that use of radioactive materials at each location shall be in accordance with this regulation.

(c) A single location where licensing and compliance records will be maintained for Department review shall be designated.

(d) The nature of radioactive materials use and the operations shall be the same at all locations.

NOTE: Authority cited: Sections 100275 and 115000, Health and Safety Code. Reference: Sections 114965, 114970, 115060 and 115165, Health and Safety Code.

HISTORY

1. New section filed 6–22–2005 as an emergency; operative 6–22–2005 (Register 2005, No. 25). A Certificate of Compliance must be transmitted to OAL by 10–20–2005 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 6–22–2005 order transmitted to OAL 9–20–2005 and filed 10–18–2005 (Register 2005, No. 42).

§ 30194.2. Amendment Requests.

To amend an existing license, a licensee shall submit a written request to the Department containing:

(a) The licensee's name and license number as shown on the specific license.

(b) The nature and scope of the request.

(c) The reasons for the request and supporting justifications including any documents relied upon.

(d) If the request proposes to increase the maximum possession limit specified on the license, the request shall include the fee specified in section 30231(c).

NOTE: Authority cited: Sections 100275 and 115000, Health and Safety Code. Reference: Sections 114965, 114970, 115060 and 115165, Health and Safety Code.

HISTORY

1. New section filed 6–22–2005 as an emergency; operative 6–22–2005 (Register 2005, No. 25). A Certificate of Compliance must be transmitted to OAL by 10–20–2005 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 6–22–2005 order transmitted to OAL 9–20–2005 and filed 10–18–2005 (Register 2005, No. 42).

§ 30195. Special Requirements for Issuance of Specific Licenses.

In addition to the requirements set forth in Section 30194, specific licenses for certain specialized uses will be issued only if the following conditions are met:

(a) For human use of radioactive material limited to medical purposes, the applicant submits documentation demonstrating that they are capable of complying with the regulations governing the medical use of radioactive material in title 10, Code of Federal Regulations, Part 35 (10 CFR 35) (January 1, 2013), which is hereby incorporated by reference with the exceptions listed at subsections (a)(1) through (a)(15) below, and upon issuance of a license maintains compliance with said regulations:

(1) Title 10, Code of Federal Regulations, sections 35.1, 35.5, 35.7, 35.8, 35.10, 35.11(c), 35.12, 35.13, 35.14, 35.15, 35.18, 35.19, 35.26, 35.65, 35.4001, and 35.4002 are not incorporated by reference.

(2) Any references to the United States Nuclear Regulatory Commission (NRC) or any component thereof shall be deemed to be a reference to the "Department" as defined in section 30100 of this regulation.

(3) Any reference to 10 CFR 35, section 35.5 shall be deemed to be a reference to section 30293 of this regulation.

(4) Any reference to "Person" in 10 CFR 35 shall be deemed to be a reference to the term "Person" as defined in section 114985(c) of the Health and Safety Code.

(5) Any reference to "Licensee" in 10 CFR 35 shall be deemed to be a reference to the term "User" as defined in section 30100 of this regulation.

(6) Any reference to "Byproduct material" in 10 CFR 35 is replaced by the term "Radioactive Material" as defined in section 30100 of this regulation.

(7) The definition of the term "Agreement State" in 10 CFR 35, section 35.2 is replaced by the definition of the term "Agreement State" as defined in section 30100 of this regulation.

(8) The definition of the term "Sealed source" in 10 CFR 35, section 35.2 is replaced by the definition of the term "Sealed source" as defined in section 30100 of this regulation.

(9) The definition of the term "Dentist" in 10 CFR 35, section 35.2 is modified to mean an individual possessing a current and valid license to practice as a dentist pursuant to the California Dental Practice Act specified in Business and Professions Code Section 1600 et seq.

(10) The definition of the term "Pharmacist" in 10 CFR 35, section 35.2 is modified to mean an individual possessing a current and valid license to practice as a pharmacist pursuant to the California Pharmacy Law specified in Business and Professions Code Section 4000 et seq.

(11) The definition of the term "Podiatrist" in 10 CFR 35, section 35.2 is modified to mean an individual possessing a current and valid license to practice as a podiatrist pursuant to California Business and Professions Code sections 2460 et seq.

(12) The definition of the term "Physician" in 10 CFR 35, section 35.2 is modified to mean an individual possessing a current and valid license to practice as a physician and surgeon or as an osteopathic physician and surgeon pursuant to the California Medical Practice Act specified in Business and Professions Code Section 2000 et seq.

(13) The reference to section 19.12 found in 10 CFR 35, section 35.27(b)(1) shall be deemed to be a reference to section 30255 of this regulation.

(14) The date January 1, 2011 is substituted for the date October 24, 2002 found in 10 CFR 35, section 35.57(a)(1) and (b)(1). Subdivisions (a)(2) and (b)(2) of 10 CFR 35, section 35.57 are replaced by the following:

(A) "An individual identified as a Radiation Safety Officer, an authorized medical physicist, or an authorized nuclear pharmacist, and physicians, dentists, or podiatrists identified as authorized users for the medical use of radioactive material on a license or an NRC or Agreement State license or a permit issued by a Department, NRC or Agreement State broad scope licensee or NRC master material license permit or by an NRC master material license permittee of broad scope before January 1, 2011 who perform only those medical uses for which they were authorized, need not comply with the training requirements of 10 CFR 35, sections 35.50, 35.51, or 35.55, and subparts D through H of 10 CFR 35, respectively."

(15) Nothing in this incorporation by reference shall be construed to authorize the Department to approve of specialty boards or medical specialty boards for meeting training requirements specified in 10 CFR 35.

(b) For use of multiple quantities of types of radioactive material for research and development or for processing for distribution:

(1) The applicant has a radiation safety committee of at least three members which must evaluate all proposals for, and maintain surveillance over, all uses of radioactive material. Committee members shall be knowledgeable and experienced in pertinent kinds of radioactive material use and in radiation safety.

(2) The applicant has a radiation safety officer, who is a member of the radiation safety committee, and who is supported by a staff of a size and degree of competence appropriate to deal with radiation safety problems that might be encountered.

(3) The applicant furnishes a detailed statement of the qualifications, duties, authority, and responsibilities of the radiation safety committee and of the staff radiation safety group.

(c) Except as provided in paragraphs (1), (2), and (3), for use of radioactive material in the form of a sealed source or in a device that contains the sealed source, the application either identifies the source or device by the manufacturer and model number by which the source or device was registered with either the Department, pursuant to section 32.210 of title 10, Code of Federal Regulations, Part 32 (10 CFR 32.210), incorporated by reference in section 30196, the U.S. Nuclear Regulatory Commission (NRC), or an Agreement State other than this state; or provides the information identified in 10 CFR 32.210(c), incorporated by reference in section 30196:

(1) For sources or devices manufactured before October 23, 2012 that are not registered with the Department under 10 CFR 32.210, incorporated by reference in section 30196, or with an Agreement State, and for which the applicant is unable to provide all categories of information specified in 10 CFR 32.210(c), the applicant provides:

(A) All available information identified in 10 CFR 32.210(c), incorporated by reference in section 30196, regarding the source, and, if applicable, the device; and

(B) Sufficient additional information to demonstrate that there is reasonable assurance that the radiation safety properties of the source or device are adequate to protect health and minimize danger to life and property. Such information shall include a description of the source or device, a description of radiation safety features, the intended use and associated operating experience of the applicant, and the results of a recent leak test;

(2) For sealed sources and devices allowed to be distributed without registration of safety information in accordance with 10 CFR 32.210(g)(1), incorporated by reference in section 30196, the applicant may supply only the manufacturer, model number, and radionuclide and quantity; and

(3) If it is not feasible to identify each sealed source and device individually, the applicant may propose constraints on the number and type of sealed sources and devices to be used and the conditions under which they will be used, in lieu of identifying each sealed source and device.

(d) An application from a medical facility or educational institution to produce Positron Emission Tomography (PET) radioactive drugs for noncommercial transfer to licensees in its consortium, as defined in section 30195.4(b), that are authorized for medical use pursuant to subsection (a), includes:

(1) A request for authorization for the production of PET radionuclides, or evidence of an existing license issued by the Department, the NRC under 10 CFR 30, or an Agreement State other than this State for a PET radionuclide production facility within its consortium from which it receives PET radionuclides;

(2) Evidence that the applicant is qualified to produce radioactive drugs for medical use by meeting one of the criteria in 10 CFR 32.72(a)(2), incorporated by reference in section 30196;

(3) Information identified in 10 CFR 32.72(a)(3), incorporated by reference in section 30196 regarding the PET drugs to be noncommercially transferred to members of its consortium; and

(4) If the applicant is a pharmacy, in addition to satisfying the requirements in paragraphs (1), (2), and (3), the applicant shall also provide identification of all individuals authorized to prepare the PET radioactive drugs and documentation that each individual meets the requirements of an authorized nuclear pharmacist as specified in 10 CFR 32.72(b)(2), incorporated by reference in section 30196.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115165, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Repealer and new subsection (c) filed 10–12–72; effective thirtieth day thereafter (Register 72, No. 42).
2. Repealer of subsection (c) filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
3. Change without regulatory effect amending subsection (d) filed 11–1–91 pursuant to section 100, title 1, California Code of Regulations (Register 92, No. 5).
4. Repealer of subsections (a)–(b)(2), new subsections (a)–(a)(15), subsection relettering and amendment of NOTE filed 10–13–2010; operative 1–1–2011 (Register 2010, No. 42).
5. Editorial correction of subsection (a)(14) (Register 2010, No. 45).

6. Amendment subsections (a), (a)(14) and (a)(14)(A), repealer of subsections (c)–(c)(2) and new subsections (c)–(d)(4) filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30195.1. Special Requirements for Issuance of Specific Licenses—Financial Surety for Decommissioning.

(a) The regulations governing financial assurance for decommissioning in Title 10, Code of Federal Regulations (10 CFR), section 30.35 (January 1, 2007) and Appendices A through E of 10 CFR Part 30 referenced in section 30.35, are hereby incorporated by reference with the following exceptions:

(1) Subsection 30.35(g) is not incorporated by reference.

(2) The phrase "byproduct material" shall include all "radioactive material" as defined in Title 17, California Code of Regulations, section 30100, except source material which shall be governed by subsection (b).

(3) The date "January 1, 1996" is substituted for the date "July 27, 1990."

(4) Any reference to the United States Nuclear Regulatory Commission (NRC) or any component thereof shall be deemed to be a reference to the Department.

(5) Any reference to 10 CFR section 30.37 shall be deemed to be a reference to Section 30194.

(6) The date "January 1, 1998" is substituted for the date "November 24, 1995."

(7) The date "January 1, 2010" is substituted for the date "December 2, 2004."

(8) The date "July 1, 2010" is substituted for the date "June 2, 2005."

(9) The date "January 1, 2011" is substituted for the date "December 2, 2005."

(10) The reference to 10 CFR section 20.303 found in the Note of Appendix B of 10 CFR Part 30 shall be deemed a reference to 10 CFR section 20.2003.

(11) Provisions relating only to power reactor licensees found in the following appendices are not incorporated:

(A) Appendix A, II.A.1.(ii);

(B) Appendix A, II.A.1.(iv);

(C) Appendix A, II.A.2.(ii);

(D) Appendix A, II.A.2.(iv);

(E) Appendix C, II.A(1); and

(F) Appendix C, II.A(2).

(b) The regulations governing financial assurance for decommissioning in 10 CFR section 40.36 (January 1, 2007) are hereby incorporated by reference with the following exceptions:

(1) Subsection 40.36(f) is not incorporated by reference.

(2) The date "January 1, 1996" is substituted for the date "July 27, 1990."

(3) Any reference to the NRC or any component thereof shall be deemed to be a reference to the Department.

(4) Any reference to 10 CFR section 40.43 shall be deemed to be a reference to Section 30194.

(5) The date "January 1, 1998" is substituted for the date "November 24, 1995."

(6) The date "January 1, 2009" is substituted for the date "December 2, 2004."

(7) The date "July 1, 2009" is substituted for the date "June 2, 2005."

(8) Appendix A referenced in section 40.36 is not incorporated by reference.

(c) The following persons shall be exempt from the requirements of this section:

(1) Persons authorized to possess no more than 1,000 times the quantity specified for each licensed material specified in Appendix B to Part 30 of Title 10, Code of Federal Regulations;

(2) Persons authorized to possess hydrogen-3 contained in hydrogen gas in a sealed source;

(3) Persons authorized to possess radioactive noble gases in sealed sources with no radioactive daughter product with half-life greater than 30 days; or

(4) Persons authorized to possess no more than 10 mCi of source material in any form and source material in any quantity in a non-dispersible form.

NOTE: Authority cited: Sections 115000, 115091, 131055 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115091, 115092 and 115235, Health and Safety Code.

HISTORY

1. New section filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
2. Amendment of subsection (c) filed 7–12–89; operative 8–11–89 (Register 89, No. 28).
3. Renumbering of former section 30195.1 to new section 30195.3 and new section filed 10-16-95 as an emergency; operative 10–16–95 (Register 95, No. 42). A Certificate of Compliance must be transmitted to OAL by 2–13–96 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 10-16-95 order, including amendment of subsection (c)(1) and NOTE, transmitted to OAL 2–9–96 and filed 3-25-96 (Register 96, No. 13).
5. Amendment of subsections (a) and (b), new subsections (a)(5), (a)(6), (b)(4) and (b)(5), and amendment of NOTE filed 9-9-97; operative 10-9-97 (Register 97, No. 37).
6. Amendment of subsections (a), (a)(2), (a)(4)–(5), (b) and (b)(3)–(4), new subsections (a)(7)–(11)(F) and (b)(6)–(8) and amendment of NOTE filed 12-30-2008; operative 1–29–2009 (Register 2009, No. 1).

§ 30195.2. Special Requirements for Issuance of Specific Licenses—Emergency Plans.

(a) In addition to meeting the requirements set forth in sections 30194, 30195, 30195.1 and 30195.3, specific licenses shall be issued only if the requirements specified in subsection (b) are met.

(b) The regulations governing application for specific licenses in Title 10, Code of Federal Regulations, section 30.32, subsection (i) (10 CFR 30.32(i)) (January 1, 2013) including section 30.72 referenced in 10 CFR 30.32(i), are hereby adopted by reference with the following exceptions:

(1) The phrase "radioactive material" as defined in Title 17, California Code of Regulations, section 30100 is substituted for the phrase "byproduct material."

(2) Any reference to the Nuclear Regulatory Commission or any component thereof shall be deemed to be a reference to the Department.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–16–95 as an emergency; operative 10-16-95 (Register 95, No. 42). A Certificate of Compliance must be transmitted to OAL by 2-13-96 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 10–16–95 order, including amendment of NOTE, transmitted to OAL 2–9–96 and filed 3-25-96 (Register 96, No. 13).
3. Amendment of section and NOTE filed 12–30–2014; operative 4-1-2015 (Register 2015, No. 1).

§ 30195.3. Special Requirements for Issuance of Specific Licenses for Use of Sealed Sources in Industrial Radiography.

(a) The definitions of sections 30100 and 30330 apply to this section.

(b) An applicant for a specific license for the use of sealed sources in industrial radiography shall submit:

(1) A description of the applicant's training program that meets the requirements of section 30333(a) and (b). Copies of typical examinations and correct answers shall be submitted. Instructors shall, at a minimum, meet the requirements of section 30333.05(a)(1). Instructor qualifications shall be submitted;

(2) If the applicant proposes to be a radiation safety training provider, the information required by section 30331(a)(3) through (a)(5) and the fee required by section 30331(a)(6) in addition to any fee required by section 30230. This information shall be clearly identified as being submitted for compliance with section 30331;

(3) Procedures for verifying and documenting the certification status of radiographers and ensuring that the certification of each radiographer remains valid;

(4) A description of the applicant's overall organizational structure as it applies to the radiation safety responsibilities in radiography using sealed sources, including specified delegation of authority and responsibility;

(5) Operating and emergency procedures that meet the requirements of section 30333.1;

(6) A description of the internal inspection system used to assure that radiographers and radiographers' assistants comply with Department regulations and license conditions and the applicant's operating and emergency procedures as required by section 30333(e);

(7) The name(s) and qualification(s) of the individual(s) designated as the radiation safety officer (RSO) and potential designees responsible for ensuring that the licensee's radiation safety program is implemented in accordance with Department regulations and license conditions and the applicant's operating and emergency procedures. The designated RSO shall, at a minimum, meet the requirements specified in section 30333.07. Potential designees shall, at a minimum, meet the requirements specified in section 30333.05; and

(8) The location and a description of the location of each field station and permanent radiographic installation.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115165, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Renumbering of former section 30195.1 to new section 30195.3 filed 10–16–95 as an emergency; operative 10–16–95 (Register 95, No. 42). A Certificate of Compliance must be transmitted to OAL by 2–13–96 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 10–16–95 order, including amendment of NOTE, transmitted to OAL 2–9–96 and filed 3–25–96 (Register 96, No. 13).
3. Amendment of section heading, section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).
4. Amendment of subsection (b)(6) and NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30195.4. Additional Requirements for Specific Licenses Authorized Pursuant to Section 30195(d).

(a) Specific licenses authorizing, pursuant to section 30195(d), the production of positron emission tomography (PET) radioactive drugs for noncommercial transfer to licensees holding a specific license issued pursuant to section 30195(a) in its consortium, as defined in subsection (b), shall be subject to the following:

(1) Authorization does not relieve the licensee from complying with applicable FDA requirements, or other Federal, and State requirements governing radioactive drugs.

(2) The licensee shall:

(A) Satisfy the labeling requirements in title 10, Code of Federal Regulations section 32.72(a)(4) (10 CFR 32.72(a)(4)), incorporated by reference in section 30196, for each PET radioactive drug transport radiation shield and each syringe, vial, or other container used to hold a PET radioactive drug intended for noncommercial distribution to members of its consortium; and

(B) Possess and use instrumentation to measure the radioactivity of the PET radioactive drugs intended for noncommercial distribution to members of its consortium and meet the procedural, radioactivity measurement, instrument test, instrument check, and instrument adjustment requirements in 10 CFR 32.72(c), incorporated by reference in section 30196.

(3) If the licensee is a pharmacy, the licensee shall require that any individual that prepares PET radioactive drugs be:

(A) An authorized nuclear pharmacist who meets 10 CFR 32.72(b)(2), incorporated by reference in section 30196; or

(B) An individual who is under the supervision of an authorized nuclear pharmacist as specified in 10 CFR 35.27, incorporated by reference in section 30195(a).

(4) If the licensee is a pharmacy who allows an individual to work as an authorized nuclear pharmacist, the licensee shall ensure the individual meets 10 CFR 32.72(b)(5), incorporated by reference in section 30196.

(b) For purposes of subsection (a) and section 30195(d), "consortium" means an association of licensees authorized for medical use pursuant to section 30195(a) and a PET radionuclide production facility in the same geographical area that jointly own or share in the operation and maintenance cost of the PET radionuclide production facility that produces PET radionuclides for use in producing radioactive drugs within the consortium for noncommercial distributions among its associated members for medical use. The PET radionuclide production facility within the consortium may only be located at an educational institution or a medical facility.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115165, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30196. Special Requirements for Issuance of Specific Licenses to Manufacture or Transfer Certain Items Containing Radioactive Material.

(a) The regulations governing manufacturing or initially transferring items containing radioactive material for sale or distribution in Title 10, Code of Federal Regulations (10 CFR), Part 32 (10 CFR 32) (January 1, 2013) are hereby incorporated by reference with the following exceptions:

(1) Title 10, Code of Federal Regulations, sections 32.1, 32.3, 32.8, 32.11, 32.12, 32.14, 32.15, 32.16, 32.18, 32.19, 32.20, 32.21, 32.21a, 32.22, 32.23, 32.25, 32.26, 32.27, 32.28, 32.29, 32.101, 32.102, 32.103, 32.110, 32.301, and 32.303 and NRC Form 653 referenced in section 32.52 are not incorporated by reference.

(2) Any reference to "byproduct material" in 10 CFR 32 is replaced by the term "radioactive material" as defined Title 17, California Code of Regulations (17 CCR), section 30100.

(3) Any reference to the United States Nuclear Regulatory Commission (NRC) or any component thereof shall be deemed to be a reference to the Department.

(4) Any reference to the term "Agreement State" shall be deemed to be a reference to the term "Agreement State" as defined in 17 CCR section 30100.

(5) Any reference to the below identified federal regulation cited within 10 CFR 32 shall be deemed to be a reference to the below identified Department regulation in this subchapter:

Federal regulation cited within 10 CFR 32	Department regulation within this subchapter
§ 30.34(h)	§ 30257
§ 30.33	§ 30194
§ 30.36	§ 30256
§ 30.51	§ 30293
§31.2	§ 30190
§ 31.5	§ 30192.1
§ 31.7	§ 30192.2
§ 31.8	§ 30192.3
§ 31.10	§ 30192.4
§ 31.11	§ 30192.5
10 CFR 20 (any section)	§ 30253

(6) Any reference within 10 CFR 32 to sections found in 10 CFR 35 shall be deemed to be a reference to 17 CCR section 30195(a) except that 10 CFR 35.65 (January 1, 2013) cited within 10 CFR 32.74 is incorporated by reference in this section for the purpose of issuing a specific license pursuant to this section. Section 35.65 of 10 CFR is not incorporated by reference for purposes of issuing a specific license pursuant to 17 CCR section 30195(a).

NOTE: Authority cited: Sections 114975, 115000, 115091 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115091, 115092, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 12-30-2014; operative 4-1-2015 (Register 2015, No. 1). For prior history, see Register 87, No. 29.

§ 30197. Specific Terms and Conditions of Licenses. [Repealed]

NOTE: Authority cited: Sections 102, 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25805, 25815, 25855, 25875 and 25876, Health and Safety Code.

HISTORY

1. Amendment filed 11-16-67; effective thirtieth day thereafter (Register 67, No. 46).
2. Repealer filed 7-8-87; operative 8-7-87 (Register 87, No. 29).

§ 30198. Expiration of Licenses. [Repealed]

NOTE: Authority cited: Sections 102, 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25805, 25815, 25855, 25875 and 25876, Health and Safety Code.

HISTORY

1. Repealer filed 7-8-87; operative 8-7-87 (Register 87, No. 29).

§ 30205. Modification, Suspension, Revocation and Termination of Licenses.

(a) All licenses shall be subject to modification, suspension, or revocation by regulations or orders issued by the department.

(b) Any license may be modified, suspended, or revoked by the department:

(1) for any material false statement in the application or in any required report;

(2) because of conditions revealed by any means which would warrant refusal to grant such a license on an original application; or

(3) for violation of any terms and conditions of the Act, of the license, or of any relevant regulation or order of the department, including non payment of license fee pursuant to Sections 30230-30232 of this regulation.

(c) Prior to the institution of proceedings to modify, suspend, or revoke a license, facts or conduct which may warrant such action shall be called to the attention of the licensee in writing and the licensee shall be accorded reasonable opportunity to demonstrate or achieve compliance, except in cases of willful violation or those in which the public health or safety requires otherwise.

(d) A specific license may be terminated by mutual consent between the licensee and the department.

NOTE: Authority cited: Sections 208 and 25811(d), Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Amendment of subsection (b)(3) filed 10-12-72; effective thirtieth day thereafter (Register 72, No. 42).
2. New NOTE filed 8-22-84 (Register 84, No. 34).

Article 5. Transfer of Material

§ 30210. Authorization for Transfer.

(a) A licensee may transfer radioactive material only to persons listed below and only following acceptance of such transfer:

(1) the Department;

(2) any person who is exempt from this regulation to the extent permitted under such exemption; or

(3) any person licensed or authorized to receive the material by the United States Nuclear Regulatory Commission, the Department, or any other Agreement State.

(b) This section does not authorize the commercial distribution of radioactive material other than those items listed in Section 30192 through 30192.6, except when such distribution is authorized by a specific license.

NOTE: Authority cited: Sections 102, 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25855, 25875 and 25876, Health and Safety Code.

HISTORY

1. Repealer of Article 5 (Section 30210 and 30211) and new Article 5 (Section 30210) filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For prior history, see Register 62, No. 1.
2. Amendment filed 11–16–67; effective thirtieth day thereafter (Register 67, No. 46).
3. Amendment filed 5–13–69; effective thirtieth day thereafter (Register 69, No. 20).
4. Amendment filed 7–8–87; operative 8–7–87 (Register 87, No. 29).

§ 30210.1. Verification Required.

(a) Before transferring radioactive material to a licensee, the licensee transferring the material shall verify license authorization for the receipt of the type, form and quantity of radioactive material to be transferred.

(b) The transferrer shall utilize methods of verification and maintain records of verification required by subsection (a) as specified in 10CFR30.41 (38FR33968).

NOTE: (1) Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25815, 25855, 25875 and 25876, Health and Safety Code.

(2) Copies of Title 10, Code of Federal Regulations —Energy, are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

HISTORY

1. New section filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
2. Change without regulatory effect of NOTE (Register 88, No. 6).

§ 30210.2. Labeling Requirements for the Manufacture, Preparation or Transfer for Commercial Distribution of Drugs Containing Radioactive Material for Human Use as Authorized by a Specific License. [Repealed]

NOTE: Authority cited: Sections 100275 and 115000, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115165 and 115235, Health and Safety Code.

HISTORY

1. New section filed 10–13–99; operative 11–12–99 (Register 99, No. 42).
2. Repealer filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

Article 6. Enforcement

§ 30220. Violations. [Repealed]

NOTE: Authority cited: Sections 102, 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25855, 25875 and 25876, Health and Safety Code.

HISTORY

1. Repealer of Article 6 (Sections 30215 through 30217) and new Article 6 (Section 30220) filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For prior history, see Register 62, No. 21.
2. Repealer filed 7–8–87; operative 8–7–87 (Register 87, No. 29).

Article 7. Reciprocal Recognition of Licenses

§ 30225. Persons Specifically Licensed by Other Agencies.

(a) Any person who holds a specific license issued by the United States Nuclear Regulatory Commission (NRC), by any other Agreement State, or by any state that has been either provisionally or finally designated as a Licensing State by the Conference of Radiation Control Program Directors, Inc. (CRCPD), other than this State, may conduct activities of the kind therein authorized within this State for a period not in excess of 180 days in any calendar year without obtaining a specific license from the Department, provided that:

(1) The person maintains an office for directing the licensed activity, at which radiation safety records are normally maintained, in a location under jurisdiction of the agency which issued the specific license;

(2) The license does not limit the authorized activity to specified installations or locations;

(3) The person provides written notice to the Department at least three days prior to engaging in such activity. Such notice shall indicate the location, specific time period, and type of proposed possession and use within this state, and shall be accompanied by a copy of the pertinent license. If, for a specific case, the 3–day period would impose an undue hardship on the person, the person may make application to the Department to proceed sooner;

(4) The person complies with all applicable regulations of the Department and with all the terms and conditions of the license, except such terms and conditions as may be inconsistent with said regulations;

(5) The person supplies such other information as the Department may request; and

(6) The person pays a fee in accordance with section 30230(f) to the Department, prior to the engagement of activities within the state.

(b) Any person who holds a specific license issued by the NRC, by any other Agreement State or by any state that has been either provisionally or finally designated as a Licensing State by the CRCPD, other than this State, authorizing the holder to manufacture, install or service a device described in section 30192.1(a), is hereby issued a general license to install or service such device in this State, provided that:

(1) The person files a report with the Department within 30 days after the end of each calendar quarter in which any device is transferred to or installed in this State, identifying each device recipient by name and address, identifying the type of device transferred or installed, and identifying the quantity and type of radioactive material contained in each device;

(2) The device has been manufactured and labeled and is installed and serviced in accordance with applicable provisions of the specific license;

(3) The person assures that any labels required to be affixed to the device, under regulations of the authority which licensed manufacture of the device, are affixed and bear a statement that "Removal of this label is prohibited;" and

(4) The person furnishes to each device recipient in this State to whom he or she transfers such a device, or on whose premises he or she installs the device, a copy of the regulations contained in Group 1.5 of this subchapter and sections 30192.1, 30254, 30257, 30293(a)(2) and 30295 of Group 3 of this subchapter, and sections 20.2201 and 20.2202 of title 10, Code of Federal Regulations, Part 20, incorporated by reference in section 30253.

(c) The Department may withdraw, limit, or qualify its acceptance of any license specified in subsection (a) or (b) upon determining that such action is necessary to protect health or to minimize danger to life or property.

(d) Authorization granted pursuant to this section does not authorize a person to conduct activities in areas within this State that are under exclusive federal jurisdiction.

NOTE: Authority cited: Sections 114975, 115000, 115060 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 114985, 114990, 115060, 115065, 115090, 115093, 115105, 115110, 115120, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Repealer of article 7 (section 30220) and new article 7 (section 30225) filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For prior history, see Register 62, No. 21.
2. Amendment of subsection (a) filed 7–22–71; effective thirtieth day thereafter (Register 71, No. 30).
3. Amendment of subsection (a) filed 10–12–72; effective thirtieth day thereafter (Register 72, No. 42).
4. New NOTE filed 8–22–84 (Register 84, No. 34).
5. Amendment filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
6. New subsection (a)(6) and amendment of NOTE filed 10–23–91; operative 11–22–91 (Register 92, No. 5).
7. Amendment of section and NOTE filed 10–15–2001; operative 11–14–2001 (Register 2001, No. 42).
8. Amendment of subsection (a)(6) filed 6–22–2005 as an emergency; operative 6–22–2005 (Register 2005, No. 25). A Certificate of Compliance must be trans-

mitted to OAL by 10–20–2005 or emergency language will be repealed by operation of law on the following day.

9. Certificate of Compliance as to 6–22–2005 order transmitted to OAL 9–20–2005 and filed 10–18–2005 (Register 2005, No. 42).

10. Amendment of section heading, section and NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).

§ 30226. Persons Generally Licensed by Other Agencies.

(a) A person generally licensed by the United States Nuclear Regulatory Commission (NRC), or an Agreement State other than this State, is not subject to the registration requirements specified in section 30192.1(d)(1) if the device is used in areas subject to the Department's jurisdiction for a period less than 180 days in any calendar year.

(b) Authorization granted pursuant to this section shall not authorize a person to conduct activities in areas within this State that are under exclusive federal jurisdiction within this State.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 115060, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).

Article 8. License Fees

§ 30230. License Fees.

(a) Except as provided in subsection (b), each applicant for a specific license pursuant to the provisions of this group shall include with the application a nonrefundable fee, which is equal to the annual fee as set forth in section 30231, and if the specific license is granted, the application fee shall constitute the annual fee for the first year of the license.

(b) Each applicant for a specific license for commercial distribution of sealed sources or devices containing sealed sources, who requests evaluation of the information submitted pursuant to section 30195(d)(1) and (d)(2), shall include with the application, a nonrefundable fee, which is equal to the annual fee, and a nonrefundable evaluation fee as set forth in section 30231. If the specific license is granted, the fee equal to the annual fee shall constitute the annual fee for the first year of the license.

(c) Each licensee shall pay an annual fee, as set forth in section 30231, on or before the anniversary of the effective date of the license.

(d) Each licensee, who applies for an amendment to a specific license that increases the maximum possession limits of the license shall include with the request submitted pursuant to section 30194.2, an additional fee for each such amendment, as set forth in section 30231(c).

(e) Each licensee authorized pursuant to section 30195(d) to commercially distribute sealed sources or devices containing sealed sources shall, in addition to the annual fee specified in section 30231(a), pay:

(1) The evaluation fees specified in section 30231(f)(1) through (3), specific to the type of evaluation, when a request for evaluation is submitted to the Department; and

(2) The annual fee specified in section 30231(f)(4).

(f) Each person authorized to conduct activities within the state pursuant to section 30225(a) shall pay a fee as specified in section 30231(e).

NOTE: Authority cited: Sections 100275, 115000, 115060 and 115065, Health and Safety Code. Reference: Sections 114965, 114970, 114980 and 115165, Health and Safety Code.

HISTORY

1. Amendment filed 8–1–62; effective thirtieth day thereafter (Register 62, No. 16).

2. Renumbering from article 9 to article 8, filed 11–29–65 (Register 65, No. 23).

3. New NOTE filed 8–22–84 (Register 84, No. 34).

4. New subsection (d) and amendment of NOTE filed 10–23–91; operative 11–22–91 (Register 92, No. 5).

5. Amendment of section and NOTE filed 6–22–2005 as an emergency; operative 6–22–2005 (Register 2005, No. 25). A Certificate of Compliance must be transmitted to OAL by 10–20–2005 or emergency language will be repealed by operation of law on the following day.

6. Certificate of Compliance as to 6–22–2005 order transmitted to OAL 9–20–2005 and filed 10–18–2005 (Register 2005, No. 42).

§ 30231. Fee Schedule.

(a) The annual fee shall be calculated in accordance with the following formula and shall not exceed $29,418.00 for any one license:

Annual fee (rounded to the nearest dollar) = A + (A x B x C)

Where:

A = [Sum of the license fee specified in subsection (b)(1), the fee for unsealed sources specified in subsection (b)(2) and the fee for sealed sources specified in subsection (b)(3)]

B = [Number of authorized use locations minus one as specified in subsection (b)(4)]

C = [0.2 as specified in subsection (b)(4)].

(b) The annual fee for each specific license shall consist of the following components:

(1) A fee of $1,308.00 for each license;

(2) A fee for the unsealed sources authorized to be possessed at any one time by the license provided such unsealed sources have a combined total strength of over 10 millicuries (mCi), as follows:

Over 10 mCi, but not over 100 mCi	$748.00
Over 100 mCi, but not over 500 mCi	$1,496.00
Over 500 mCi, but not over 1 curie (Ci)	$2,992.00
Over 1 Ci, but not over 10 Ci	$4,488.00
Over 10 Ci, but not over 100 Ci	$5,984.00
Over 100 Ci	$7,480.00;

(3) A fee for the sealed sources authorized to be possessed at any one time by the license provided such sealed sources have a combined total strength of over 100 mCi, as follows:

Over 100 mCi, but not over 1 Ci	$748.00
Over 1 Ci, but not over 5 Ci	$1,496.00
Over 5 Ci, but not over 10 Ci	$2,992.00
Over 10 Ci, but not over 100 Ci	$4,488.00
Over 100 Ci, but not over 1,000 Ci	$5,984.00
Over 1,000 Ci	$7,480.00; and

(4) A fee for each location of use greater than one, authorized in a specific license pursuant to section 30194.1, which is determined by multiplying the number of authorized use locations minus one by the sum of the values of subsections (b)(1) through (3) and by 0.2.

(c) The amount of additional fee required pursuant section 30230(d), except as limited by this section, shall be the difference between the current annual fee and the total annual fees required for the new limits requested.

(d) Any licensee who fails to pay the annual fee by the anniversary of the effective date of the license shall immediately cease use of all sources of radiation by placing the sources in storage until such time as the annual fee and a late fee of 25 percent of the annual fee has been paid.

(e) The fee for persons authorized to operate under section 30225(a) shall be equal to the annual fee as specified in subsection (a) for the combined total strength of radioactive material that will be possessed while in this state. The fees shall be effective for the period in which reciprocity is granted under section 30225.

(f) The fees required by subsections (b) and (e) of section 30230 shall be as follows:

(1) $5,025.00 for evaluation of each device and sealed source;

(2) $3,848.00 for evaluation of each device only;

(3) $1,177.00 for evaluation of each sealed source only; and

(4) $471.00, annually, for each registry certificate maintained by the Department indicating that the sealed source or device is commercially manufactured and/or distributed and includes evaluations of modifications of the source or device identified on the certificate.

(g) Fees required by this section shall be nonrefundable.

NOTE: Authority cited: Sections 114975, 115000, 115060, 115065 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 114980, 115165, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment filed 8–1–62; effective thirtieth day thereafter (Register 62, No. 16).

2. Amendment filed 7–2–82; effective thirtieth day thereafter (Register 82, No. 27).

3. Editorial correction of NOTE filed 8–22–84 (Register 84, No. 34).

4. Amendment filed 7–7–86 as an emergency; effective upon filing (Register 86, No. 28). A Certificate of Compliance must be transmitted to OAL within 120 days or emergency language will be repealed on 11–4–86.

5. Certificate of Compliance transmitted to OAL 10–9–86 and filed 11–7–86 (Register 86, No. 45).

6. Amendment filed 3–6–89 as an emergency; operative 3–6–89 (Register 89, No. 10). A Certificate of Compliance must be transmitted to OAL within 120 days or emergency language will be repealed on 7–5–89.

7. Certificate of Compliance transmitted to OAL 6–12–89 and filed 6–28–89 (Register 89, No. 26).

8. New subsection (e) and amendment of NOTE filed 10–23–91; operative 11–22–91 (Register 92, No. 5).

9. Amendment of subsections (a)–(c) and (e) and NOTE filed 3–1–94 as an emergency; operative 3–1–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 6–28–94 or emergency language will be repealed by operation of law on the following day.

10. Certificate of Compliance as to 3–1–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

11. Repealer and new section and amendment of NOTE filed 6–22–2005 as an emergency; operative 6–22–2005 (Register 2005, No. 25). A Certificate of Compliance must be transmitted to OAL by 10–20–2005 or emergency language will be repealed by operation of law on the following day.

12. Certificate of Compliance as to 6–22–2005 order transmitted to OAL 9–20–2005 and filed 10–18–2005 (Register 2005, No. 42).

13. Editorial correction of subsection (b)(2) (Register 2014, No. 38).

14. Amendment of subsections (a), (b)(1)–(3) and (f)(1)–(4) and amendment of NOTE filed 6–15–2015; operative 6–15–2015. Submitted to OAL for filing and printing only pursuant to Health and Safety Code section 100425 (Register 2015, No. 25).

§ 30232. Fee Limitations. [Repealed]

NOTE: Authority cited: Sections 208, 25811 and 25816, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25816, 25875 and 25876, Health and Safety Code.

HISTORY

1. Amendment filed 7–2–82; effective thirtieth day thereafter (Register 82, No. 27).
2. Editorial correction of NOTE filed 8–22–84 (Register 84, No. 34).
3. Amendment filed 7–7–86 as an emergency; effective upon filing (Register 86, No. 28). A Certificate of Compliance must be transmitted to OAL within 120 days or emergency language will be repealed on 11–4–86.
4. Certificate of Compliance transmitted to OAL 10–9–86 and filed 11–7–86 (Register 86, No. 45).
5. Amendment filed 3–6–89 as an emergency; operative 3–6–89 (Register 89, No. 10). A Certificate of Compliance must be transmitted to OAL within 120 days or emergency language will be repealed on 7–5–89.
6. Certificate of Compliance transmitted to OAL 6–12–89 and filed 6–28–89 (Register 89, No. 26).
7. Amendment of subsections (a), (c)–(f) and NOTE filed 3–1–94 as an emergency; operative 3–1–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 6–28–94 or emergency language will be repealed by operation of law on the following day.
8. Certificate of Compliance as to 3–1–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
9. Repealer filed 6–22–2005 as an emergency; operative 6–22–2005 (Register 2005, No. 25). A Certificate of Compliance must be transmitted to OAL by 10–20–2005 or emergency language will be repealed by operation of law on the following day.
10. Certificate of Compliance as to 6–22–2005 order transmitted to OAL 9–20–2005 and filed 10–18–2005 (Register 2005, No. 42).

Article 9. Schedules

§ 30235. Schedule A. Exempt Quantities.

Radionuclide	Microcuries
Antimony 122 (Sb 122)	100
Antimony 124 (Sb 124)	10
Antimony 125 (Sb 125)	10
Arsenic 73 (As 73)	100
Arsenic 74 (As 74)	10
Arsenic 76 (As 76)	10
Arsenic 77 (As 77)	100
Barium 131 (Ba 131)	10
Barium 133 (Ba 133)	10
Barium 140 (Ba 140)	10
Bismuth 210 (Bi 210)	1
Bromine 82 (Br 82)	10
Cadmium 109 (Cd 109)	10
Cadmium 115m (Cd 115m)	10
Cadmium 115 (Cd 115)	100
Calcium 45 (Ca 45)	10
Calcium 47 (Ca 47)	100
Carbon 14 (C 14)	100
Cerium 141 (Ce 141)	100
Cerium 143 (Ce 143)	100
Cerium 144 (Ce 144)	1

Cesium 129 (Cs 129)	100
Cesium 131 (Cs 131)	1,000
Cesium 134m (Cs 134m)	100
Cesium 134 (Cs 134)	1
Cesium 135 (Cs 135)	10
Cesium 136 (Cs 136)	10
Cesium 137 (Cs 137)	10
Chlorine 36 (C1 36)	10
Chlorine 38 (Cl 38)	10
Chromium 51 (Cr 51)	1,000
Cobalt 57 (Co 57)	100
Cobalt 58m (Co 58m)	10
Cobalt 58 (Co 58)	10
Cobalt 60 (Co 60)	1
Copper 64 (Cu 64)	100
Dysprosium 165 (Dy 165)	10
Dysprosium 166 (Dy 166)	100
Erbium 169 (Er 169)	100
Erbium 171 (Er 171)	100
Europium 152 9.2 h (Eu 152 9.2 h)	100
Europium 152 13 yr (Eu 152 13 yr)	1
Europium 154 (Eu 154)	1
Europium 155 (Eu 155)	10
Fluorine 18 (F 18)	1,000
Gadolinium 153 (Gd 153)	10
Gadolinium 159 (Gd 159)	100
Gallium 67 (Ga 67)	100
Gallium 72 (Ga 72)	10

Germanium 68 (Ge 68)	10
Germanium 71 (Ge 71)	100
Gold 195 (Au 195)	10
Gold 198 (Au 198)	100
Gold 199 (Au 199)	100
Hafnium 181 (Hf 181)	10
Holmium 166 (Ho 166)	100
Hydrogen 3 (H 3)	1,000
Indium 111 (In 111)	100
Indium 113m (In 113m)	100
Indium 114m (In 114m)	10
Indium 115m (In 115m)	100
Indium 115 (In 115)	10
Iodine 123 (I 123)	100
Iodine 125 (I 125)	1
Iodine 129 (I 129)	1
Iodine 131 (I 131)	0.1
Iodine 132 (I 132)	10
Iodine 133 (I 133)	1
Iodine 134 (I 134)	10
Iodine 135 (I 135)	10
Iridium 192 (Ir 192)	10
Iridium 194 (Ir 194)	100
Iron 52 (Fe 52)	10
Iron 55 (Fe 55)	100
Iron 59 (Fe 59)	10
Krypton 85 (Kr 85)	100
Krypton 87 (Kr 87)	10

Lanthanum 140 (La 140)	10
Lutetium 177 (Lu 177)	100
Manganese 52 (Mn 52)	10
Manganese 54 (Mn 54)	10
Manganese 56 (Mn 56)	10
Mercury 197m (Hg 197m)	100
Mercury 197 (Hg 197)	100
Mercury 203 (Hg 203)	10
Molybdenum 99 (Mo 99)	100
Neodymium 147 (Nd 147)	100
Neodymium 149 (Nd 149)	100
Nickel 59 (Ni 59)	100
Nickel 63 (Ni 63)	10
Nickel 65 (Ni 65)	100
Niobium 93m (Nb 93m)	10
Niobium 95 (Nb 95)	10
Niobium 97 (Nb 97)	10
Osmium 185 (Os 185)	10
Osmium 191m (Os 191m)	100
Osmium 191 (Os 191)	100
Osmium 193 (Os 193)	100
Palladium 103 (Pd 103)	100
Palladium 109 (Pd 109)	100
Phosphorus 32 (P 32)	10
Platinum 191 (Pt 191)	100
Platinum 193m (Pt 193m)	100
Platinum 193 (Pt 193)	100

Platinum 197m (Pt 197m)	100
Platinum 197 (Pt 197)	100
Polonium 210 (Po 210)	0.1
Potassium 42 (K 42)	10
Potassium 43 (K 43)	10
Praseodymium 142 (Pr 142)	100
Praseodymium 143 (Pr 143)	100
Promethium 147 (Pm 147)	10
Promethium 149 (Pm 149)	10
Rhenium 186 (Re 186)	100
Rhenium 188 (Re 188)	100
Rhodium 103m (Rh 103m)	100
Rhodium 105 (Rh 105)	100
Rubidium 81 (Rb 81)	10
Rubidium 86 (Rb 86)	10
Rubidium 87 (Rb 87)	10
Ruthenium 97 (Ru 97)	100
Ruthenium 103 (Ru 103)	10
Ruthenium 105 (Ru 105)	10
Ruthenium 106 (Ru 106)	1
Samarium 151 (Sm 151)	10
Samarium 153 (Sm 153)	100
Scandium 46 (Sc 46)	10
Scandium 47 (Sc 47)	100
Scandium 48 (Sc 48)	10
Selenium 75 (Se 75)	10
Silicon 31 (Si 31)	100
Silver 105 (Ag 105)	10

Silver 110m (Ag 110m)	1
Silver 111 (Ag 111)	100
Sodium 22 (Na 22)	10
Sodium 24 (Na 24)	10
Strontium 85 (Sr 85)	10
Strontium 89 (Sr 89)	1
Strontium 90 (Sr 90)	0.1
Strontium 91 (Sr 91)	10
Strontium 92 (Sr 92)	10
Sulphur 35 (S 35)	100
Tantalum 182 (Ta 182)	10
Technetium 96 (Tc 96)	10
Technetium 97m (Tc 97m)	100
Technetium 97 (Tc 97)	100
Technetium 99m (Tc 99m)	100
Technetium 99 (Tc 99)	10
Tellurium 125m (Te 125m)	10
Tellurium 127m (Te 127m)	10
Tellurium 127 (Te 127)	100
Tellurium 129m (Te 129m)	10
Tellurium 129 (Te 129)	100
Tellurium 131m (Te 131m)	10
Tellurium 132 (Te 132)	10
Terbium 160 (Tb 160)	10
Thallium 200 (Tl 200)	100
Thallium 201 (Tl 201)	100
Thallium 202 (Tl 202)	100
Thallium 204 (Tl 204)	10

Thulium 170 (Tm 170)	10
Thulium 171 (Tm 171)	10
Tin 113 (Sn 113)	10
Tin 125 (Sn 125)	10
Tungsten 181 (W 181)	10
Tungsten 185 (W 185)	10
Tungsten 187 (W 187)	100
Vanadium 48 (V 48)	10
Xenon 131m (Xe 131m)	1,000
Xenon 133 (Xe 133)	100
Xenon 135 (Xe 135)	100
Ytterbium 175 (Yb 175)	100
Yttrium 87 (Y 87)	10
Yttrium 88 (Y 88)	10
Yttrium 90 (Y 90)	10
Yttrium 91 (Y 91)	10
Yttrium 92 (Y 92)	100
Yttrium 93 (Y 93)	100
Zinc 65 (Zn 65)	10
Zinc 69m (Zn 69m)	100
Zinc 69 (Zn 69)	1,000
Zirconium 93 (Zr 93)	10
Zirconium 95 (Zr 95)	10
Zirconium 97 (Zr 97)	10
Any radioactive material not listed above other than alpha emitting byproduct material.	0.1

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New Schedule A filed 7–22–71; effective thirtieth day thereafter (Register 71, No. 30). For history of former section, see Register 62, No. 16.
2. Amendment filed 10–12–72; effective thirtieth day thereafter (Register 72, No. 42).
3. Amendment filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
4. Amendment of NOTE filed 7–28–2006; operative 8–27–2006 (Register 2006, No. 30).

5. Amendment of section and NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30236. Schedule B, Table I, In Vitro Clinical Tests. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25815, 25855, 25875 and 25876, Health and Safety Code.

HISTORY

1. New Schedule B filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28). For history of former Schedule B, see Registers 72, No. 42, and 67, No. 46.
2. Repealer filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).

§ 30237. Schedule C. Exempt Concentrations.

Element (atomic number)	Isotope	Column I	Column II
		Gas Concentration µCi/ml[1]	Liquid and Solid Concentration µCi/ml[2]
Antimony (51)	Sb 122		3E-4[3]
	Sb 124		2E-4
	Sb 125		1E-3
Argon (18)	A 37	1E-3	
	A 41	4E-7	
Arsenic (33)	As 73		5E-3
	As 74		5E-4
	As 76		2E-4
	As 77		8E-4
Barium (56)	Ba 131		2E-3
	Ba 140		3E-4
Beryllium (4)	Be 7		2E-2
Bismuth (83)	Bi 206		4E-4
Bromine (35)	Br 82	4E-7	3E-3
Cadmium (48)	Cd 109		2E-3
	Cd 115M		3E-4
	Cd 115		3E-4
Calcium (20)	Ca 45		9E-5
	Ca 47		5E-4
Carbon (6)	C 14	1E-6	8E-3
Cerium (58)	Ce 141		9E-4
	Ce 143		4E-4
	Ce 144		1E-4
Cesium (55)	Cs 131		2E-2
	Cs 134m		6E-2
	Cs 134		9E-5
Chlorine (17)	Cl 38	9E-7	4E-3

Chromium (24)	Cr 51		2E-2
Cobalt (27)	Co 57		5E-3
	Co 58		1E-3
	Co 60		5E-4
Copper (29)	Cu 64		3E-3
Dysprosium (66)	Dy 165		4E-3
	Dy 166		4E-4
Erbium (68)	Er 169		9E-4
	Er 171		1E-3
Europium (63)	Eu 152 (T/2=9.2 hrs)		6E-4
	Eu 155		2E-3
Fluorine (9)	F 18	2E-6	8E-3
Gadolinium (64)	Gd 153		2E-3
	Gd 159		8E-4
Gallium (31)	Ga 72		4E-4
Germanium (32)	Ge 71		2E-2
Gold (79)	Au 196		2E-3
	Au 198		5E-4
	Au 199		2E-3
Hafnium (72)	Hf 181		7E-4
Hydrogen (1)	H 3	5E-6	3E-2
Indium (49)	In 113M		1E-2
	In 114M		2E-4
Iodine (53)	I 126	3E-9	2E-5
	I 131	3E-9	2E-5
	I 132	8E-8	6E-4
	I 133	1E-8	7E-5
	I 134	2E-7	1E-3

Iridium (77)	Ir 190		2E-3
	Ir 192		4E-4
	Ir 194		3E-4
Iron (26)	Fe 55		8E-3
	Fe 59		6E-4
Krypton (36)	Kr 85M	1E-6	
	Kr 85	3E-6	
Lanthanum (57)	La 140		2E-4
Lead (82)	Pb 203		4E-3
Lutetium (71)	Lu 177		1E-3
Manganese (25)	Mn 52		3E-4
	Mn 54		1E-3
	Mn 56		1E-3
Mercury (80)	Hg 197M		2E-3
	Hg 197		3E-3
	Hg 203		2E-4
Molybdenum (42)	Mo 99		2E-3
Neodymium (60)	Nd 147		6E-4
	Nd 149		3E-3
Nickel (28)	Ni 65		1E-3
Niobium (Columbium) (41)	Nb 95		1E-3
	Nb 97		9E-3
Osmium (76)	Os 185		7E-4
	Os 191M		3E-2
	Os 191		2E-3
	Os 193		6E-4
Palladium (46)	Pd 103		3E-3
	Pd 109		9E-4
Phosphorus (15)	P 32		2E-4

Platinum (78)	Pt 191		1E-3
	Pt 193M		1E-2
	Pt 197M		1E-2
	Pt 197		1E-3
Polonium (84)	Po 210		7E-4
Potassium (19)	K 42		3E-3
Praseodymium (59)	Pr 142		3E-4
	Pr 143		5E-4
Promethium (61)	Pm 147		2E-3
	Pm 149		4E-4
Radium (88)	Ra 223		1E-7
Radon (86)	Rn 222	1E-8	
	Rn 230	1E-7	
Rhenium (75)	Re 183		6E-3
	Re 186		9E-4
	Re 188		6E-4
Rhodium (45)	Rh 103M		1E-1
	Rh 105		1E-3
Rubidium (37)	Rb 86		7E-4
Ruthenium (44)	Ru 97		4E-4
	Ru 103		8E-4
	Ru 105		1E-3
	Ru 106		1E-4
Samarium (62)	Sm 153		8E-4
Scandium (21)	Sc 46		4E-4
	Sc 47		9E-4
	Sc 48		3E-4
Selenium (34)	Se 75		3E-3
Silicon (14)	Si 31		9E-3

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Silver (47)	Ag 105		1E-3
	Ag 110M		3E-4
	Ag 111		4E-4
Sodium (11)	Na 24		2E-3
Strontium (38)	Sr 85		1E-4
	Sr 89		1E-4
	Sr 91		7E-4
	Sr 92		7E-4
Sulfur (16)	S 35	9E-8	6E-4
Tantalum (73)	Ta 182		4E-4
Technetium (43)	Tc 96M		1E-1
	Tc 96		1E-3
Tellurium (52)	Te 125M		2E-3
	Te 127M		6E-4
	Te 127		3E-3
	Te 129M		3E-4
	Te 131M		6E-4
	Te 132		3E-4
Terbium (65)	Tb 160		4E-4
Thallium (81)	Tl 200		4E-3
	Tl 201		3E-3
	Tl 202		1E-3
	Tl 204		1E-3
Thulium (69)	Tm 170		5E-4
	Tm 171		5E-3
Tin (50)	Sn 113		9E-4
	Sn 125		2E-4
Tungsten (Wolfram) (74)	W 181		4E-3
	W 187		7E-4
Vanadium (23)	V 48		3E-4

Xenon (54)	Xe 131M	4E-6	
	Xe 133	3E-6	
	Xe 135	1E-6	
Ytterbium (70)	Yb 175		1E-3
Yttrium (39)	Y 90		2E-4
	Y 91M		3E-2
	Y 91		3E-4
	Y 92		6E-4
	Y 93		3E-4
Zinc (30)	Zn 65		1E-3
	Zn 69M		7E-4
	Zn 69		2E-2
Zirconium (40)	Zr 95		6E-4
	Zr 97		2E-4
Beta and/or gamma emitting radioactive material not listed above with half-life less than three years		1E-10	1E-6

Footnotes to Schedule C.

1. Values are given only for those materials normally used as gases.
2. μCi/gm for solids.
3. Numerical value expressed in "E notation" where the letter "E" represents "times ten raised to the power of," thus, replacing the "x 10" in scientific notation, followed by the value of the exponent. (e.g. $1 \times 10^2 = 1E2$; $1 \times 10^{-2} = 1E{-}2$)

NOTE: 1: Many radioisotopes disintegrate into isotopes which are also radioactive. In expressing the concentrations in Schedule C, the activity stated is that of the parent isotope and takes into account the daughters.

NOTE: 2: Where there is involved a combination of isotopes, the limit for the combination should be derived as follows: Determine for each isotope in the product the ratio between the concentration present in the product and the exempt concentration established in Schedule C for the specific isotope when not in combination. The sum of such ratios may not exceed "1" (i.e., unity).

EXAMPLE:

$$\frac{\text{Concentration of Isotope A in Product}}{\text{Exempt concentration of Isotope A}} + \frac{\text{Concentrate of Isotope B in Product}}{\text{Exempt concentration of Isotope B}} \leq 1$$

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment filed 7–22–71; effective thirtieth day thereafter (Register 71, No. 30).
2. Change without regulatory effect amending Arsenic and Beryllium and adoption of NOTE filed 11–1–91 pursuant to section 100, title 1, California Code of Regulations (Register 92, No. 5).
3. Amendment of listings for argon and platinum and amendment of footnote 2 and NOTE filed 7–28–2006; operative 8–27–2006 (Register 2006, No. 30).
4. Repealer and new section filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

Group 3. Standards for Protection Against Radiation

Article 1. General

§ 30250. Authority. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Repealer of Article 1 and new Article 1 (30250 through 30255) filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For former Article 1, see Register 62, No. 1.
2. Repealer filed 6–18–87; operative 7–18–87 (Register 87, No. 28).

§ 30251. Purpose. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Repealer filed 6–18–87; operative 7–18–87 (Register 87, No. 28).

§ 30252. Scope and Purpose.

(a) Group 3 regulations apply to all persons who possess sources of radiation, except as exempt from the licensing and registration requirements or otherwise specifically exempted by the provisions of Group 1 and Group 2 of this subchapter.

(b) The limits in Group 3 do not apply to doses due to background radiation, to exposure of patients to radiation for the purpose of medical diagnosis or therapy, or to voluntary participation in medical research programs.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811 and 25815, Health and Safety Code.

HISTORY

1. Repealer and new subsection (b) filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day. For prior history, see Register 87, No. 28.
2. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
3. Editorial correction deleting HISTORY 1 and amending and redesignating HISTORY 2 (Register 94, No. 28).

§ 30253. Standards for Protection Against Radiation.

(a) The regulations governing standards for protection against radiation in title 10, Code of Federal Regulations, part 20, (10 CFR 20) sections 20.1001 through 20.2402 and Appendices A through G, (January 1, 2013) are hereby incorporated by reference with the following exceptions:

(1) Title 10, Code of Federal Regulations, sections 20.1001, 20.1002, 20.1006, 20.1007, 20.1008, 20.1009, 20.1401, 20.1402, 20.1403, 20.1404, 20.1405, 20.1406, 20.1905(g), 20.2106(d), 20.2203(e), 20.2206, 20.2302, 20.2401, and 20.2402, and Appendix D are not incorporated by reference.

(2) Any references to the United States Nuclear Regulatory Commission (NRC) or any component thereof shall be deemed to be a reference to the California Department of Public Health.

(3) The definition of the term "Byproduct material" in 10 CFR 20, section 20.1003 is replaced by the definition of the term "radioactive material" as defined in section 30100 of this regulation.

(4) The definition of the term "License" in 10 CFR 20, section 20.1003 is replaced by the definition of the term "License" as defined in section 30100 of this regulation.

(5) The definition of the term "Licensed material" in 10 CFR 20, section 20.1003 is modified to mean any radioactive material (including source material, special nuclear material, or byproduct material) received, possessed, used, transferred or disposed of under a general or specific license issued by the NRC, or by any other Agreement State or by any state that has been either provisionally or finally designated as a Licensing State by the Conference of Radiation Control Program Directors, Inc. With respect to dose limits and reporting requirements, the term "Licensed material" is to be construed broadly in context to include any source of ionizing radiation subject to the requirements of this regulation.

(6) The definition of the term "Licensee" as defined in 10 CFR 20, section 20.1003 is replaced by the definition of the term "User" as set forth in section 30100 of this regulation.

(7) The definition of the term "Person" as defined in 10 CFR 20, section 20.1003 is replaced by the definition of the term "Person" as set forth in section 114985(c) of the Health and Safety Code.

(8) The definition of the term "Radiation (ionizing radiation)" as defined in 10 CFR 20, section 20.1003 is replaced by the definition of the term "Ionizing radiation" as set forth in section 114985(b) of the Health and Safety Code.

(9) The definition of the term "Special nuclear materials" as defined in 10 CFR 20, section 20.1003 is replaced by the definition of the term "Special nuclear material" as set forth in section 114985(f) of the Health and Safety Code.

(10) Reports of transactions and inventories required in 10 CFR 20, section 20.2207 shall be submitted to the National Source Tracking System maintained by NRC as specified in section 20.2207. Methods of reporting specified in section 20.2207(f) are identified on NRC's form, referenced in section 20.2207(f)(4).

(11) Sections 30.35(g), 40.36(f), and 70.25(g), as cited in 10 CFR 20.1501(b), shall be deemed to reference section 30256(a); sections 50.75(g) and 72.30(d), as cited in 10 CFR 20.1501(b), are not incorporated by reference.

(b) The terms defined in 10 CFR 20, section 20.1003, as incorporated by reference, shall apply to this regulation, except that:

(1) The term "Act" as defined in 10 CFR 20, section 20.1003 is limited to the textual material incorporated by reference in subsection (a) above. The meaning of the term "Act" elsewhere in this regulation, is as defined in section 30100 of this regulation.

(2) The term "Department" as defined in 10 CFR 20, section 20.1003 is limited to the provisions incorporated by reference in subsection (a). The meaning of the term "Department" elsewhere in this regulation, is as defined in section 30100 of this regulation.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114960, 114965, 114970, 114985, 114990, 115060, 115105, 115110, 115120, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Repealer and new section filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day. For prior history, see Register 86, No. 28.
2. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
3. Editorial correction deleting HISTORY 1 and amending and redesignating HISTORY 3 (Register 94, No. 28).
4. Editorial correction of section heading (Register 99, No. 8).
5. Amendment of section and NOTE filed 10–15–2001; operative 11–14–2001 (Register 2001, No. 42).
6. Change without regulatory effect amending subsection (a)(1) and repealing subsections (a)(10)–(12) filed 8–8–2002 pursuant to section 100, title 1, California Code of Regulations (Register 2002, No. 32).
7. Amendment filed 7–20–2006; operative 8–19–2006 (Register 2006, No. 29).
8. Amendment of subsections (a)–(a)(3) and (a)(5), new subsection (a)(10), amendment of subsections (b)(1)–(2) and amendment of NOTE filed 11–9–2010; operative 12–9–2010 (Register 2010, No. 46).
9. Amendment of subsection (a), new subsection (a)(11) and amendment of NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

Article 2. Notices, Instructions, and Reports to Workers; Inspections and Investigations

§ 30254. Inspection.

(a) Each user shall afford to the Department or other official agency specifically designated by the Department, at all reasonable times, opportunity to inspect materials, machines, activities, facilities, premises, and records pursuant to these regulations.

(b) During an inspection, inspectors may consult privately with workers as specified below. The user may accompany inspectors during other phases of an inspection.

(1) Inspectors may consult privately with workers concerning matters of occupational radiation protection and other matters related to applicable provisions of Department regulations and licenses to the extent the inspectors deem necessary for the conduct of an effective and thorough inspection.

(2) During the course of an inspection any worker may bring privately to the attention of the inspectors, either orally or in writing, any past or present condition which he has reason to believe may have contributed to or caused any violation of the Radiation Control Law, these regulations, or license condition, or any unnecessary exposure of an individual to radiation from licensed radioactive material or a registered radiation machine under the user's control. Any such notice in writing shall comply with the requirements of subsection (h) hereof.

(3) The provision of paragraph (b)(2) of this section shall not be interpreted as authorization to disregard instructions pursuant to Section 30255(b)(1).

(c) If, at the time of inspection, an individual has been authorized by the workers to represent them during inspections, the user shall notify the inspectors of such authorization and shall give the workers' representative an opportunity to accompany the inspectors during the inspection of physical working conditions.

(d) Each worker's representative shall be routinely engaged in work under control of the user and shall have received instructions as specified in Section 30255(b)(1).

(e) Different representatives of users and workers may accompany the inspectors during different phases of an inspection if there is no resulting

interference with the conduct of the inspection. However, only one workers' representative at a time may accompany the inspectors.

(f) With the approval of the user and the workers' representative, an individual who is not routinely engaged in work under control of the user, for example, a consultant to the user or to the workers' representative, shall be afforded the opportunity to accompany inspectors during the inspection of physical working conditions.

(g) Notwithstanding the other provisions of this section, inspectors are authorized to refuse to permit accompaniment by an individual who deliberately interferes with a fair and orderly inspection. With regard to any area containing proprietary information, the workers' representative for that area shall be an individual previously authorized by the user to enter that area.

(h) Any worker or representative of workers who believes that a violation of the Radiation Control Law, these regulations or license conditions exists, or has occurred in work under a license or registration with regard to radiological working conditions in which the worker is engaged, may request an inspection by giving notice of the alleged violation to the Department or other official agency specifically designated by the Department. Any such notice shall be in writing, shall set forth the specific grounds for the notice, and shall be signed by the worker or representative of the workers. A copy shall be provided to the user by the Department no later than at the time of inspection except that, upon the request of the worker giving such notice, his name and the name of individuals referred to therein shall not appear in such copy or on any record published, released, or made available by the Department except for good cause shown.

(i) If, upon receipt of such notice, the Chief, Radiologic Health Branch, of the Department, determines that the complaint meets the requirements set forth in subsection (h) hereof, and that there are reasonable grounds to believe that the alleged violation exists or has occurred, he shall cause an inspection to be made as soon as practicable, to determine if such alleged violation exists or has occurred. Inspections pursuant to this section need not be limited to matters referred to in the complaint.

(j) No user shall discharge or in any manner discriminate against any worker because such worker has filed any complaint or instituted or caused to be instituted any proceeding under these regulations or has testified or is about to testify in any such proceeding or because of the exercise by such worker on behalf of himself or others of any option afforded by this section.

(k) If the Chief, Radiologic Health Branch, of the Department, determines with respect to a complaint under subsection (h) hereof that an inspection is not warranted because there are no reasonable grounds to believe that a violation exists or has occurred, the complainant shall be notified in writing of such determination. The complainant may obtain review of such determination by submitting a written statement of position to the Director of the Department, who will provide the user with a copy of such statement by certified mail, excluding, at the request of the complainant, the name of the complainant. The user may submit an opposing written statement of position with the Director of the Department who will provide the complainant with a copy of such statement by certified mail. Upon the request of the complainant, the Director of the Department, or his designee, may hold an informal conference in which the complainant and the user may orally present their views. An informal conference may also be held at the request of the user, but disclosure of the identity of the complainant will be made only following receipt of written authorization from the complainant. After considering all written or oral views presented, the Director of the Department shall affirm, modify, or reverse the determination of the Chief, Radiologic Health Branch, of the Department, and furnish the complainant and the user a written notification of his decision and the reason therefor.

(*l*) If the Department determines that an inspection is not warranted because the requirements of subsection (h) hereof have not been met, it shall notify the complainant in writing of such determination. Such determination shall be without prejudice to the filing of a new complaint meeting the requirements of subsection (h) hereof.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115165, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Repealer and new section filed 8–19–75 as an emergency; effective upon filing (Register 75, No. 34). Approved by CAL/OSHA Standards Board 12–16–75.
2. Certificate of Compliance filed 11–28–75 (Register 75, No. 48).
3. Amendment of subsections (b)(3) and (d) filed 8–23–76; effective thirtieth day thereafter (Register 76, No. 35).
4. Amendment of subsections (h), (i) and (k) filed 6–18–87; operative 7–18–87 (Register 87, No. 28).
5. New article 2 heading and amendment of subsection (b)(3) filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
6. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
7. Amendment of subsection (d) and amendment of NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30255. Notices, Instructions, and Reports to Personnel.

(a) This section establishes requirements for notices, instructions, and reports by users to individuals engaged in work under a license or registration and options available to such individuals in connection with Department inspections of licensees or registrants to ascertain compliance with the provisions of the Radiation Control Law and regulations, orders, and licenses issued thereunder regarding radiological working conditions. The requirements in this section apply to all persons who receive, possess, use, own or transfer material licensed by or registered with the Department.

(b) Each user shall:

(1) Inform all individuals working in or frequenting any portion of a controlled area of the storage, transfer, or use of radioactive materials or of radiation in such portions of the controlled area; instruct such individuals in the health protection problems associated with exposure to such radioactive materials or radiation, in precautions or procedures to minimize exposure, and in the purposes and functions of protective devices employed; instruct such individuals in, and instruct them to observe, to the extent within their control, the applicable provisions of Department regulations and license conditions for the protection of personnel from exposures to radiation or radioactive materials occurring in such areas; instruct such individuals of their responsibility to report promptly to the licensee or registrant any condition which may lead to or cause a violation of department regulations or license conditions or unnecessary exposure to radiation or radioactive material, and of the inspection provisions of Section 30254; instruct such individuals in the appropriate response to warnings made in the event of any unusual occurrence or malfunction that may involve exposure to radiation or radioactive materials; and advise such individuals as to the radiation exposure reports which they may request pursuant to this section. The extent of these instructions shall be commensurate with potential radiological health protection problems in the controlled area.

(2) Conspicuously post a current copy of this regulation, a copy of applicable licenses for radioactive material, and a copy of operating and emergency procedures applicable to work with sources of radiation. If posting of documents specified in this paragraph is not practicable the user may post a notice which describes the document and states where it may be examined.

(3) Conspicuously post a current copy of Department Form RH–2364 (Notice to Employees) in a sufficient number of places to permit individuals working in or frequenting any portion of a controlled area to observe a copy on the way to or from such area.

(4) Conspicuously post any notice of violation involving radiological working conditions or any order issued pursuant to the Radiation Control Law and any required response from the user. Department documents posted pursuant to this paragraph shall be posted within two working days after receipt of the documents from the Department; the user's response, if any, shall be posted within two working days after dispatch by the user. Such documents shall remain posted for a minimum of five working days or until action correcting the violation has been completed, whichever is later.

(5) Assure that documents, notices, or forms posted pursuant to this section shall appear in a sufficient number of places to permit individuals engaged in work under the license or registration to observe them on the way to or from any particular work location to which the document applies, shall be conspicuous, and shall be replaced if defaced or altered.

(6) Provide reports to any individual of their radiation exposure data and the results of any measurements, analyses, and calculations of radioactive material deposited or retained in the body of that individual as specified in this section. The information reported shall include data and results obtained pursuant to Department regulations, orders, or license conditions, as shown in records maintained by the user pursuant to Department regulations. Each notification and report shall: be in writing; include appropriate identifying data such as the name of the user, the name of the individual, the individual's Social Security number; include the individual's exposure information; and contain the following statement:

"This report is furnished to you under the provisions of the California State Department of Public Health Regulations: Standards for Protection Against Radiation. You should preserve this report for future reference."

These reports shall be provided as follows:

(A) Each user shall advise each worker annually of the worker's dose as shown in records maintained by the user pursuant to title 10, Code of Federal Regulations, part 20, (10 CFR 20), section 20.2106 as incorporated by reference in section 30253. The user shall provide an annual report to each monitored individual pursuant to section 20.1502, incorporated by reference in section 30253, of the dose received in that monitoring year if:

1. The individual's occupational dose exceeds 100 mrem total effective dose equivalent or 100 mrem to any individual organ or tissue; or

2. The individual requests his or her annual dose report.

(B) At the request of a worker formerly engaged in work controlled by the user, the user shall furnish to the worker a report of the worker's exposure to radiation or radioactive material as shown in records maintained by the user pursuant to 10 CFR 20, section 20.2106 that has been incorporated by reference in section 30253, for each year the worker was required to be monitored pursuant to section 20.1502 and for each year the worker was required to be monitored under the monitoring requirements in effect prior to March 3, 1994. Such report shall be furnished within 30 days from the time the request is made, or within 30 days after the exposure of the individual has been determined by the user, whichever is later. This report shall cover the period of time that the worker's activities involved exposure to radiation from radioactive material licensed by, or radiation machines registered with, the Department and shall include the dates and locations of work under the license or registration in which the worker participated during this period.

(C) When a user is required pursuant to 10 CFR 20, sections 20.2202, 20.2203, or 20.2204, as incorporated by reference in section 30253, to report to the Department any exposure of an individual to radiation or radioactive material, the user shall also provide the individual a report on his exposure data included therein. Such reports shall be transmitted at a time not later than the transmittal to the Department.

(D) At the request of a worker who is terminating employment with the user that involved exposure to radiation or radioactive materials, during the current calendar quarter or the current year, each user shall provide at termination to each worker, or to the worker's designee, a written report regarding the radiation dose received by that worker from operations of the user during the current year or fraction thereof. If the most recent individual monitoring results are not available at that time, a written estimate of the dose must be provided together with a clear indication that this is an estimate.

NOTE: Authority cited: Sections 114975, 115000, 131051, 131052, 131055 and 131200, Health and Safety Code. Reference: Sections 114940, 114965, 115000, 115060, 115110, 115230 and 115235, Health and Safety Code.

HISTORY

1. Renumbering and amendment of former section 30280 to section 30255 filed 3-3-94 as an emergency; operative 3-3-94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7-1-94 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 3-3-94 order transmitted to OAL 6-7-94 and filed 7-14-94 (Register 94, No. 28).
3. Amendment of subsections (a)(6)–(a)(6)(D) and amendment of NOTE filed 11-9-2010; operative 12-9-2010 (Register 2010, No. 46).

§ 30256. Vacating Installations: Records and Notice.

(a) Each person granted a specific license pursuant to Group 2 of this Subchapter shall keep records of information important to the decommissioning of a facility in an identified location until the site is released for unrestricted use by the Department. Before licensed activities are transferred or assigned in accordance with 30194(c), licensees shall transfer all records described in this section to the new licensee. In this case, the new licensee shall be responsible for maintaining these records until the license is terminated. If records important to the decommissioning of a facility are kept for other purposes, reference to these records and their locations may be used. The records shall include the following information important to decommissioning:

(1) Records of spills or other unusual occurrences involving the spread of contamination in and around the facility, equipment, or site. These records shall include but not be limited to a description of any instances when contamination remains after any cleanup procedures or when there is reasonable likelihood that contaminants may have spread to inaccessible areas, as for example, possible seepage into porous materials such as concrete. These records shall include any known information on identification of involved nuclides, quantities, forms, and concentrations.

(2) As built drawings and modification drawings of structures and equipment in restricted areas where radioactive materials are used or stored, and of locations of possible inaccessible contamination such as buried pipes which may be subject to contamination. If required drawings are referenced, each relevant document need not be indexed individually. If drawings are not available, the licensee shall substitute appropriate records of available information concerning these areas and locations.

(3) Except for areas containing only sealed sources (provided the sources have not leaked or no contamination remains after any leak) or any radioactive materials having only half-lives of less than 65 days, a list contained in a single document and updated every 2 years, of the following:

(A) All areas designated and formerly designated restricted areas as defined in Title 10, Code of Federal Regulations, Section 20.1003 incorporated by reference pursuant to Title 17, California Code of Regulations, Section 30253;

(B) All areas outside restricted areas that require documentation under (a)(1);

(C) All areas outside of restricted areas where current and previous wastes have been buried as documented under Title 10, Code of Federal Regulations, Section 20.2108 incorporated by reference pursuant to Title 17, California Code of Regulations, Section 30253; and

(D) All areas outside of restricted areas which contain material such that, if the license expired, the licensee would be required to either decontaminate the area to unrestricted release levels or apply for approval for disposal under Title 10, Code of Federal Regulations, Section 20.2002 incorporated by reference pursuant to Title 17, California Code of Regulations, Section 30253.

(4) Records of the cost estimate performed for the decommissioning funding plan or of the amount certified for decommissioning, and records of the funding method used for assuring funds if either a funding plan or certification is used pursuant to Section 30195.1.

(b) Each person granted a specific license pursuant to Group 2 of this Subchapter shall, no less than 30 days before vacating any installation which may have been contaminated with radioactive material as a result of the licensee's activities, notify the department in writing of intent to vacate. This notice shall be submitted on form CDPH 5314 (06/09), entitled "Certificate of Disposition of Materials," which is incorporated by reference herein, and shall address all requirements specified in subsection (c).

(c) If a licensee does not submit an application for license renewal under section 30194, the licensee shall on or before the expiration date specified in the license:

(1) Terminate use of radioactive material;

(2) Remove radioactive contamination to the extent practicable except for those procedures covered by Subsection (d) of this section;

(3) Dispose of radioactive material in accordance with applicable regulations;

(4) Submit a completed form CDPH 5314 (06/09), which certifies information concerning the disposition of materials; and

(5) Conduct a radiation survey of the premises where the licensed activities were carried out and submit a report of the results of this survey, unless the licensee demonstrates that the premises are suitable for release for unrestricted use in some other manner. The licensee shall, as appropriate:

(A) Report levels of radiation in units of microrads per hour of beta and gamma radiation at one centimeter and gamma radiation at one meter from surfaces, and report levels of radioactivity, including alpha, in units of disintegrations per minute (or microcuries) per 100 square centimeters removable and fixed for surfaces, microcuries per milliliter for water, and picocuries per gram for solids such as soils or concrete; and

(B) Specify the survey instrument(s) used and certify that each instrument is properly calibrated and tested.

(d) In addition to the information required under Subsections (c)(4) and (5), the licensee shall submit a plan for completion of decommissioning if the procedures necessary to carry out decommissioning have not been previously approved by the Department and could increase potential health and safety impacts to workers or to the public such as in any of the following cases:

(1) Procedures would involve techniques not applied routinely during cleanup or maintenance operations; or

(2) Workers would be entering areas not normally occupied where surface contamination and radiation levels are significantly higher than routinely encountered during operation; or

(3) Procedures could result in significantly greater airborne concentrations of radioactive materials than are present during operation; or

(4) Procedures could result in significantly greater releases of radioactive material to the environment than those associated with operation.

(e) Procedures with potential health and safety impacts shall not be carried out prior to approval of the decommissioning plan.

(f) The proposed decommissioning plan, if required by Subsection (d) of this section or by license condition, shall include:

(1) Description of planned decommissioning activities;

(2) Description of methods used to assure protection of workers and the environment against radiation hazards during decommissioning;

(3) A description of the planned final radiation survey;

(4) The information required in (a) (3) and any other information required by (a) that is considered necessary to support the adequacy of the decommissioning plan for approval; and

(5) An updated detailed cost estimate for decommissioning, comparison of that estimate with present funds set aside for decommissioning, and plan for assuring the availability of adequate funds for completion of decommissioning.

(g) The proposed decommissioning plan will be approved by the Department if the Department determines that the decommissioning will be completed as soon as is reasonable and that the health and safety of workers and the public will be adequately protected.

(h) Upon approval of the decommissioning plan by the Department, the licensee shall complete decommissioning in accordance with the approved plan. As a final step in decommissioning, the licensee shall again submit the information required in subsection (c)(5) and shall certify the disposition of accumulated wastes from decommissioning by completing form CDPH 5314 (06/09).

(i) If the information submitted under subsection (c)(5) or (h) does not adequately demonstrate that the premises are suitable for release for unrestricted use, the Department shall inform the licensee of the appropriate further actions required for termination of license.

(j) Each specific license continues in effect, beyond the expiration date if necessary, with respect to possession of residual radioactive material present as contamination until the Department notifies the licensee in writing that the license is terminated. During this time, the licensee shall:

(1) Limit actions involving radioactive material to those related to decommissioning; and

(2) Continue to control entry to restricted areas until they are suitable for release for unrestricted use and the Department notifies the licensee in writing that the license is terminated.

(k) Specific licenses shall be terminated by written notice to the licensee when the Department determines that:

(1) Radioactive material has been properly disposed;

(2) Reasonable effort has been made to eliminate residual radioactive contamination, if present; and

(3) A radiation survey has been performed which demonstrates that the premises are suitable for release for unrestricted use; or other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release for unrestricted use.

NOTE: Authority cited: Sections 114975, 115000, 131051, 131052, 131055 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. Renumbering of former section 30298 to section 30256 filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
3. Amendment of section heading and section filed 10–16–95 as an emergency; operative 10–16–95 (Register 95, No. 42). A Certificate of Compliance must be transmitted to OAL by 2–13–96 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 10–16–95 order, including amendment of subsections (a), (c)(4) and (f)(3), new (f)(4) and subsection renumbering, and amendment of subsection (h) and NOTE, transmitted to OAL 2–9–96 and filed 3–25–96 (Register 96, No. 13).
5. Amendment of subsection (a) filed 9–9–97; operative 10–9–97 (Register 97, No. 37).
6. Amendment of subsections (b), (c)(4) and (h) and amendment of NOTE filed 11–9–2010; operative 12–9–2010 (Register 2010, No. 46).

§ 30257. Bankruptcy Notification.

(a) Each general licensee required to register pursuant to sections 30192.1(d)(1) or 30192.6(b)(1), and each specific licensee, shall notify the Department in writing immediately following the filing of a voluntary or involuntary petition for bankruptcy under any chapter of title 11 (Bankruptcy) of the United States Code (11 U.S.C.) by or against:

(1) The licensee;

(2) An entity (as that term is defined in 11 U.S.C. 101 (15)) controlling the licensee or listing the license or licensee as property of the estate; or

(3) An affiliate (as that term is defined in 11 U.S.C. 101 (2)) of the licensee.

(b) The notification to the Department shall indicate:

(1) The bankruptcy court in which the petition for bankruptcy was filed; and

(2) The date of the filing of the petition.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115175, 115205, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Renumbering of former section 30299 to section 30257 filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
3. Amendment of section and NOTE filed 6–8–2011; operative 7–8–2011 (Register 2011, No. 23).
4. Amendment of subsection (a)(2) filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30258. General Definitions. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Repealer of article 2 and new article 2 (section 30258) filed 11-29-65; effective thirtieth day thereafter (Register 65, No. 23). For former article 2, see Register 62, No. 1.
2. Amendment filed 1-22-76; effective thirtieth day thereafter (Register 76, No. 4).
3. Repealer filed 6-18-87; operative 7-18-87 (Register 87, No. 28).
4. Editorial correction deleting article heading (Register 94, No. 15).

Article 3. Surveys and Tests

§ 30265. Occupational Dose Limits. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Repealer of article 3 and new article 3 (sections 30265 and 30266) filed 11-29-65; effective thirtieth day thereafter (Register 65, No. 23). For prior history of article 3, see Register 62, No. 1.
2. Repealer of subsection (c) filed 7-7-86; effective thirtieth day thereafter (Register 86, No. 28).
3. Amendment of article heading and repealer of section filed 3-3-94 as an emergency; operative 3-3-94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7-1-94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 3-3-94 order transmitted to OAL 6-7-94 and filed 7-14-94 (Register 94, No. 28).

§ 30265.1. Determination of Prior Dose. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section 7-7-86; effective thirtieth day thereafter (Register 86, No. 28).
2. Change without regulatory effect of subsection (b) (Register 87, No. 6).
3. Repealer filed 3-3-94 as an emergency; operative 3-3-94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7-1-94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 3-3-94 order transmitted to OAL 6-7-94 and filed 7-14-94 (Register 94, No. 28).

§ 30266. Exposure of Individuals to Concentrations of Radioactive Material in Controlled Areas. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25815, 25875 and 25876, Health ad Safety Code.

HISTORY

1. Amendment filed 7-7-86; effective thirtieth day thereafter (Register 86, No. 8).
2. Change without regulatory effect of NOTE (Register 88, No. 6).
3. Repealer and amendment of NOTE filed 3-3-94 as an emergency; operative 3-3-94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7-1-94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 3-3-94 order transmitted to OAL 6-7-94 and filed 7-14-94 (Register 94, No. 28).

§ 30268. Permissible Levels of Radiation in Uncontrolled Areas. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Change without regulatory effect adding NOTE (Register 87, No. 11).
2. Change without regulatory effect of subsection (a) (Register 88, No. 6).
3. Editorial correction of printing error restoring inadvertantly deleted HISTORY 2 (Register 92, No. 34).
4. Repealer filed 3-3-94 as an emergency; operative 3-3-94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7-1-94 or emergency language will be repealed by operation of law on the following day.
5. Certificate of Compliance as to 3-3-94 order transmitted to OAL 6-7-94 and filed 7-14-94 (Register 94, No. 28).

§ 30269. Concentrations in Effluents to Uncontrolled Areas. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Change without regulatory effect adding NOTE (Register 87, No. 11).
2. Change without regulatory effect of subsection (a) (Register 88, No. 6).
3. Editorial correction of printing error restoring inadvertently deleted section (Register 92, No. 34).
4. Repealer filed 3-3-94 as an emergency; operative 3-3-94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7-1-94 or emergency language will be repealed by operation of law on the following day.
5. Certificate of Compliance as to 3-3-94 order transmitted to OAL 6-7-94 and filed 7-14-94 (Register 94, No. 28).

§ 30275. Surveys and Tests.

(a) Each user shall make or cause to be made such surveys as are necessary for compliance with all provisions of this regulation.

(b) Upon instruction from the Department or other official agency specifically designated by the Department, each user shall perform or cause to have performed, and shall permit the Department or said agency to perform, such reasonable tests as the Department or said agency deems necessary for the protection of life, health, or property, including, but not limited to, tests of:

(1) Sources of radiation.

(2) Facilities wherein sources of radiation are used or stored.

(3) Radiation detection and monitoring instruments.

(4) Other equipment and devices used in connection with utilization or storage of sources of radiation.

(c) Each sealed source other than sources listed below, shall be tested for contamination prior to initial use and for leakage at least every six months:

(1) Hydrogen 3 or krypton 85 sources.

(2) Sealed sources containing licensed radioactive material in gaseous form.

(3) Source material.

(4) Sources containing radioactive material with a half life of 30 days or less.

(5) Sources of beta- and/or gamma-emitting radioactive material with an activity of 100 microcuries or less.

(6) Sources of alpha and/or neutron-emitting radioactive material with an activity of 10 microcuries or less.

In the absence of a certificate from a transferor indicating that a test has been made prior to the transfer, the sealed source shall not be put into use until tested. If there is reason to suspect that a source might have been damaged, it shall be tested for leakage before further use. Contamination and leak tests shall be capable of determining the presence of 0.005 microcuries of removable contamination. When any contamination or leak test reveals the presence of 0.005 microcuries or more of removable contamination the user shall immediately withdraw the source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with applicable provisions of Group 2 of this subchapter. Two copies of a report shall be filed, within 5 days of the test, with the Department or other official agency specifically designated by the Department, describing the source involved, the test results, and the corrective action taken.

(d) The test sample shall be taken from the surface of the source, or source holder, or from the surface of the device in which the source is stored or mounted and on which one might expect contamination to accumulate. Where sealed sources are permanently mounted in devices or equipment, alternate tests for contamination and leakage may be approved by the Department.

(e) Tests for contamination and leakage, decontamination, and repair of sealed sources shall be performed only by persons specifically authorized by the Department to do so in accordance with provisions of Group 2 of this subchapter.

(f) Records of leak tests shall be maintained as specified in United States, title 10, Code of Federal Regulations, part 20, subpart L as incorporated by reference in section 30253..

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Repealer of article 4 and new article 4 (sections 30275 through 30281) filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For former article 4, see Register 62, No. 1.
2. Change without regulatory effect adding NOTE (Register 87, No. 11).
3. Amendment filed 11–4–91; operative 12–4–91 (Register 92, No. 5).
4. Editorial correction of printing error restoring inadvertantly deleted article heading (Register 92, No. 34).
5. Repealer of article heading and amendment of subsection (f) filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
6. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30276. Personnel Monitoring. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Change without regulatory effect adding NOTE (Register 87, No. 11).
2. Amendment of subsection (a), new subsection (b) and subsection renumbering filed 10–10–91; operative 11–9–91 (Register 91, No. 52).
3. Repealer filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30277. Bio–Assays and Medical Review. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Amendment filed 9–4–73 as an emergency; effective upon filing (Register 73, No. 36). Approved by State Building Standards Commission 11–30–73.
2. Certificate Compliance filed 12–28–73 (Register 73, No. 52).
3. Change without regulatory effect adding NOTE (Register 87, No. 11).
4. Repealer filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
5. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30278. Caution Signs and Labels. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Amendment filed 11–16–67; effective thirtieth day thereafter (Register 67, No. 46).
2. Change without regulatory effect adding NOTE (Register 87, No. 10).
3. Repealer filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30278.1. Removal of Caution Labels from Empty Containers.

Each user shall, prior to disposal of an empty uncontaminated container to unrestricted areas, remove or deface the radioactive material label or otherwise clearly indicate that the container no longer contains radioactive materials.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25815, 25875 and 25876, Health and Safety Code; and 10 CFR 20. 203 (f)(4) (43 FR 22171).

HISTORY

1. New section filed 3–6–87; effective upon filing pursuant to Government Code Section 11346.2(d) (Register 87, No. 10).

§ 30279. Special Requirements for High Radiation Areas and Radiation Machines Capable of Producing High Radiation Areas. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Amendment filed 7–22–71; effective thirtieth day thereafter (Register 71, No. 30).
2. Change without regulatory effect adding NOTE (Register 87, No. 11).
3. Repealer filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30279.1. Additional Special Requirements for Very High Radiation Areas. [Repealed]

NOTE: (1) Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
2. Change without regulatory effect of NOTE (Register 88, No. 6).
3. Repealer and amendment of NOTE filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30280. Notices, Instructions, and Reports to Personnel. [Renumbered]

NOTE: Authority cited: Section 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25815, 25826, 25875 and 25876, Health and Safety Code.

HISTORY

1. Amendment filed 8–19–75 as an emergency; effective upon filing (Register 75, No. 34). Approved by CAL/OSHA Standards Board 12–16–75.
2. Certificate of Compliance filed 11–28–75 (Register 75, No. 48).
3. Amendment filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
4. Change without regulatory effect of subsections (b)(4) and (b)(6)(B) (Register 88, No. 6).
5. Renumbering of former section 30280 to new section 30255 filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
6. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30281. Storage and Control of Radioactive Material. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25875 and 25876, Health and Safety Code.

HISTORY

1. Amendments filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
2. Repealer filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30282. Procedures for Opening Packages. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 6–19–73; effective thirtieth day thereafter (Register 73, No. 25).
2. Change without regulatory effect adding NOTE (Register 87, No. 11).
3. Repealer filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30285. General Requirement. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25812 and 25815, Health and Safety Code.

HISTORY

1. Repealer of article 5 and new article 5 (sections 30285, 30287, 30288) filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For former article 5, see Register 62, No. 1.
2. Amendment filed 6–18–87; operative 7–18–87 (Register 87, No. 28).

3. Repealer of article heading and section filed 3–3–94 as an emergency; operative 3 3 94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30287. Disposal by Release into Sanitary Sewerage Systems. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Change without regulatory effect adding NOTE (Register 87, No. 11).
2. Repealer filed 3–3–94 as an emergency; operative 3 3 94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30288. Disposal by Burial in Soil. [Repealed]

HISTORY

1. Repealer filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).

§ 30289. Treatment or Disposal by Incineration. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 7–22–71; effective thirtieth day thereafter (Register 71, No. 30).
2. Change without regulatory effect adding NOTE (Register 87, No. 11).
3. Repealer filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7 1 94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7 14–94 (Register 94, No. 28).

Article 3.1. Records and Notification

§ 30293. Records.

(a) Each user shall keep records showing the receipt, transfer, and disposal of each source of radiation which is subject to licensure or registration pursuant to groups 1.5 and 2 of this subchapter as follows:

(1) The user shall retain each record of receipt of a source of radiation as long as the source of radiation is possessed and for three years following transfer or disposal of the source of radiation.

(2) The user who transferred the source of radiation shall retain each record of transfer for three years after each transfer unless a specific requirement in another part of the regulations in this subchapter dictates otherwise.

(3) The user who disposed of the radioactive material shall retain each record of disposal of the radioactive material until the Department terminates each license that authorizes disposal of the radioactive material.

(b) The user shall retain each record that is required by the regulations in this subchapter or by license condition for the period specified by the appropriate regulation or license condition. If a retention period is not otherwise specified by regulation or license condition, the record shall be retained until the Department terminates each license that authorizes the activity that is subject to the recordkeeping requirement.

(c) Records which shall be maintained pursuant to this subchapter may be the original or a reproduced copy or microform if such reproduced copy or microform is duly authenticated by authorized personnel and the microform is capable of producing a clear and legible copy after storage for the period specified by department regulations. The record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records such as letters, drawings, specifications, shall include all pertinent information such as stamps, initials, and signatures. The licensee shall maintain adequate safeguards against tampering with and loss of records.

(d) If there is a conflict between the Department's regulations in this subchapter, license condition, or other written Department approval or authorization pertaining to the retention period for the same type of record, the retention period specified in the regulations in this subchapter for such records shall apply unless the Department, pursuant to 30104, has granted a specific exemption from the record retention requirements specified in the regulations in this subchapter.

(e) Prior to license termination, each licensee authorized to possess radioactive material with a half-life greater than 120 days, in an unsealed form, shall, if requested by the Department, forward the following records to the Department:

(1) Records of disposal of licensed material made under Title 10, Code of Federal Regulations, sections 20.2002, 20.2003, 20.2004, 20.2005, incorporated by reference in section 30253; and

(2) Records required by Title 10, Code of Federal Regulations section 20.2103(b)(4), incorporated by reference in section 30253.

(f) If licensed activities are transferred or assigned in accordance with section 30194(c), each licensee authorized to possess radioactive material, with a half life greater than 120 days, in an unsealed form, shall transfer the following records to the new licensee and the new licensee will be responsible for maintaining these records until the license is terminated:

(1) Records of disposal of licensed material made under Title 10, Code of Federal Regulations, sections 20.2002, 20.2003, 20.2004, 20.2005, incorporated by reference in section 30253; and

(2) Records required by Title 10, Code of Federal Regulations, section 20.2103(b)(4), incorporated by reference in section 30243.

(g) Prior to license termination, each licensee shall, if requested by the Department, forward the records required by section 30256(a) to the Department.

NOTE: Authority cited: Sections 100275 and 115000, Health and Safety Code. Reference: Sections 114965, 114970, 115105, 115110, and 115235, Health and Safety Code.

HISTORY

1. New article 3.1 (sections 30293 and 30295) and section filed 9–9–97; operative 10–9–97 (Register 97, No. 37). For prior history, see Register 94, No. 28.

§ 30294. Reports of Theft or Loss of Sources of Radiation. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Amendment of subsections (a) and (c) filed 6–19–73; effective thirtieth day thereafter (Register 73, No. 25).
2. Amendment filed 1 22 76; effective thirtieth day thereafter (Register 76, No. 4).
3. Amendment filed 6 18 87; operative 7–18–87 (Register 87, No. 28).
4. Repealer filed 3–3–94 as an emergency; operative 3 3 94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7 1 94 or emergency language will be repealed by operation of law on the following day.
5. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6 7 94 and filed 7–14–94 (Register 94, No. 28).

§ 30295. Notification of Incidents.

(a) Each user shall notify the Department as soon as possible but not later than four hours after the discovery of an event that prevents immediate protective actions necessary to avoid exposures to radiation or radioactive materials that could exceed regulatory limits.

(b) Each user shall notify the Department within 24 hours after the discovery of any of the following events involving radiation or radioactive materials:

(1) An unplanned contamination event involving licensed radioactive material that:

(A) Requires access to the contaminated area by workers or the public, to be restricted for more than 24 hours by imposing additional radiological controls or by prohibiting entry into the area;

(B) Involves a quantity of material greater than five times the lowest annual limit on intake specified in Appendix B of Title 10, Code of Federal Regulations, part 20, incorporated by reference in section 30253 for the material; and

(C) Has access to the area restricted for a reason other than to allow isotopes with a half–life of less than 24 hours to decay prior to decontamination.

(2) An event in which equipment is disabled or fails to function as designed when:

(A) The equipment is required by regulation or license condition to prevent releases exceeding regulatory limits, to prevent exposures to radiation and radioactive materials exceeding regulatory limits, or to mitigate the consequences of an accident;

(B) The equipment is required to be available and operable when it is disabled or fails to function; and

(C) No redundant equipment is available and operable to perform the required safety function.

(3) An event that requires unplanned medical treatment at a medical facility of an individual with spreadable radioactive contamination on the individual's clothing or body.

(4) An unplanned fire or explosion damaging any licensed material or any device, container, or equipment containing licensed material when:

(A) The quantity of material involved is greater than five times the lowest annual limit on intake specified in Appendix B of Title 10, Code of Federal Regulations, part 20, incorporated by reference in section 30253 for the material; and

(B) The damage affects the integrity of the licensed material or its container.

(c) Reports made by users in response to the requirements of this section shall be made as follows:

Each user shall make reports required by subsections (a) and (b) by telephone to the Department. To the extent that the information is available at the time of notification, the information provided in these reports shall include:

(1) The caller's name and call back telephone number;

(2) A description of the event, including date and time;

(3) The exact location of the event;

(4) The isotopes, quantities, and chemical and physical form of the licensed material involved; and

(5) Any personnel radiation exposure data available.

(d) Each user who makes a report required by this section shall submit a written follow–up report within 30 days of the initial report. These written reports shall be sent to the Department and include:

(1) A description of the event, including the probable cause and the manufacturer and model number (if applicable) of any equipment that failed or malfunctioned;

(2) The exact location of the event;

(3) The isotopes, quantities, and chemical and physical form of the licensed material involved;

(4) Date and time of the event;

(5) Corrective actions taken or planned and the results of any evaluation or assessment; and

(6) The extent of exposure of individuals to radiation or to radioactive materials without identification of individuals by name.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115105, 115110, and 115235, Health and Safety Code.

HISTORY

1. New section filed 9–9–97; operative 10–9–97 (Register 97, No. 37). For prior history, see Register 94, No. 28.
2. Amendment of section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30297. Reports of Overexposures and Excessive Levels and Concentrations. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New subsections (c) and (d) filed 5–13–69; effective thirtieth day thereafter (Register 69, No. 20).
2. Amendment of subsections (a) and (b) filed 10–12–72; effective thirtieth day thereafter (Register 72, No. 42).
3. Amendment of subsection (a) filed 1–22–76; effective thirtieth day thereafter (Register 76, No. 4).
4. Amendment of subsection (a) filed 6–18–87; operative 7–18–87 (Register 87, No. 28).
5. Repealer filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
6. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30298. Vacating Installations. [Renumbered]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Change without regulatory effect adding NOTE (Register 87, No. 11).
2. Renumbering of former section 30298 to new section 30256 filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30299. Bankruptcy Notification. [Renumbered]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 28501, 28502, 25815, 25860, 25863, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 4–19–91; operative 5–19–91 (Register 91, No. 20).
2. Renumbering of former section 30299 to new section 30257 filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

Article 4. Special Requirements for the Use of X–Ray in the Healing Arts

§ 30305. General Provisions.

(a)(1) This article pertains to use of X–rays in medicine, dentistry, osteopathy, chiropractic, podiatry, and veterinary medicine. The provisions of this article are in addition to, and not in substitution for, other applicable provisions of this regulation and of Group 1 of this subchapter.

(2) Any existing machine or installation need not be replaced or substantially modified to conform to the requirements of this regulation provided that the user demonstrates to the Department's satisfaction achievement of equivalent protection through other means.

(3) No person shall make, sell, lease, transfer, lend, or install X–ray or fluoroscopic equipment or the supplies used in connection with such equipment unless such supplies and equipment, when properly placed in operation or properly used, will meet the requirements of this regulation. This includes responsibility for the delivery of cones or collimators, filters, adequate timers and fluoroscopic shutters (where applicable).

(4) For X–ray equipment manufactured after July 31, 1974, the user shall provide sufficient maintenance to keep the equipment in compliance with all applicable radiation protection sections of the Code of Federal Regulations, Title 21, Chapter I, Subchapter J, Part 1020, Sections 1020.30, 1020.31, and 1020.32.

(5) Each installation shall be provided with such primary barriers and/or secondary barriers as are necessary to ensure compliance with title 10, Code of Federal Regulations, part 20, (10 CFR 20) subparts C and D incorporated by reference in section 30253. Special requirements are contained in title 24, California Code of Regulations, Part 2, Chapter 31C, sections 3101C through 3104C.

(b) Use.

(1) The user shall assure that all X–ray equipment under his jurisdiction is operated only by persons adequately instructed in safe operating procedures and competent in safe use of the equipment.

(2) The user shall provide safety rules to each individual operating X–ray equipment under his control, including any restrictions of the operating technique required for the safe operation of the particular X–ray ap-

paratus, and require that the operator demonstrate familiarity with these rules.

(3) No user shall operate or permit the operation of X-ray equipment unless the equipment and installation meet the applicable requirements of these regulations and are appropriate for the procedures to be performed.

(4) Deliberate exposure of an individual to the useful beam for training or demonstration purposes shall not be permitted unless there is also a medical or dental indication for the exposure and the exposure is prescribed by a physician or dentist.

(c) Areas or rooms that contain permanently installed X ray machines as the only source of radiation shall be posted with a sign or signs

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in lieu of other signs required by the United States, title 10, Code of Federal Regulations, part 20, section 20.1902 as incorporated by reference in section 30253.

(d) High radiation areas caused by radiographic and fluoroscopic machines used solely in the healing arts and which are in compliance with the access control and signal requirements of title 24, California Code of Regulations, Part 2, Chapter 31C, sections 3101C through 3104C shall be exempt from the access control and signal requirements of 10 CFR 20, section 20.1601 as incorporated by reference in section 30253.

NOTE: Authority cited: Sections 100275, 114975, 115000, 131051, 131052, 131055 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000 and 115060, Health and Safety Code.

HISTORY

1. Amendment filed 3-5-71; effective thirtieth day thereafter. Approved by State Building Standards Commission 2-26-71. (Register 71, No. 10).
2. Renumbering and amendment filed 9-4-73 as an emergency; effective upon filing (Register 73, No. 36). Approved by State Building Standards Commission 11-30-73.
3. Certificate of Compliance filed 12-28-73 (Register 73, No. 52).
4. Amendment filed 6-24-80; effective thirtieth day thereafter (Register 80, No. 26).
5. New subsection (a)(5) and repealer of subsection (c) filed 6-18-87; operative 7-18-87 (Register 87, No. 28).
6. Amendment of article heading and new subsections (c) and (d) filed 3-3-94 as an emergency; operative 3-3-94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7-1-94 or emergency language will be repealed by operation of law on the following day.
7. Certificate of Compliance as to 3-3-94 order transmitted to OAL 6-7-94 and filed 7-14-94 (Register 94, No. 28).
8. Change without regulatory effect amending subsections (a)(5) and (d) and amending NOTE filed 11-12-2009 pursuant to section 100, title 1, California Code of Regulations (Register 2009, No. 46).

§ 30305.1. Quality Assurance General Provisions.

(a) Each user subject to this article, as specified in section 30305(a)(1), who performs radiography shall assure that:

(1) Radiographic films are stored, handled, and processed in accordance with manufacturers' recommendations. Expired film may not be used for clinical purposes.

(2) Intensifying screens, grids, viewers, film processing equipment, chemicals, and solutions are stored, used, and maintained in accordance with manufacturers' recommendations.

(3) For each X ray machine, a technique chart is provided which establishes for each view commonly performed:

(A) Patient size versus selectable exposure factors;

(B) Source-to-Image distance (if not fixed);

(C) Grid data;

(D) Film/Screen combination; and

(E) Patient shielding (if appropriate).

NOTE: Authority cited: Sections 114975, 115000, 115060, 115061, 131051, 131052, 131055 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060 and 115061, Health and Safety Code.

HISTORY

1. New section filed 9-4-2012; operative 10-4-2012 (Register 2012, No. 36).

§ 30306. Definitions.

(a) "Automatic exposure control" means a device which automatically controls one or more technique factors in order to obtain at a preselected location(s) a required quantity of radiation.

(b) "Cineradiography" means the making of a motion picture record of the successive images appearing on a fluorescent screen.

(c) "Contact therapy" means irradiation of accessible lesions usually employing a very short source-skin distance and potentials of 40-50 KV.

(d) "Dead-man switch" means a switch so constructed that a circuit closing contact can only be maintained by continuous pressure by the operator.

(e) "Diagnostic-type tube housing" means an X-ray tube housing so constructed that the leakage radiation measured at a distance of 1 meter from the source cannot exceed 100 milliroentgens in 1 hour when the tube is operated at its maximum continuous rate of current for the maximum rated tube potential.

(f) "Filter" means material placed in the useful beam to absorb preferentially the less penetrating radiations.

(g) "Interlock" means a device for precluding access to an area of radiation hazard either by preventing entry or by automatically removing the hazard.

(h) "Leakage radiation" means all radiation coming from within the tube housing except the useful beam.

(i) "Protective barrier" means a barrier of attenuating materials used to reduce radiation exposure.

(j) "Primary protective barrier" means a barrier sufficient to attenuate the useful beam to the required degree.

(k) "Scattered radiation" means radiation that, during passage through matter, has been deviated in direction.

(l) "Secondary protective barrier" means a barrier sufficient to attenuate stray radiation to the required degree.

(m) "Shutter" means a device, generally of lead, fixed to an X ray tube housing to intercept the useful beam.

(n) "Stray radiation" means radiation not serving any useful purpose. It includes leakage and scattered radiation.

(o) "Therapeutic-type tube housing" means,

(1) For X-ray therapy equipment not capable of operating at 500 kVp or above, an X ray tube housing so constructed that the leakage radiation at a distance of 1 meter from the source does not exceed 1 roentgen in an hour when the tube is operated at its maximum rated continuous current for the maximum rated tube potential.

(2) For X ray therapy equipment capable of operating at 500 kVp or above, an X-ray tube housing so constructed that the leakage radiation at a distance of 1 meter from the source does not exceed either 1 roentgen in an hour or 0.1 percent of the useful beam dose rate at 1 meter from the source, whichever is greater, when the machine is operated at its maximum rated continuous current for the maximum rated accelerating potential.

(3) In either case, small areas of reduced protection are acceptable provided the average reading over any 100 square centimeters area at 1 meter distance from the source does not exceed the values given above.

(p) "Useful beam" means that part of the radiation which passes through the window, aperture, cone, or other collimating device of the tube housing. (T17-30306-T24).

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811 and 25815, Health and Safety Code.

HISTORY

1. Renumbering and amendment filed 9-4-73 as an emergency; effective upon filing (Register 73, No. 36). Approved by State Building Standards Commission 11-30-73.
2. Certificate of Compliance filed 12-28-73 (Register 73, No. 52).
3. Amendment of subsection (c) filed 6-18-87; operative 7-18-87 (Register 87, No. 28).

§ 30307. Fluoroscopic Installations

(a) Equipment.

(1) The tube housing shall be of diagnostic type.

(2) The target–to–panel or target–to–table top distance should not be less than 18 inches and shall not be less than 12 inches.

(3) The total filtration permanently in the useful beam shall not be less than 2.5 millimeters aluminum equivalent. This requirement may be assumed to have been met if the half–value layer is not less than 2.5 millimeters aluminum at normal operating voltages.

(4) The equipment shall be so constructed that the entire cross–section of the useful beam is attenuated by a primary barrier. This barrier is usually the viewing device, either a conventional fluoroscopic screen or an image intensification mechanism.

(A) The lead equivalent of the barrier of conventional fluoroscopes shall be at least 1.5 millimeters for equipment capable of operating up to 100 kVp, at least 1.8 millimeters for equipment whose maximum operating potential is greater than 100 kVp and less than 125 kVp, and at least 2.0 millimeters for equipment whose maximum operating potential is 125 kVp or greater. Special attention must be paid to the shielding of image intensifiers so that neither the useful beam nor scattered radiation from the intensifier can produce a radiation hazard to the operator or personnel. With the fluorescent screen 14 inches (35 cm) from the panel or table top, the exposure rate 2 inches 5 cm) beyond the viewing surface of the screen shall not exceed 30 mR/hr for each R per minute at the table top with the screen in the useful beam without a patient and with the fluoroscope operating at the highest potential employed.

(B) Collimators shall be provided to restrict the size of the useful beam to less than the area of the barrier. For conventional fluoroscopes this requirement is met if, when the adjustable diaphragm is opened to its fullest extent, an unilluminated margin is left at all edges of the fluorescent screen with the screen centered in the beam at a distance of 35 cm (14 inches) from the panel or table top.

For image intensified fluoroscopy, shutters shall be provided which can be adjusted to restrict the X–ray field to the visible portion of the image receptor during fluoroscopy. For systems employing rectangular X–ray fields and circular image receptors, this requirement is met if the collimated beam forms a square which circumscribes, and is tangent to, the circular margin of the image receptor.

(C) The tube mounting and the carrier shall be so linked together that the carrier always intercepts the entire useful beam. The X–ray exposure shall automatically terminate when the carrier is removed from the useful beam.

(D) Collimators and adjustable diaphragms or shutters to restrict the size of the useful beam shall provide the same degree of protection as is required of the tube housing.

(5) The exposure switch shall be of the dead–man type.

(6) Each fluoroscopic unit shall be equipped with a manual–reset cumulative timing device, activated by the exposure switch, which will either indicate elapsed exposure time by a signal audible to the fluorocopist or turn off the apparatus when the total exposure exceeds a predetermined limit not exceeding five minutes in one or a series of exposures.

(7) Useful beam exposure rate.

(A) All fluoroscopic equipment. For routine fluoroscopy, the exposure rate measured at the point where the center of the useful beam enters a typical patient shall be as low as is practicable and shall not exceed 5 roentgens per minute under the conditions specified herein. This limit shall not apply during magnification procedures or the recording of fluoroscopic images where higher exposure rates are required. Compliance with this paragraph shall be determined using the measuring specifications of Section 30307(a)(7)(D), plus the following procedures when the automatic exposure rate control is used:

1. The useful beam exposure rate shall be measured with a phantom equivalent to 9 inches of water or 7 7/8 inches of lucite, intercepting the entire useful beam.

2. If the X–ray source is below the table, the X–ray exposure rate shall be measured with the nearest part of the imaging assembly located at 14 inches above the table top.

3. The field size at the point of exposure rate measurement shall be at least 6 1/4 square inches in area in the plane perpendicular to the central ray.

(B) Fluoroscopic equipment manufactured after August 1, 1974, and equipped with automatic exposure rate controls. Fluoroscopic equipment which is provided with automatic exposure rate control shall not be operable at any combination of tube potential and current which will result in an exposure rate in excess of 10 roentgens per minute at the point where the center of the useful beam enters the patient, except during recording of fluoroscopicimages, or when an optional high level control is provided. When so provided, the equipment shall not be operable at any combination of tube potential and current which will result in an exposure rate in excess of 5 roentgens per minute at the point where the center of the useful beam enters the patient unless the high level control is activated. Special means of activation of high level controls shall be required. The high level control shall only be operable when continuous manual activation is provided by the operator. A continuous signal audible to the fluoroscopist shall indicate that the high level control is being employed.

(C) Fluoroscopic equipment manufactured after August 1, 1974, without automatic exposure rate controls. Fluoroscopic equipment which is not provided with automatic exposure rate control shall not be operable at any combination of tube potential and current which will result in an exposure rate in excess of 5 roentgens per minute at the point where the center of the useful beam enters the patient, except during recording of fluoroscopic images, or when an optional high level control is activated. Special means of activation of high level controls shall be required. The high level control shall only be operable when continuous manual activation is provided by the operator. A continuous signal audible to the fluoroscopist shall indicate that the high level control is being employed.

(D) Measuring useful beam exposure rate compliance.

1. If the X–ray tube is below the table, the exposure rate shall be measured 1 centimeter above the tabletop or cradle.

2. If the X–ray tube is above the table, the exposure rate shall be measured at 30 centimeters above the tabletop with the end of the beam–limiting device or spacer positioned as closely as possible to the point of measurement.

3. In a C–arm type of fluoroscope, the exposure rate shall be measured at 30 centimeters from the input surface of the fluoroscopic imaging assembly.

(8) Mobile fluoroscopic equipment shall meet the requirements of this section where applicable, except that:

(A) Inherent provisions shall be made so that the machine is not operated at a source–skin distance of less than 30 cm (12 inches).

(B) Image intensification shall always be provided. Conventional fluoroscopic screens shall not be used.

(C) It shall be impossible to operate a machine when the collimating cone or diaphragm is not in place.

(D) It shall be impossible to energize the useful beam of a mobile fluoroscope unless the entire useful beam is intercepted by the image receptor.

(9) Devices which indicate the X–ray tube potential and current shall be provided, and should be located in such a manner that the operator may monitor the tube potential and current during fluoroscopy.

(10) A shielding device of at least 0.25 millimeters lead equivalent shall be provided for covering the bucky–slot during fluoroscopy.

(11) Whenever practicable, protective drapes, or hinged or sliding panels, of at least 0.25 millimeters lead equivalent shall be provided between the patient and the fluoroscopist to intercept scattered radiation which would otherwise reach the fluoroscopist and others near the machine. Such devices shall not substitute for wearing of a protective apron.

(b) Operating Procedures.

(1) Protective aprons of at least 0.25 mm lead equivalent shall be worn in the fluoroscopy room by each person, except the patient, whose body is likely to be exposed to 5 mR/hr or more.

(2) On fluoroscopes with automatic exposure controls the operator shall monitor the tube current and potential at least once each week to as-

certain that they are in their usual ranges for a given set of operating parameters. This requirement may be met by adjusting the controls to usual settings for fluoroscoping an average patient, and using a phantom of any suitable material with attenuation roughly equivalent to six to ten inches of water. Whenever the monitored tube current or potential vary in a way which could increase the patient X–ray exposure rate by more than 25% over the latest exposure rate measurement required by Section 30307(b)(3), the cause(s) for the change shall be determined promptly and the patient exposure rate shall be remeasured. On fluoroscopes with manual exposure control only, the operator shall monitor the tube current and potential at least once each day during use to ascertain that they are within the normal ranges used by the facility. A written log shall be kept of all monitored readings and shall include at least the tube current and potential, the date, identification of the fluoroscope, and name of the person who did the monitoring. Records of all monitored readings shall be preserved at the facility for at least three years.

(3) Measurements of the table top or patient exposure rate shall be made at least once each year for units with automatic exposure control, and at least once each 3 years for units without automatic exposure control, and immediately following alteration or replacement of a major component, such as the X ray tube, the exposure controls, the imaging assembly, and the power source.

(4) On cineradiography equipment, the exposure rates to which patients are normally subjected shall be determined at least once each year, and immediately following alterations or replacement of a major component, such as the X–ray tube, the exposure controls, the imaging assembly, and the power source.

NOTE: Authority cited: Sections 102, 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811 and 25815, Health and Safety Code.

HISTORY

1. Renumbering and amendment filed 9–4–73 as an emergency; effective upon filing (Register 73, No. 36). Approved by State Building Standards Commission 11–30–73.
2. Certificate of Compliance filed 12–28–73 (Register 73, No. 52).
3. Amendment filed 6–24–80; effective thirtieth day thereafter (Register 80, No. 26).
4. Amendment filed 6–18–87; operative 7–18–87 (Register 87, No. 28).

§ 30308. Radiographic Installations (Other Than Dental and Veterinary Medicine).

(a) Equipment.

(1) The tube housing shall be of diagnostic type.

(2) Suitable devices (diaphragms, cones, adjustable collimators), capable of restricting the useful beam to the area of clinical interest shall be provided to define the beam and shall provide the same degree of attenuation as that required of the tube housing. Such devices shall be calibrated in terms of the size of the projected useful beam at specified source–film distances. For chest photofluorographic equipment, the collimator shall restrict the beam to dimensions no greater than those of the fluorographic screen. The field size indication on adjustable collimators shall be accurate to within 2 percent of the source–film distance. The light field shall be aligned with the X–ray field with the same degree of accuracy.

(3) For equipment manufactured prior to August 1, 1974, the aluminum equivalent of the total filtration in the useful beam shall be not less than that shown in Table 1:

Table 1

Operating kVp	*Minimum Total Filter (Inherent plus added)*
Below 50 kVp	0.5 mm aluminum
50–70 kVp	1.5 mm aluminum
Above 70 kVp	2.5 mm aluminum

For equipment manufactured on or after August 1, 1974, the half–value layer (HVL) of the useful beam for a given X–ray tube potential shall not be less than the appropriate value specified in Table 2.

Table 2

X–ray tube voltage (kilovolt peak)		
Designed *Operating Range*	*Measured Minimum HVL*	*Minimum HVL (mm of Al)*
Below 50	30	0.3
	40	0.4
	49	0.5
50 to 70	50	1.2
	60	1.3
	70	1.5
Above 70	70	2.1
	80	2.3
	90	2.5
	100	2.7
	110	3.0
	120	3.2
	130	3.5
	140	3.8
	150	4.1

(4) A device shall be provided to terminate the exposure after a pre–set time or exposure.

(5) A dead–man type of exposure switch shall be provided and so arranged that it cannot be conveniently operated outside a shielded area, except that exposure switches for "spot film" devices used in conjunction with fluoroscopic tables are excepted from this shielding requirement.

(6) The control panel shall include a device (usually a milliammeter) to give positive indication of the production of X–rays whenever the X ray tube is energized.

(7) The control panel shall include devices (labeled control settings and/or meters) indicating the physical factors (such as kVp, mA, exposure time, or whether timing is automatic) used for the exposure.

(8) Machines equipped with beryllium window X–ray tubes shall contain keyed filter interlock switches in the tube housing and suitable indication on the control panel of the added filter in the useful beam if the total filtration permanently in the useful beam is less than 0.5 mm aluminum equivalent. The total filtration permanently in the useful beam shall be clearly indicated on the tube housing.

(9) The aluminum equivalent of the table top when a cassette tray is used under the table top, or the aluminum equivalent of the front panel of the vertical cassette holder, shall not be more than 1 mm at 100 kVp.

(b) Operating Procedures.

(1) No individual occupationally exposed to radiation shall be permitted to hold patients during exposures except during emergencies, nor shall any individual be regularly used for this service. If the patient must be held by an individual, that individual shall be protected with appropriate shielding devices such as protective gloves and apron and he shall be so positioned that no part of his body will be struck by the useful beam.

(2) Only individuals required for the radiographic procedure shall be in the radiographic room during exposure; and, except for the patient, all such persons shall be equipped with appropriate protective devices.

(3) The radiographic field shall be restricted to the area of clinical interest.

(4) Gonadal shielding of not less than 0.5 mm lead equivalent shall be used for patients who have not passed the reproductive age during radiographic procedures in which the gonads are in the direct beam, except for cases in which this would interfere with the diagnostic procedure.

(5) The operator shall stand behind the barrier provided for his protection during radiographic exposures.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811 and 25815, Health and Safety Code.

HISTORY

1. Renumbering and amendment filed 9–4–73 as an emergency; effective upon filing (Register 73, No. 36). Approved by State Building Standards Commission 11–30–73.
2. Certificate of Compliance filed 12–28–73 (Register 73, No. 52).
3. Amendment filed 6–18–87; operative 7–18–87 (Register 87, No. 28).

§ 30308.1. Quality Assurance for Radiographic Installations (Other Than Mammography, Dental, and Veterinary Medicine)

(a) Each user subject to this article, as specified in section 30305(a)(1), who develops clinical radiographs for diagnostic purposes with automat-

ic film processors for other than mammographic, dental, or veterinary use, shall assure all of the following:

(1) Each processor used to develop clinical radiographs is adjusted and maintained to meet the manufacturer's processing specifications for the highest speed radiographic film used clinically.

(2) Measurements are performed each day before clinical radiographs are processed, so as to determine that the processor is operating within the following limits:

(A) The base–plus–fog density is within plus 0.05 of the operating level established with the highest speed radiographic film used clinically;

(B) The mid–density is within plus or minus 0.15 of the operating level established with the highest speed radiographic film used clinically; and

(C) The density–difference is within plus or minus 0.15 of the operating level established with the highest speed radiographic film used clinically.

(3) Tests are performed at intervals not to exceed three months to determine that the residual fixer level retained in clinical radiographic films is not more than 5.0 micrograms per square centimeter.

(4) Tests are performed at intervals not to exceed six months to determine that the optical density attributable to darkroom fog is not more than 0.05 when the highest speed of each type radiographic film used clinically, which has a mid–density of no less than 1.20 optical density, is exposed on the counter top for one minute under typical darkroom conditions with the safelight on.

(5) For any test result falling outside the criteria specified in this section, the problem is identified and corrective action is taken before clinical radiographs are processed.

(6) Records of the tests specified in this section, including the problems detected, corrective actions taken, and the effectiveness of those corrective actions, are maintained for at least one year from the date the test was performed.

NOTE: Authority cited: Sections 114975, 115000, 115060, 115061, 131051, 131052, 131055 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060 and 115061, Health and Safety Code.

HISTORY

1. New section filed 9–4–2012; operative 10–4–2012 (Register 2012, No. 36).

§ 30309. Special Requirements for Mobile Radiographic Equipment.

(a) Equipment.

(1) All requirements of Section 30308(a) apply except 30308 (a)(5) and 30308 (a)(9).

(2) The exposure control switch shall be of the dead–man type and shall be so arranged that the operator can stand at least 6 feet from the patient and well away from the useful beam.

(3) Inherent provisions shall be made so that the equipment is not operated at source–skin distances of less than 12 inches.

(b) Operating Procedures.

(1) All provisions of Section 30308(b) apply except 30308(b)(5).

(2) The target–to–skin distance shall be not less than 12 inches.

(3) Personnel monitoring shall be required for all individuals operating mobile X–ray equipment.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811 and 25815, Health and Safety Code.

HISTORY

1. Amendment filed 3–5–71; effective thirtieth day thereafter. Approved by State Building Standards Commission 2–26–71. (Register 71, No. 10).
2. Renumbering and amendment filed 9–4–73 as an emergency; effective upon filing (Register 73, No. 36). Approved by State Building Standards Commission 11–30–73.
3. Certificate of Compliance filed 12–28–73 (Register 73, No. 52).
4. Amendment of subsection (b)(1) filed 6–18–87; operative 7–18–87 (Register 87, No. 28).

§ 30310. Special Requirements for Chest Photofluorographic Installations.

(a) Equipment.

(1) All provisions of Section 30308 (a) apply.

(2) A collimator shall restrict the useful beam to the area of the photofluorographic screen.

(3) The incident X–ray exposure where the central ray enters the patient shall not exceed 200 milliroentgens per radiograph for the average patient, and should not exceed 100 milliroentgens per radiograph.

(b) Operating Procedures.

(1) All provisions of Section 30308(b) apply.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811 and 25815, Health and Safety Code.

HISTORY

1. Amendment filed 3–5–71; effective thirtieth day thereafter. Approved by State Building Standards Commission 2–26–71 (Register 71, No. 10).
2. Renumbering and amendment filed 9–4–73 as an emergency; effective upon filing (Register 73, No. 36). Approved by State Building Standards Commission 11–30–73.
3. Certificate of Compliance filed 12–28–73 (Register 73, No. 52).
4. Amendment filed 6–18–87; operative 7–18–87 (Register 87, No. 28).

§ 30311. Dental Radiographic Installations.

(a) Equipment.

(1) The tube housing shall be of diagnostic type.

(2) Diaphragms or cones shall be used for collimating the useful beam and shall provide the same degree of protection as the housing.

(A) For intra–oral radiography the useful beam shall be restricted to a diameter of not more than 7 cm (2.75 inches) at the surface of the skin.

(3) For intra–oral film exposures a cone or spacer frame shall provide a target–to–skin distance of not less than 18 cm (7 inches) with apparatus operating above 50 kVp or 10 cm (4 inches) with apparatus operating at 50 kVp or below.

(4) The total filtration permanently in the useful beam shall be equivalent to at least 0.5 millimeters of aluminum for equipment operating below 50 kVp, equivalent to at least 1.5 millimeters of aluminum for equipment operating from 50 kVp through 70 kVp, and equivalent to at least 2.5 millimeters of aluminum for equipment operating above 70 kVp.

(5) A device shall be provided to terminate the exposure after a pre–set time or exposure.

(6) The exposure control switch shall be of the dead–man type. If a recycling timer is employed it shall not be possible to make a repeat exposure without release of the exposure switch to reset the timer.

(7) Each installation shall be provided with a protective barrier for the operator or shall be so arranged that the operator can stand at least 6 feet from the patient and well away from the useful beam.

(8) Mechanical support of the tube head and cone shall maintain the exposure position without drift or vibration.

(9) Panoramic installations. This part applies to those installations which consist of a tube head with a collimator providing a narrow useful beam and an extra oral film carrier which are interlocked in their motion about the patient.

(A) All provisions of Section 30311 (a) apply except 30311 (a)(2)(A), 30311 (a)(3), 30311 (a)(10).

(10) Cephalometric installations.

(A) All provisions of Section 30311 (a) apply except 30311 (a)(2)(A), 30311 (a)(3), and 30311 (a)(9).

(B) The radiographic field shall be restricted to the area of the image receptor.

(11) The X–ray control panel shall include means for indicating X–ray tube voltage (kVp), tube current (mA), and exposure duration. The tube voltage and current shall be indicated by meters or by control settings. A milliammeter, a light or other device shall give clear and distinct visual or audible indication to the operator when X–rays are being produced.

(b) Operating Procedures.

(1) No individual occupationally exposed to radiation shall be permitted to hold patients or films during exposure, nor shall any individual be regularly used for this service.

(2) During each exposure, the operator shall stand at least 6 feet from the patient or behind a protective barrier.

(3) Only the patient shall be in the useful beam.

(4) Neither the tube housing nor the position indicating device (cone, cylinder) shall be hand-held during exposure.

(5) Fluoroscopy shall not be used in dental examinations.

(6) Each patient undergoing dental radiography shall be draped with a protective apron of not less than 0.25 millimeter lead-equivalent to cover the gonadal area.

(7) For intra-oral and cephalometric radiography the X-ray beam and the film shall be aligned very carefully with the area to be radiographed.

(8) Only persons required for the radiographic procedure shall be in the radiographic room during exposures.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811 and 25815, Health and Safety Code.

HISTORY

1. Renumbering and amendment filed 9-4-73 as an emergency; effective upon filing (Register 73, No. 36). Approved by State Building Standards Commission 11-30-73.
2. Certificate of Compliance filed 12-28-73 (Register 73, No. 52).
3. Editorial correction (Register 74, No. 6).
4. Amendment filed 6-24-80; effective thirtieth day thereafter (Register 80, No. 26).
5. Amendment filed 6-18-87; operative 7-18-87 (Register 87, No. 28).

§ 30311.1. Quality Assurance for Dental Radiography.

(a) Each user subject to this article, as specified in section 30305(a)(1), using intra-oral film for dental radiography of human beings shall assure all of the following:

(1) A reference film meeting the interpreting dentists' criteria for image density, contrast, sharpness and overall quality is selected for use in daily comparisons of dental radiographs.

(2) For each day dental radiographs are processed, clinical radiographs are compared to the selected reference film for density, contrast, sharpness, and overall image quality.

(3) Corrective action is taken when observable changes occur in clinical radiographic image density, contrast, sharpness and overall quality.

(4) Records of the corrective actions taken, and the effectiveness of those corrective actions, are maintained for a minimum of one year from the date the corrective action was taken.

(5) Corrective action, as directed by the Department, is taken if the entrance exposure to an adult patient for a routine intraoral bitewing exam is found by the Department to be outside the ranges specified in the following table.

Tube Potential[1] *(kVp)*[2]	*"D" Speed Film (mR)*[3]	*"E or F" Speed Film (mR)*[3]
50	425–575	220–320
55	350–500	190–270
60	310–440	165–230
65	270–400	140–200
70	240–350	120–170
75	170–260	100–140
80	150–230	90–120
85	130–200	80–105
90	120–180	70–90
95	110–160	60–80
100	100–140	50–70

[1]Linear extrapolation or interpolation shall be used for an x-ray tube potential (kVp) not listed in the table.

[2]The kVp shall be measured to determine the correct exposure limit to be applied.

[3]Exposures values are specified as free in air exposures without backscatter.

NOTE: Authority cited: Sections 114975, 115000, 115060, 115061, 131051, 131052, 131055 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060 and 115061, Health and Safety Code.

HISTORY

1. New section filed 9-4-2012; operative 10-4-2012 (Register 2012, No. 36).

§ 30312. Therapeutic X-Ray Installations.

(a) Equipment.

(1) The tube housing shall be of therapeutic type.

(2) For equipment installed on or before August 1, 1979, permanent diaphragms or cones used for collimating the useful beam shall afford the same degree of protection as the housing. Adjustable or removable beam-defining diaphragms or cones shall transmit not more than 5 percent of the useful beam obtained at the maximum kilovoltage and with maximum treatment filter.

(3) For equipment installed after August 1, 1979, permanent beam-defining devices or diaphragms shall afford the same degree of protection as the housing. Adjustable or interchangeable beam-defining devices shall transmit no more than 2 percent of the useful beam for the portion of the useful beam which is to be attenuated by the beam limiting device. Measurements shall be averaged over an area up to but not exceeding 100 square centimeters at the normal treatment distance.

(4) Filters shall be secured in place to prevent them from dropping out during treatment. A filter indication system shall be used on all therapy machines using interchangeable filters. It shall indicate, from the control panel, or from the control station, the presence or absence of any filter except compensating filters, and it shall be designed to permit easy identification of the filter in place. The filter slot shall be so constructed that the radiation escaping through it does not exceed 1 roentgen per hour at 1 meter, or, if the patient is likely to be exposed to radiation escaping from the slot, 30 roentgens per hour at 5 centimeters from the external opening. Each interchangeable filter shall be marked with its thickness and material.

(5) The X-ray tube shall be so mounted that it cannot turn or slide with respect to the aperture.

(6) Means shall be provided to immobilize the tube housing during stationary portal treatment.

(7) A suitable exposure control device such as an automatic timer, exposure meter, or dose meter shall be provided to terminate the exposure after a preset time interval or preset exposure or dose limit. A timer shall be provided to terminate the exposure after a preset time regardless of what other exposure limiting devices are present. Means shall be provided for the operator to terminate the exposure at any time.

(8) Equipment utilizing shutters to control the useful beam shall have a shutter position indicator on the control.

(9) An easily discernible indicator which shows whether or not X-rays are being produced shall be on the control panel.

(10) Mechanical and/or electrical stops shall be provided on X-ray machines capable of operating at 150 kVp or above to insure that the useful beam is oriented only toward primary barriers.

(11) When the relationship between the beam interceptor (when present) and the useful beam is not permanently fixed, mechanical or electrical stops shall be provided to insure that the beam is oriented only toward primary barriers.

(b) Operating Procedures.

(1) When a patient must be held in position for radiation therapy, mechanical supporting or restraining devices shall be used.

(2) No patient other than the one being treated shall be in the treatment room during exposure.

(3) No person other than the patient shall be in the treatment room when the tube is operated at potentials exceeding 150 kVp. At operating potentials of 150 kVp or below, persons other than the patient and operator may be in the treatment room for good reason but only if they are adequately protected and their radiation exposure is appropriately monitored.

(4) A calibration of the output of each radiation therapy system shall be performed before the system is first used for irradiation of a patient, and thereafter at intervals not to exceed 24 months. Therapy equipment shall not be used for any therapy treatments except at those combinations of effective energy, field size, and treatment distance for which the equipment has been calibrated. The calibration shall be performed by or under the direct supervision of a person who has been determined by the De-

partment to have adequate training, experience and knowledge in radiation therapy physics, and who shall be present at the facility during such calibration. After any change which might significantly alter the output, spatial distribution, or other characteristics of the therapy beam, the parameters which might be affected shall be measured.

(A) For therapy systems operating at potentials above 500 kVp, the determinations included in the calibration shall be provided in sufficient detail so that the absorbed dose in tissue in the useful beam may be calculated to within 5 percent. The calibration shall include, but shall not be limited to, the following determinations:

1. Verification that the equipment is operating in compliance with the design specifications concerning the light localizer, the side light and back–pointer alignment with the isocenter when these specifications are known and applicable, variation in the axis of rotation for the table, gantry and jaw system, and beam flatness and symmetry at specified depths.

2. The relative dose at various depths in a tissue equivalent phantom for each effective energy and the ranges of field sizes and treatment distances used for radiation therapy.

3. The congruence between the radiation field and the field indicated by the localizing device.

4. The uniformity of the radiation field and its dependency upon the direction of the useful beam.

5. The absolute dose per unit time and dose per monitor setting.

(B) For therapy systems operating at potentials between 150 kVp and 500 kVp inclusive, the calibration shall include, but shall not be limited to, the following determinations:

1. The exposure rates and/or dose rates for each combination of field size, technique factors, filter, and treatment distance used.

2. The degree of congruence between the radiation field and the field indicated by the localizing device if such device is present.

3. An evaluation of the uniformity of the radiation field symmetry for the field sizes used, and any dependence upon tube housing assembly orientation.

(5) All new installations and existing installations not previously surveyed shall have a radiation protection survey performed by or under the direction of a person determined by the Department to have adequate knowledge and training to advise regarding radiation protection needs, to measure ionizing radiation and to evaluate safety techniques. If the survey shows that supplementary shielding is required a resurvey shall be performed after its installation. In addition, a resurvey shall be made after every change which might decrease radiation protection significantly. The surveyor shall report his findings in writing to the user. The report shall indicate whether or not the installation is in compliance with all applicable radiation protection requirements of this section. The user shall report the findings of the survey in writing to the Department within 15 days of his receipt of the survey report.

(6) The exposure rate or dose rate of the useful beam and the size and shape of the useful beam shall be known with reasonable certainty at all times during operation of the radiation therapy apparatus for medical purposes.

(7) Spot checks shall be performed at least once each week for therapy systems operating at potentials above 500 kVp, and at least once each month for therapy systems operating at 500 kVp or below.

(A) The measurements taken during spot checks shall demonstrate the degree of consistency of the operating characteristics which can affect the radiation output of the system or the radiation delivered to a patient during a therapy procedure.

(B) For systems in which the calibrating person believes beam quality can vary significantly, spot checks shall include beam quality checks.

(C) The spot check procedures shall be in writing and shall have been developed or approved by the individual who made the most recent calibration of the system pursuant to Section 30312(b)(4). The written spot check procedures shall specify when measurements and determinations indicate an inconsistency or potential change in radiation output. When more than the minimum frequency of spot checking is necessary, the spot check procedures shall specify the frequency at which spot checks are to be performed.

(D) When spot check results are erratic or inconsistent with calibration data, the person who designed the spot check procedures, or a person of equivalent competence, shall be consulted immediately and the reason(s) for the inconsistency corrected before the system is used for patient irradiation.

(8) Calibration of the therapy beam shall be performed with a measurement instrument which has been calibrated within the preceding two years directly, or through no more than one exchange, at the National Institute of Standards and Technology, or facility determined acceptable by the Department. In addition, indirect spot checks or intercomparisons of measurement instruments with secondary standards shall be made at least each six months.

(9) Reports of each radiation safety survey spot check and calibration performed pursuant to this section shall be maintained at the facility for at least three years. A copy of the treatment data developed from the latest calibration shall be available for use by the operator at the treatment control station.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811 and 25815, Health and Safety Code.

HISTORY

1. Renumbering and amendment filed 9–4–73 as an emergency; effective upon filing (Register 73, No. 36). Approved by State Building Standards Commission 11–30–73.
2. Certificate of Compliance filed 12–28–73 (Register 73, No. 52).
3. Amendment of subsection (e)(5) filed 12–12–75; effective thirtieth day thereafter (Register 75, No. 50).
4. Amendment filed 6–24–80; effective thirtieth day thereafter (Register 80, No. 26).
5. Amendment filed 6–18–87; operative 7–18–87 (Register 87, No. 28).
6. Change without regulatory effect amending subsection (b)(7)(C) and (b)(8) filed 11–1–91 pursuant to section 100, title 1, California Code of Regulations (Register 92, No. 5).

§ 30313. Special Requirements for X–Ray Therapy Equipment Operated at Potentials of 50 kV and Below.

(a) Equipment.

(1) All provisions of Section 30312(a) apply.

(2) A therapeutic–type protective tube housing shall be used. Contact therapy machines shall meet the additional requirement that the leakage radiation at 2 inches from the surface of the housing not exceed 0.1 R/hr.

(3) Automatic timers shall be provided which will permit accurate presetting and determination of exposures as short as one second.

(b) Operating Procedures.

(1) All provisions of Section 30312(b) apply except 30312(b)(1) and 30312(b)(7).

(2) In the therapeutic application of apparatus constructed with beryllium or other low–filtration windows adequate shielding shall be required to protect against unnecessary exposure from the useful beam, and special safeguards are essential to avoid accidental exposures to the useful beam. There shall be on the control panel some easily discernible device which will give positive information as to whether or not the tube is energized.

(3) Machines having an output of more than 1,000 roentgens per minute at any accessible place shall not be left unattended without the power being shut off at the primary disconnecting source.

(4) If the X–ray tube of a contact therapy machine is hand–held during irradiation, the operator shall wear protective gloves and apron.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811 and 25815, Health and Safety Code.

HISTORY

1. Amendment filed 3–5–71; effective thirtieth day thereafter. Approved by State Building Standards Commission 2–26–71 (Register 71, No. 10).
2. Renumbering and amendment filed 9–4–73 as an emergency; effective upon filing (Register 73, No. 36). Approved by State Building Standards Commission 11–30–73.
3. Certificate of Compliance filed 12–28–73 (Register 73, No. 52).
4. Amendment of subsections (a)(1), (b)(1) and (b)(4) filed 6–18–87; operative 7–18–87 (Register 87, No. 28).

5. Change without regulatory effect amending subsection (b)(3) filed 11–1–91 pursuant to section 100, title 1, California Code of Regulations (Register 92, No. 5).
6. Amendment of section heading filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
7. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30314. Veterinary Medicine Radiographic Installations.

(a) Equipment.

(1) The tube housing shall be of diagnostic type.

(2) Diaphragms or cones shall be provided for collimating the useful beam to the area of clinical interest and shall provide the same degree of protection as is required of the housing.

(3) The total filtration permanently in the useful beam shall not be less than 1.5 millimeters aluminum–equivalent for equipment operating up to 70 kvp and 2.0 millimeters aluminum equivalent for machines operated in excess of 70 kvp.

(4) A device shall be provided to terminate the exposure after a pre-set time or exposure.

(5) A dead–man type of exposure switch shall be provided, together with an electrical cord of sufficient length so that the operator can stand out of the useful beam and at least 6 feet from the animal during all X–ray exposures.

(b) Operating Procedures.

(1) The operator shall stand well away from the tube housing and the animal during radiographic exposures. The operator shall not stand in the useful beam. If film must be held, it shall be held by individuals not occupationally exposed to radiation. Hand–held fluoroscopic screens shall not be used. The tube housing shall not be held by the operator. No individuals other than the operator shall be in the X–ray room while exposures are being made unless such person's assistance is required.

(2) In any application in which the operator is not located behind a protective barrier, clothing consisting of a protective apron having a lead equivalent of not less than 0.25 millimeter shall be worn by the operator and any other individuals in the room during exposures.

(3) No individual shall be regularly employed to hold or support animals during radiation exposures. Operating personnel shall not perform this service except very infrequently and then only in cases in which no other method is available. Any individual holding or supporting an animal during radiation exposure shall wear protective gloves and apron having a lead–equivalent of not less than 0.25 millimeter.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811 and 25815, Health and Safety Code.

HISTORY

1. Amendment filed 3–5–71; effective thirtieth day thereafter. Approved by State Building Standards Commission 2–26–71. (Register 71, No. 10).
2. Renumbering filed 9–4–73 as an emergency; effective upon filing (Register 73, No. 36). Approved by State Building Standards Commission 11–30–73.
3. Certificate of Compliance filed 12–28–73 (Register 73, No. 52).
4. Amendment filed 6–18–87; operative 7–18–87 (Register 87, No. 28).

Article 4.5. Requirements for the Use of X–Ray in Mammography

§ 30315.10. Definitions.

(a) The definitions in section 30100 shall apply to this article.

(b) As used in this article:

(1) "Action limit" means the minimum or maximum value of a quality assurance measurement representing acceptable performance.

(2) "Activities" means the operation of a mammography system to produce the mammogram, the initial interpretation of the mammogram, and the maintenance of the viewing conditions for that interpretation.

(3) "Adverse event" means an undesirable experience associated with mammography activities such as:

(A) Poor image quality;

(B) Failure to send mammography reports within 30 calendar days from the date of the mammographic examination to the referring physician or to the patient; and

(C) Use of personnel that do not meet the applicable requirements of sections 30315.50, 30315.51 or 30315.52.

(4) "Air kerma" means the kerma, measured in Gray (Gy), in a given mass of air.

(5) "Automatic exposure control" (AEC) means a device that automatically controls one or more technique factors in order to obtain at pre-selected locations a required quantity of radiation.

(6) "Average glandular dose" means the value in millirad (mrad) or milligray (mGy) for a given breast or phantom thickness that estimates the average absorbed dose to the glandular tissue extrapolated from free air exposures and based on fixed filter thickness and target material.

(7) "Category I" means medical educational activities that have been designated as Category 1 by the Accreditation Council for Continuing Medical Education, the American Osteopathic Association, or a state medical society.

(8) "Clinical image review" means the process whereby the mammograms produced by a specific mammography system are evaluated for image quality.

(9) "Consumer" means an individual who chooses to comment on or complain in reference to a mammographic examination, including the patient or representative of the patient, such as a family member or referring physician.

(10) "Continuing education unit" means one hour of training received through either:

(A) Face-to-face interaction between instructor(s) and student(s), as when the instructor provides a lecture, conducts demonstrations, or reviews student performance; or

(B) The administration and correction of student examinations by an instructor(s) with subsequent feedback to the student(s).

(11) "Direct supervision" means the oversight of operations that include the following:

(A) During joint interpretation of mammograms, the supervising interpreting physician reviews, discusses, and confirms the diagnosis of the physician being supervised and signs the resulting report before it is entered into the patient's record.

(B) During performance of a mammographic examination, the supervising mammographic radiologic technologist is physically present to observe, and correct, as needed, the performance of the individual who is performing the mammographic examination.

(C) During performance of a survey, the supervising medical physicist is physically present to observe, and correct, as needed, the performance of the individual who is performing the survey.

(12) "Established operating level" means the value of a particular quality assurance parameter that has been established as an acceptable normal level by the facility's quality assurance program.

(13) "Facility" means a hospital, outpatient department, clinic, radiology practice, an office of a physician, mobile setting, or other place or building in which a person conducts:

(A) Mammography activities; and/or

(B) Interventional mammography or research mammography.

(14) "Facility accreditation certificate" means a document issued by the Department authorizing a facility to perform mammography.

(15) "FDA" means the United States Food and Drug Administration.

(16) "Image receptor" means any device that transforms incident X ray photons either into a visible image or into another form that can be made into a visible image by further transformations.

(17) "Interpreting physician" means a licensed physician who interprets mammograms and meets the requirements of section 30315.50.

(18) "Interim Facility Accreditation Certificate" means a document issued by the Department pursuant to section 30315.24.

(19) "Interventional mammography" means the creation of a mammogram during invasive interventions for localization, biopsy procedures, or therapeutic procedures.

(20) "Kerma" means the sum of the initial energies of all the charged particles liberated by uncharged ionizing particles in a material of given mass.

(21) "Lead interpreting physician" means the interpreting physician designated either by the person who owns or leases the facility, or an authorized agent of that person to ensure that the facility's quality assurance program meets all of the requirements of this article.

(22) "Mammogram" means an X-ray image of the human breast.

(23) "Mammographic examination" means the performance of mammography on a human being.

(24) "Mammographic modality" means a technology for radiography of the breast such as screen-film mammography, digital mammography and xeromammography.

(25) "Mammography" means the procedure for creating a mammogram.

(26) "Mammography medical outcomes audit" means a systematic collection of mammography results and the comparison of those results with outcome data.

(27) "Mammography system" means a system that includes all of the following:

(A) A radiation machine used as a source of radiation to produce a mammogram;

(B) An imaging receptor used for the formation of a latent image of a mammogram or for converting X-ray photons to a digital signal;

(C) A processing device for changing a latent image of a mammogram or a digital signal to a visual image that can be used for diagnostic or therapeutic purposes; and

(D) A viewing device, such as a view box or computer monitor, used to visually evaluate a mammogram.

(28) "Mammography system evaluation" means an evaluation of the mammography system by a medical physicist to ensure the system is in compliance with sections 30316 and 30316.20(e).

(29) "Medical physicist" means an individual trained in performing mammography system evaluations, quality assurance testing evaluations and surveys.

(30) "Mobile service provider" means a person who performs mammography in a mobile setting.

(31) "Mobile setting" means a setting in which mammography is performed with a radiation machine that is fixed or used exclusively in a mobile vehicle or unit, or is transported to a different location for the purpose of providing mammography, but does not include a radiation machine moved from room to room within a facility.

(32) "Multi-reading" means two or more physicians interpreting the same mammogram, at least one of whom meets the requirements of section 30315.50.

(33) "Overall assessment of findings" means the results of an interpreting physician's evaluation of mammograms produced during a mammographic examination and categorized using the assessment categories specified in section 30317.40(a)(4).

(34) "Phantom" means a test object used to simulate radiographic characteristics of compressed breast tissue and containing components that radiographically model aspects of breast disease and cancer.

(35) "Phantom image" means a radiographic image of a phantom.

(36) "Physical science" means physics, chemistry, radiation science (including medical physics and health physics), and engineering.

(37) "Positive mammogram" means a mammogram that has an overall assessment of findings that are either "suspicious" or "highly suggestive of malignancy."

(38) "Quality assurance technologist" means an individual who meets the requirements of section 30315.51 and has experience performing or assisting in the performance of quality assurance tests specified in section 30316.20(a) through (d) and (f)

(39) "Quality assurance testing evaluation" means an evaluation of a facility's quality assurance testing by a medical physicist to ensure quality assurance testing is performed in accordance with section 30316.20 excluding subsection (e) of section 30316.20.

(40) "Research mammography" means the creation of a mammogram with an investigational mammography device as part of a scientific study conducted in accordance with FDA's investigational device exemption regulations in part 812 of title 21, Code of Federal Regulations.

(41) "Serious adverse event" means an adverse event that may significantly compromise clinical outcomes, or an adverse event for which appropriate corrective action was not taken in a timely manner.

(42) "Serious complaint" means a report of a serious adverse event.

(43) "Source-to-image receptor distance" (SID) means the distance from the X-ray source to the center of the input surface of the image receptor.

(44) "Standard breast" means a 4.2 cm thick compressed breast consisting of 50 percent glandular and 50 percent adipose tissue.

(45) "Survey," in lieu of the definition found in title 10, Code of Federal Regulations, section 20.1001 incorporated by reference in section 30253, means the on-site performance of a mammography system evaluation and a quality assurance testing evaluation by a medical physicist.

(46) "Traceable to a national standard" means that the instrument used to quantitatively measure radiation has been calibrated at:

(A) The National Institute of Standards and Technology (NIST); or

(B) A calibration laboratory that participates in a proficiency program with NIST at least once every two years during which the calibration laboratory achieves agreement within plus or minus 3.0 percent of the NIST standard at mammography energy levels.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Section 115060, Health and Safety Code.

HISTORY

1. New article 4.5 (sections 30315.10-30320.90) and section filed 2-10-2003 as an emergency; operative 2-10-2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6-10-2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2-10-2003 order, including amendment of subsections (b)(17) and (b)(33), transmitted to OAL 6-6-2003 and filed 7-18-2003 (Register 2003, No. 29).

§ 30315.20. Facility Accreditation Certificate and Interim Facility Accreditation Certificate.

(a) Except for persons only performing interventional mammography or research mammography, a person shall not perform mammography activities unless performed in a facility that:

(1) Possesses a current and valid Facility Accreditation Certificate or an Interim Facility Accreditation Certificate; and

(2) Meets the requirements of this subchapter.

(b) An Interim Facility Accreditation Certificate shall be valid for six months beginning on the date of issuance.

(c) A Facility Accreditation Certificate shall be valid for three years beginning on the date of issuance.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Section 115060, Health and Safety Code.

HISTORY

1. New section filed 2-10-2003 as an emergency; operative 2-10-2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6-10-2003 or emergency language will be repealed by operation of law on the following day.
2. Editorial correction adding inadvertently omitted HISTORY 1 (Register 2003, No. 8).
3. Certificate of Compliance as to 2-10-2003 order transmitted to OAL 6-6-2003 and filed 7-18-2003 (Register 2003, No. 29).

§ 30315.22. Eligibility for a Facility Accreditation Certificate.

(a) To be eligible for a Facility Accreditation Certificate a facility shall:

(1) Submit the application described in section 30315.33;

(2) Comply with section 30108;

(3) Pass a Department inspection verifying that:

(A) Physicians interpreting mammograms meet the requirements of section 30315.50;

(B) Mammographic radiologic technologists meet the requirements of section 30315.51;

(C) Medical physicists meet the requirements of section 30315.52;

(D) Mammography systems meet the requirements of section 30316;

(E) The mammography quality assurance program is capable of meeting the requirements of section 30317.10;

(F) By following the procedure specified in section 30316.20(b), phantom images of a phantom that meets the requirements of section 30316.22 produced by all mammography systems, meet the criteria specified in section 30316.20(b)(1) through (3);

(G) By use of the facility's proposed technique factors for a standard breast, the average glandular dose for each radiation machine used for mammography does not exceed the value specified in section 30316.20(e)(10);

(H) The quality assurance manual meets the requirements of section 30317.20;

(I) The mammography procedures manual meets the requirements of section 30317.30;

(J) The facility is capable of ensuring mammograms and mammographic examination reports meet the requirements of sections 30316.50 and 30317.40;

(K) The facility is capable of conducting a mammography medical outcomes audit that meets the requirements of section 30317.60;

(L) The facility has a consumer complaint procedure that meets the requirements of section 30317.70; and

(M) The requirements of Group 3 of this regulation are met.

(4) After receipt of an interim facility accreditation certificate issued pursuant to section 30315.24, for each machine that will be used to perform mammography, pass a clinical image review conducted by the Department pursuant to section 30315.35, or conducted by an entity approved by the FDA pursuant to 42 United States Code Section 263b(e)(1)(A); and

(5) After receipt of an interim facility accreditation certificate issued pursuant to section 30315.24, possess a current and valid certificate issued by FDA pursuant to title 21, Code of Federal Regulations, section 900.11(b).

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Section 115060, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30315.23. Renewal of a Facility Accreditation Certificate.

(a) To renew a Facility Accreditation Certificate, a facility shall:

(1) Seven months prior to the expiration date of the facility accreditation certificate submit the facility application described in section 30315.33;

[The next page is 202.3.]

(2) For each radiation machine that will be used for mammography, either:

(A) Pass a clinical image review conducted by the Department pursuant to section 30315.35(c) prior to the expiration date of the current facility accreditation certificate; or

(B) Have the machine's accreditation renewed by an entity approved by FDA pursuant to 42 United States Code Section 263b(e)(1)(A); and

(3) Possess a current and valid certificate issued by FDA pursuant to title 21, Code of Federal Regulations, section 900.11(b).

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Section 115060, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30315.24. Interim Facility Accreditation Certificate.

An interim facility accreditation certificate shall not be issued until a facility has complied with section 30315.22(a)(1) through (3) and has obtained a provisional certificate issued by FDA pursuant to title 21, Code of Federal Regulations, section 900.11(b)(2).

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Section 115060, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of section, transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30315.33. Complete Facility Application.

(a) An application submitted for compliance with sections 30315.22 or 30315.23 shall be considered complete if the application contains the following:

(1) The legal name of the applicant, the mailing address, and the telephone number;

(2) The name under which the applicant's facility does business and, if doing business under a fictitious name, a copy of the applicant's fictitious name permit;

(3) The name of the contact person for the facility;

(4) The facility location address and mailing address if different from location address.

(5) The registration number issued by the Department pursuant to section 30108 and the expiration date of registration;

(6) The applicant's federal employer identification number and California taxpayer identification number;

(7) If the facility is accredited by an entity approved by the FDA pursuant to 42 United States Code Section 263b(e)(1)(A), the name of that entity.

(8) If the applicant requests approval to perform mammography in a mobile setting:

(A) The physical address of each location where mammography will be performed;

(B) For each location where mammography will be performed, the name and telephone number of the responsible person who is allowing the service to be provided at the location;

(C) Whether the mammograms will be processed with an on–board processor or at specific locations. If the facility will process mammograms at specific locations, the physical address of each location where mammograms will be processed;

(D) Whether the radiation machine is fixed or used, exclusively, in a mobile vehicle or is transported to the use location and moved to where mammographic examinations will be performed. If the radiation machine is moved to where mammographic examinations will be performed, the designated room number within the physical building at each location of use; and

(E) A description of the quality assurance tests that will be performed each time the radiation machine is relocated.

(9) Responses to the following questions:

(A) "Have you ever performed mammography authorized pursuant to a certificate issued by FDA?" If the answer is yes, provide in your response the names under which mammography was performed;

(B) "If you have been certified by FDA to perform mammography, has that certificate ever been revoked or suspended, or has FDA ever denied to renew that certificate?" If the answer is yes, provide in your response the following:

1. The identity of any specific radiation machine(s) that failed to pass clinical image review;

2. The dates of failure;

3. The actions taken to correct any clinical image review deficiencies including physician or technologist training, radiation machine or processor repair and acquisition of replacement equipment or image receptors;

4. Whether the radiation machine passed the clinical image review subsequent to actions taken as identified in subsection (a)(9)(B)3 and when;

5. If, within the three years prior to the date of application, any radiation machine used for mammography identified in subsection (a)(15) failed clinical image review during a time when accredited by an entity approved by the FDA pursuant to 42 United States Code Section 263b(e)(1)(A), copies of the failure reports; and

6. If accreditation issued by an entity approved by the FDA pursuant to 42 United States Code Section 263b(e)(1)(A), was suspended or revoked, a description of the circumstances that led to suspension or revocation.

(C) "Is any interpreting physician you seek to allow to interpret mammograms currently under a Department–directed plan of corrective action for interpretation done at some other facility?" If the answer is yes, provide in your response the following:

1. The name and medical license number of the interpreting physician; and

2. The facility's name and registration number where the interpreting physician was required to complete a directed plan of corrective action.

(10) The name of the individual designated as the lead interpreting physician.

(11) The name, medical license number, certificate number and expiration date as shown on the individuals certificate issued pursuant sections 30466(d) or 30467 of each physician who will interpret mammograms produced by the facility;

(12) The name, certificate number and expiration date of certification shown on the certificate issued pursuant to section 30455.1 for each mammographic radiologic technologist who will perform mammographic examinations for the facility;

(13) The name of each medical physicist who will perform the tests specified in section 30316.20(e) for the facility;

(14) The name of the quality assurance technologist;

(15) For each radiation machine that will be used to perform mammographic examinations:

(A) The machine's manufacturer, model number, and the facility's radiation machine identification number as specified in section 30317(g);

(B) Whether the machine will be used in a mobile setting. If the machine will not be used in a mobile setting, the designated room number within the facility where the machine is installed or fixed;

(C) Whether the machine is a screen–film, xeromammography or digital system. If the machine is a screen–film system, the name of the manufacturer of the screen and film, and the type of screen and film used; and

(D) If the machine requires a screen–film image receptor, a phantom image of a phantom that meets the requirements of section 30316.22.

(16) A copy of the report indicating the results of a mammography system evaluation performed less than 6 months prior to the date of the application by a medical physicist or in lieu thereof for renewal applications, a copy of the report indicating the results of a survey performed less than 12 months prior to the date of the renewal application by a medical physicist and if the mammography system evaluation report or the survey report identifies deficiencies or recommendations for improvements in facility operations:

(A) A list and description of corrective actions taken and the date corrections were achieved;

(B) Copies of work invoices;

(C) Documentation that those corrective actions were taken and those actions corrected the deficiencies or that those recommendations were followed.

(17) For each film processor that is used to process mammograms:

(A) The make and model number; and

(B) Whether the processor uses extended processing or standard processing.

(18) If this is a renewal application, the number of the following procedures performed in the previous year:

(A) Screening procedures;

(B) Diagnostic procedures;

(C) The total number of screening and diagnostic procedures;

(D) Biopsy procedures;

(E) Needle localization procedures; and

(F) Therapeutic procedures.

(19) If this is a renewal application, the identification number and expiration date shown on the FDA certificate issued to the applicant's facility;

(20) Whether the applicant participates or intends to participate in either the Breast Cancer Early Detection Program or the Breast and Cervical Cancer Control Program of the Department or any of their successors;

(21) If the applicant is a Medi–Cal provider, the nine–digit Medi–Cal number used to bill for mammographic examinations performed at the facility's location;

(22) If the applicant is a Medicare provider, the nine–digit Medicare number used to bill for mammographic examinations performed at the facility's location;

(23) Name, title, signature and date of signature of the applicant and lead interpreting physician.

NOTE: Authority cited: Sections 115060, 131051 and 131200, Health and Safety Code. Reference: Section 115060, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).
3. Amendment of subsection (a)(15)(A) and NOTE filed 7–11–2007; operative 8–10–2007 (Register 2007, No. 28).

§ 30315.34. Application Processing Times.

(a) Within 30 calendar days of receipt of an application for or renewal of a facility accreditation certificate, the Department shall:

(1) Notify the applicant that the application is complete; or

(2) Notify the applicant that the application is incomplete and identify what is required for the Department to consider it complete.

(b) Unless the applicant responds to the notification in subsection (a)(2) within 30 calendar days the application shall be deemed withdrawn and the applicant may reapply by submitting a new application.

(c) Within six months of receipt of a complete application, the Department shall issue or deny the facility accreditation certificate.

(d) The Department's time periods for processing an application for or renewal of a facility accreditation certificate from receipt of the initial application to the date the final decision is made, are as follows:

(1) The median time is five and one–half months;

(2) The minimum time is four months;

(3) The maximum time is 12 months.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Section 15376, Government Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of subsection (b), transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30315.35. Clinical Image Review.

(a) After receipt of an interim facility accreditation certificate issued pursuant to section 30315.24, applicants for a facility accreditation certificate shall:

(1) Select mammograms in accordance with the criteria specified in title 21, Code of Federal Regulations, section 900.4(c)(4); and

(2) Within 75 calendar days of the date of issuance as shown on the interim facility accreditation certificate, submit those mammograms for clinical image review.

(b) If the mammograms fail the review, additional mammograms may be submitted if the resubmission is made no less than 75 calendar days prior to the expiration date of the interim facility accreditation certificate.

(c) Applicants for renewal of a facility accreditation certificate shall:

(1) Select mammograms in accordance with the criteria specified in title 21, Code of Federal Regulations, section 900.4(c)(4); and

(2) Submit those mammograms for clinical image review no less than 75 calendar days prior to the expiration date of the facility accreditation certificate.

(d) Mammograms submitted pursuant to this section shall meet the FDA–accepted attributes as specified in title 21, Code of Federal Regulations, section 900.4(c)(2).

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30315.36. Mammography Review.

(a) Each facility possessing a facility accreditation certificate shall, upon request, make mammograms and reports specified in section 30317.40(a) available to the Department and allow those mammograms and reports to be removed from the facility for the purpose of evaluating mammogram image quality.

(b) For sample sizes of two mammographic examinations:

(1) If one mammographic examination fails the review, the facility shall submit a plan of corrective action, acceptable to the Department, addressing those areas that resulted in the failure and satisfactorily complete that plan; or

(2) If both mammographic examinations fail the review, the facility shall satisfactorily complete a plan of corrective action as directed by the Department addressing those areas of the review that resulted in the failure. The facility shall be subject to additional review using a larger sample.

(c) For sample sizes greater than two mammographic examinations:

(1) If 20 percent of the mammographic examinations fail the review, the facility shall submit a plan of corrective action, acceptable to the Department, addressing those areas that resulted in the failure and satisfactorily complete that plan;

(2) If 40 percent of the mammographic examinations fail the review, the facility shall satisfactorily complete a plan of corrective action as directed by the Department addressing those areas of the review that resulted in the failure; or

(3) If 80 percent or more of the mammographic examinations fail the review, the facility shall cease the performance of mammography and submit to additional review and:

(A) If 70 percent or more of the mammographic examinations pass this additional review, the facility may restart the performance of mammography after satisfactorily completing a plan of corrective action as directed by the Department and shall, within 75 calendar days of notification that the mammograms passed the review, submit mammograms in accordance with section 30315.35(a)(1); or

(B) If less than 70 percent of the mammographic examinations pass this additional review, the facility shall not restart the performance of mammography and shall notify every patient who had a mammogram at the facility during the two–year period preceding the date of failure. The notification shall be approved by the Department prior to mailing and include:

1. The name of the patient;

2. The date the patient's mammogram was performed;

3. The statement, "The Department of Health Services of the State of California has conducted a review of the mammograms produced by (the name of the facility) and has determined that the mammograms do not meet the standards set by the Department. Therefore, we strongly advise you to consult with your physician as soon as possible regarding a repeat mammographic examination."

(d) Mammograms reviewed pursuant to this section shall meet the FDA–accepted attributes as specified in title 21, Code of Federal Regulations, section 900.4(c)(2).

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of subsection (c)(3)(B)3., transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30315.50. Interpreting Physician Requirements.

(a) An interpreting physician for a facility shall:

(1) Possess a current and valid radiology supervisor and operator certificate issued pursuant to sections 30467 or 30466(d); and

(2) Meet the requirements specified in title 21, Code of Federal Regulations, section 900.12(a)(1).

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Section 115060, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30315.51. Personnel Requirements for Individuals Who Perform Mammography.

(a) Mammographic examinations shall not be performed unless the individual who performs the mammographic examination:

(1) Possesses a current and valid mammographic radiologic technology certificate issued pursuant to section 30455.1; and

(2) Meets the requirements specified in title 21, Code of Federal Regulations, section 900.12(a)(2).

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30315.52. Medical Physicist Requirements.

(a) A medical physicist for a facility shall:

(1) Be authorized by the Department pursuant to section 30315.60;

(2) Have a masters degree or higher in a physical science from an accredited institution, with no less than 20 semester hours or 30 quarter hours of college undergraduate or graduate level physics;

(3) Complete 20 hours of documented specialized training in conducting surveys of mammography facilities; and

(4) Conduct a survey of at least one mammography facility and a total of at least ten mammography radiation machines under the direct supervision of a medical physicist who has already met the requirements of this section, but in no case may more than one survey of a specific radiation machine conducted within a period of 60 calendar days be counted towards the total number of radiation machines surveyed. The period of time spent in meeting the survey requirement may be counted toward meeting the 20–hour training requirement in subsection (a)(3). After April 28, 1999, experience conducting surveys shall be acquired under the direct supervision of a medical physicist who meets the requirements of subsections (a)(1) through (4) and (b); or

(5) In lieu of subsections (a)(2) through (4), qualify as a medical physicist under Title 21, Code of Federal Regulations, section 900.12(a)(3), as published in the December 21, 1993 Federal Register (58 Fed.Reg. 67571) and have retained that qualification by maintenance of the active status of any licensure, approval, or certification required under those regulations and prior to April 28, 1999:

(A) Received a bachelor's degree or higher in a physical science from an accredited institution with no less than 10 semester hours or equivalent of college undergraduate or graduate level physics;

(B) After meeting the requirements of subsection (a)(5)(A), completed forty hours of documented specialized training in conducting surveys of mammography facilities; and

(C) After meeting the requirements of subsection (a)(5)(A), conducted surveys of at least one mammography facility and a total of at least 20 mammography radiation machines but in no case may more than one survey of a specific radiation machine conducted within a period of 60 calendar days be counted towards the total radiation machine survey requirement. The period of time spent in meeting the survey requirement may be counted toward meeting the 40–hour training requirement in subsection (a)(5)(B).

(b) A medical physicist for a facility shall meet the requirements specified in title 21, Code of Federal Regulations, section 900.12(a)(3)(iii) and (iv).

NOTE: Authority cited: Sections 100275, 115060 and 115100, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of subsection (a)(5), transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30315.60. Authorization and Renewal of Authorization to Conduct Mammography Surveys, Revocation and Suspension of Authorization and Application Processing Times.

(a) To be eligible for authorization to conduct mammography surveys an individual shall submit a complete application consisting of the following:

(1) Name, social security number (pursuant to the authority found in sections 100275 and 115100 of the Health and Safety Code and as required by section 17520 of the Family Code, providing the social security number is mandatory. The social security number will be used for purposes of identification), mailing address, daytime telephone number, and FAX number;

(2) Documentation that the applicant meets the requirements of:

(A) Sections 30315.52(a)(2) through (4); or

(B) Section 30315.52(a)(5).

(3) Documentation that the applicant meets the requirements of section 30315.52(b);

(4) Three sample survey reports, meeting the requirements of section 30316.60, indicating the name of the medical physicist providing direct supervision and that the applicant performed all tests. Each report shall include language and data that establishes that all tests were performed to determine if the facility meets the requirements of this article and that, if a test method is specified, the test method was followed; and

(5) The following information:

(A) Manufacturer, model and serial number of the phantom used to produce phantom images;

(B) Whether the type of system resolution tool used to evaluate system resolution is a bar pattern or, until October 28, 2002, a star pattern;

(C) Method used to evaluate kVp;

(D) Method used to evaluate compression;

(E) Type of instruments used to determine average glandular dose and a copy of the most recent calibration report for that instrument indicating that it complies with section 30316.61;

(F) Whether aluminum filters used to determine the radiation machine's half–value layer of the useful beam is type 1100 or type 1145;

(G) Manufacturer, model and serial number of the densitometer, sensitometer and photometer used during surveys; and

(H) A list of equipment used to evaluate the mammography system for artifacts and the radiation machine's AEC performance; or

(6) In lieu of subsections (a)(2) and (3), a copy of the letter issued to the applicant by FDA stating that the applicant met the requirements of title 21, Code of Federal Regulations, section 900.12(a)(3).

(b) Individuals approved by use of subsection (a)(2)(B) shall not provide direct supervision.

(c) Surveys of radiation machines used to perform interventional mammography or research mammography shall not be used to comply with this section.

(d) Authorization shall be valid for three years.

(e) To be eligible for renewal of authorization to conduct mammography surveys an individual shall submit a complete application consisting of the following:

(1) Name, social security number (pursuant to the authority found in sections 100275 and 115100 of the Health and Safety Code and as required by section 17520 of the Family Code, providing the social security number is mandatory. The social security number will be used for purposes of identification), mailing address, daytime telephone number, and FAX number;

(2) The following information:

(A) If changes to the information submitted pursuant to subsection (a)(5) have occurred, the updated information;

(B) A copy of the most recent calibration report for the instrument used to determine average glandular dose.

(3) Documentation indicating that at least 8 hours of training in surveying radiation machines were received for each new mammographic modality; and

(4) Documentation that the applicant meets the requirements of section 30315.52(b).

(f) Authorization to conduct mammography surveys may be revoked, suspended, amended or restricted for any of the following:

(1) Failure to comply with section 30315.52(b);

(2) Knowingly conduct or perform mammography system evaluations, quality assurance testing evaluations or surveys that cause or would have caused, if not detected, a facility to be in violation of any provision of the Act, any regulation promulgated pursuant to the Act, any provision of the Radiologic Technology Act, as defined in Health and Safety Code section 27, any regulation promulgated pursuant to the Radiologic Technology Act, or any order of the Department;

(3) Knowingly submits to the Department false, incorrect or fraudulent information;

(4) Failure to inform a facility that a violation of this article has occurred when the medical physicist knows of the violation; or

(5) Procuring authorization by fraud, or misrepresentation, or because of mistake.

(g) Within 10 calendar days of receipt of an application for or renewal of authorization, the Department shall:

(1) Notify the applicant that the application is complete; or

(2) Notify the applicant that the application is incomplete and identify what is required for the Department to consider it complete.

(h) Unless the applicant responds to the notification in subsection (g)(2) within 30 calendar days the application shall be deemed withdrawn.

(i) Within 30 calendar days of receipt of a complete application, the Department shall issue or deny the authorization.

(j) Any applicant deemed by the Department to have withdrawn an application pursuant to subsection (e) may reapply by submitting a new application.

(k) The Department's time periods for processing an application for authorization from receipt of the initial application to the date the final decision is made, are as follows:

(1) The median time is 30 calendar days;

(2) The minimum time is seven days;

(3) The maximum time is 90 calendar days.

NOTE: Authority cited: Sections 100275, 115060 and 115100, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code; and Section 15376, Government Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of subsection (a)(4), transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30316. Mammography System Requirements.

(a) A radiation machine designed for general purpose radiography, or special nonmammography procedures or that has been modified or equipped with special attachments for mammography shall not be used for mammography.

(b) Radiation machines used for mammography shall:

(1) Be specifically designed and manufactured for mammography and meet the requirements of section 30305(a)(4).

(2) Provide a tube–image receptor assembly that is capable of being fixed in any operating position where it is designed to operate and once fixed in any such position, does not undergo unintended motion and does not fail in the event of power interruption.

(3) If equipped with screen–film image receptors:

(A) Be able to be operated with image receptors of 18 x 24 centimeters (cm) and 24 x 30 cm;

(B) Have moving grids matched to all image receptor sizes provided; and

(C) Be able to be operated with the grid removed, if the system is used for magnification procedures;

(4) If used to perform noninterventional problem solving procedures, have a radiographic magnification capability with at least one magnification value within the range of 1.4 to 2.0.

(5) When equipped with more than one focal spot, indicate, prior to exposure, which focal spot has been selected.

(6) When equipped with more than one target material, indicate, prior to exposure, the preselected target material.

(7) When equipped such that the target material and/or focal spot are selected by a system algorithm that is based on the exposure or on a test exposure, display, after the exposure, the target material and/or focal spot actually used during the exposure.

(8) Incorporate a compression device that:

(A) Effective October 28, 2002, provides:

1. An initial power–driven compression activated by hands–free controls operable from both sides of the patient; and

2. Fine adjustment compression controls operable from both sides of the patient.

(B) Provides different sized compression paddles that match the sizes of all full–field image receptors provided for the system. Compression paddles for special purposes, including those smaller than the full size of the image receptor (for "spot compression") may be provided but shall be exempt from the requirements of subsection (b)(8)(C); and

(C) Except as provided in subsection (b)(8)(D), provides a compression paddle that is flat and parallel to the image receptor holder assembly and does not deflect from parallel by more than 1.0 cm at any point on the surface of the compression paddle when compression is applied. The chest wall edge of the compression paddle shall be straight and parallel to the edge of the image receptor. The chest wall edge shall not appear on the image;

(D) If the compression paddle is intended by the manufacturer's design to not be flat and parallel to the image receptor holder assembly during compression, the paddle shall meet the manufacturer's design specifications and maintenance requirements; and

(E) If the chest wall edge is bent upward for patient comfort, the edge shall not appear on the image.

(9) Provide manual selection of milliampere–seconds (mAs) or milliamperes (mA) and time, and;

(10) Indicate kVp, mA and time and/or mAs before the exposure begins, or when AEC is used, the technique factors that are set prior to the exposure;

(11) When the AEC mode is used, indicate the actual technique factors (kVp and mAs or mA and time) used, after completion of the exposure;

(12) If it is a screen–film system, provide an AEC mode that is operable in all combinations of equipment configuration provided on that unit, such as grid, nongrid, magnification, nonmagnification and various target–filter combinations, and:

(A) Provides a positioning or selection of the detector that is flexible in the placement of the detector under the target tissue;

(B) Clearly indicates the size and available positions of the detector at the X–ray input surface of the compression paddle;

(C) Clearly indicates the selected position of the detector; and

(D) Provides a means to vary the selected optical density from the normal or baseline setting.

(13) If equipped with a light beam that passes through the X–ray beam–limiting device, the light provides an average illumination of 160 lux (15 foot candles) at the lesser of:

(A) 100 centimeters; or

(B) The maximum source–to–image–distance the machine can obtain.

(c) A facility shall not perform mammography using a screen–film mammography system unless:

(1) There are at least four image receptors of 18 x 24 centimeters (cm) and at least four image receptors of 24 x 30 cm available for use by the person performing mammographic examinations;

(2) The X–ray film and intensifying–screens are designated by the film manufacturer and the screen manufacturer as appropriate for mammography and the X–ray film matches the screen's spectral output as specified by the screen manufacturer;

(3) Chemical solutions used for processing mammograms are capable of developing the film so as to meet the minimum requirements specified by the film manufacturer;

(4) Special lights for film illumination, or hot lights, that are capable of producing light levels greater than that provided by the view box are available; and

(5) Film masking devices that can limit the illuminated area to a region equal to or smaller than the exposed portion of the film are available to all physicians interpreting mammograms for the facility.

(d) Documentation demonstrating compliance with this section shall be maintained in accordance with section 30319.20.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of subsection (b)(9), transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30316.10. Evaluations of New, Replaced or Repaired Equipment.

(a) Whenever the following occur, the affected equipment shall meet the requirements specified in sections 30316 and 30316.20 before the affected equipment is used to produce or process mammograms:

(1) Installation of a new radiation machine or processor;

(2) Disassembly and reassembling of a radiation machine or processor at the same or a new location; or

(3) Repair or replacement of any major component of the mammography system.

(b) The evaluation to determine if equipment specified in subsections (a)(1) through (3) are in compliance with subsection (a) shall be performed by a medical physicist or an individual under the direct supervision of a medical physicist.

(c) To use a new radiation machine, a facility shall:

(1) Possess a current and valid facility accreditation certificate issued pursuant to section 30315.22 or interim facility accreditation certificate issued pursuant to section 30315.24;

(2) Submit the results of tests with measurements and calculated data used to establish compliance with subsection (a), the information specified in section 30315.33(a)(1), (a)(4), (a)(7), (a)(15), (a)(17) and (a)(23) and the calibration record required in section 30316.61(a); and

(3) Pass a clinical image review conducted by an entity approved by FDA pursuant to 42 United States Code Section 263b(e)(1)(A) or by the Department in which mammograms shall:

(A) Be selected in accordance with the criteria specified in title 21, Code of Federal Regulations, section 900.4(c)(4);

(B) Be submitted within 75 calendar days of being notified by the Department that subsections (c)(1) and (2) have been met; and

(C) Meet the FDA–accepted attributes as specified in title 21, Code of Federal Regulations, section 900.4(c)(2).

(d) To use a radiation machine that was disassembled and reassembled for mammography, a facility shall:

(1) Possess a current and valid facility accreditation certificate issued pursuant to section 30315.22 or interim facility accreditation certificate issued pursuant to section 30315.24;

(2) Submit the results of tests with measurements and calculated data used to establish compliance with subsection (a), the information specified in section 30315.33(a)(1), (a)(4), (a)(7), (a)(15), (a)(17) and (a)(23) and the calibration record required in section 30316.61(a); and

(3) Submit a mammography system evaluation performed by a medical physicist or an individual under the direct supervision of a medical physicist.

(e) Documentation of the tests performed, the analysis of data obtained, corrective actions and the effectiveness of those actions taken pursuant to this section shall be maintained in accordance with section 30319.20.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of subsections (a), (c)(1)–(2) and (d)(1)–(2), transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30316.20. Quality Assurance Testing.

(a) Each facility using screen–film systems for mammography shall adjust and maintain each processor used to develop mammograms so that the manufacturer's technical development specifications for the mammography film in use are met. Each day mammograms are processed and before processing mammograms the facility shall determine that the processor used to develop mammograms, using the mammography film of the type used clinically, meets the following:

(1) Base plus fog–density is within plus 0.03 of the established operating level;

(2) Mid–density is within plus or minus 0.15 of the established operating level; and

(3) Density difference is within plus or minus 0.15 of the established operating level.

(b) Each facility using screen–film systems for mammography shall, each week in which mammography is performed, produce an image of a phantom that meets the requirements of section 30316.22. The test shall be performed prior to mammography on the day the test is performed. Before exposing the phantom an acrylic disc measuring one centimeter in diameter and four millimeters thick shall be placed on the phantom in the image area so it will not obscure details in the phantom and where it cannot cast a shadow on any portion of the AEC detector. The phantom shall then be exposed using the mammography film of the type used clinically and the techniques used for clinical images of a standard breast. The resulting phantom image shall meet the following:

(1) The center of the image has an optical density (OD) of at least 1.40 and once an established operating level is determined, the difference does not change by more than plus or minus 0.20 OD when compared to the established operating level;

(2) The difference between the OD measured inside the image of the disc and the OD measured adjacent to the image of the disc is at least 0.40 and once an established operating level is determined, the difference does not change by more than plus or minus 0.05 OD when compared to the established operating level; and

(3) Obtains a score of at least 4.0 for fibers, 3.0 for specks and 3.0 for masses using the phantom image scoring protocol in section 30316.30.

(c) Each facility conducting mammography shall, at intervals not to exceed three months:

(1) Test the residual fixer retained in the film to determine that it is no more than 5 micrograms per square centimeter; and

(2) Perform a repeat analysis on mammograms repeated or rejected. If the total repeat or reject rate changes from the previously determined rate by more than 2.0% of the total films included in the analysis, the reason(s) for the change shall be determined by the facility. Any corrective actions shall be documented and the results of those corrective actions shall be assessed. Test films, cleared films, or film processed as a result of exposure of a film bin shall not be included in the count for repeat analysis but shall be counted to determine reject rate changes and may be disposed of following completion of the analysis.

(d) Each facility conducting mammography shall, prior to initial use and at intervals not to exceed six months:

(1) Determine that the optical density attributable to darkroom fog does not exceed 0.05, by performing a test which uses mammography film of the type used clinically in the facility in which the film is exposed such that the film has a mid–density of no less than 1.4 OD, and is exposed to typical darkroom conditions for two minutes while such film, with one–half of the film covered, is placed on the counter top, emulsion side up. If the darkroom has a safelight used for mammography film, it shall be on during this test;

(2) Conduct testing on all cassettes used for mammography in the facility for screen–film contact using 40 mesh copper screen during which the entire area of the cassette that may be clinically exposed shall be tested; and

(3) Determine that the X–ray system is able to compress the breast with a force of at least 25 pounds and maintain this compression for at least 15 seconds, except that for systems with automatic compression, the maximum force applied without manual assistance shall be greater than 25 pounds and shall not exceed 45 pounds.

(e) Each facility conducting mammography shall, annually, ensure that a medical physicist verifies that:

(1) Until October 28, 2002, the automatic exposure control (AEC) can maintain film optical density within plus or minus 0.30 of the average of the optical densities measured using homogeneous acrylic thicknesses of 2, 4, and 6 centimeters and the kilovoltage peak (kVp) is varied appropriately for such thicknesses over the kVp range used clinically in the facility. Each image of the homogenous acrylic shall have an optical density (OD) of at least 1.20. If the AEC cannot meet this requirement, a chart shall be posted that specifies appropriate techniques (kVp and density control settings) for different breast thicknesses and compositions so that optical densities within plus or minus 0.30 of the average under phototimed conditions can be produced;

(2) After October 28, 2002, the AEC can maintain film optical density within plus or minus 0.15 of the average of the optical densities measured using homogeneous breast–tissue equivalent material thicknesses of 2, 4, and 6 centimeters (cm) and the kVp is varied appropriately for such thicknesses over the kVp range used clinically in the facility. Each image of the homogenous breast–tissue equivalent material shall have an OD of at least 1.20;

(3) When the AEC mode is used and the OD is increased or decreased from the normal or baseline setting, the net overall change in OD across the range of clinically used density control settings shall exceed the OD range established under subsection (e)(12) and if that net overall change in OD is equal to or greater than the maximum difference in OD allowed under subsection (e)(12), this change shall be distributed over a minimum of two density control settings removed from the normal or baseline setting;

(4) By using the protocol specified in subsection (b), the mammography system, if a screen–film system, can produce a phantom image that meets the following:

(A) The center of the image has an OD of at least 1.40;

(B) The difference between the OD measured inside the image of the disc and the OD measured adjacent to the image of the disc is at least 0.40; and

(C) Obtains a score of 4.0 for fibers, 3.0 for specks and 3.0 for masses using the phantom image scoring protocol in section 30316.30.

(D) The difference between the OD measured inside the image of the disc and the OD measured adjacent to the image of the disc is at least 0.40 and the difference is not more than plus or minus 0.05 OD when compared to the facility's established operating level.

(5) At the most commonly used clinical settings of kVp, the coefficient of variation of reproducibility of the kVp is equal to or less than 0.02;

(6) The kVp is accurate to within plus or minus 5.0% of the indicated or selected kVp at the following:

(A) The lowest clinical kVp that can be measured by a kVp test device;

(B) The most commonly used clinical kVp; and

(C) The highest available clinical kVp.

(7) The focal spot condition meets one of the following:

(A) Until October 28, 2002, the measured focal spot length (dimension parallel to the anode cathode axis) and width (dimension perpendicular to the anode cathode axis) shall be within the tolerance limits specified in Table 1. If a star pattern is used to evaluate focal spot condition, the star pattern shall, for evaluation of the large focal spot, be no larger than 1.5 degrees and, for evaluation of the small focal spot, be no larger than 1.0 degree.

Table 1
Focal Spot Tolerance Limit

Nominal Focal Spot Size (mm)	*Maximum Measured Dimensions*	
	Width (mm)	*Length (mm)*
0.10	0.15	0.15
0.15	0.23	0.23
0.20	0.30	0.30
0.30	0.45	0.65
0.40	0.60	0.85
0.60	0.90	1.30

(B) The focal spot condition shall be evaluated by determining the mammography system resolution in accordance with the following and meet the specified criteria:

(1) Each mammography system used for mammography, in combination with the mammography screen–film combination used in the facility, shall provide a minimum resolution of 11 cycles/millimeter (mm) (line–pairs/mm) when a high contrast resolution bar test pattern is oriented with the bars perpendicular to the anode–cathode axis, and a minimum resolution of 13 line–pairs/mm when the bars are parallel to that axis;

(2) The bar pattern shall be placed 4.5 cm above the breast support surface, centered with respect to the chest wall edge of the image receptor, and with the edge of the pattern within 1 cm of the chest wall edge of the image receptor;

(3) When more than one target material is provided, the measurement in subsection (e)(7)(A) shall be made using the appropriate focal spot for each target material;

(4) When more than one source–image–distance (SID) is provided, the test shall be performed at the SID most commonly used clinically; and

(5) Test kVp shall be set at the value used clinically by the facility for a standard breast and shall be performed in the AEC mode, if available. If necessary, a suitable absorber may be placed in the beam to increase exposure times. The screen–film cassette combination used by the facility shall be used to test for this requirement and shall be placed in the normal location used for clinical procedures.

(8) The half–value layer (HVL) of the useful beam is not less than the value specified in Table 2 of section 30308(a)(3) for the minimum HVL. These values, extrapolated to the mammographic range, are shown as follows, except that values not shown in Table 2 may be determined by linear interpolation or extrapolation:

Table 2
X–ray Tube Voltage (kilovolt peak) and Minimum HVL

Designed Operating Range (kV)	*Measured Operating Voltage (kV)*	*Minimum HVL (mm of aluminum)*
Below 50	20	0.20
	25	0.25
	30	0.30

(9) The coefficient of variation for both air kerma and milliampere–seconds (mAs) does not exceed 0.05;

(10) By performance of a test using the techniques the facility uses clinically for a standard breast, the average glandular dose delivered by screen–film systems during a single craniocaudal view of an FDA accepted phantom simulating a standard breast does not exceed 3.0 milligray (mGy) (0.3 rad) per exposure;

(11) All systems meet the following:

(A) Possess beam–limiting devices that allow the entire chest wall edge of the X–ray field to extend to the chest wall edge of the image receptor and provide means to assure that the X–ray field does not extend beyond any edge of the image receptor by more than 2.0% of the SID;

(B) Provide that if a light field that passes through the X–ray beam limitation device is used, it is aligned with the X–ray field so that the total of any misalignment of the edges of the light field and the X–ray field along either the length or the width of the visually defined field at the plane of the breast support surface shall not exceed 2.0% of the SID; and

(C) The chest wall edge of the compression paddle does not extend beyond the chest wall edge of the image receptor by more than 1.0% of the SID when tested with the compression paddle placed above the breast support surface at a distance equivalent to standard breast thickness. The shadow of the vertical edge of the compression paddle shall not be visible on the image.

(12) The uniformity of screen speed of all cassettes in the facility are tested, and that the difference between the maximum and minimum optical densities do not exceed 0.30. The optical density of the test films shall be no less than 1.4;

(13) During the uniformity of screen speed test specified in subsection (e)(12), system artifacts are evaluated with a high–grade, defect–free sheet of homogeneous material large enough to cover the mammography cassette and performed on all cassette sizes used in the facility using a grid appropriate for the cassette size being tested. The optical density of the test films shall be no less than 1.4;

(14) System artifacts are evaluated for all available focal spot sizes and target/filter combinations used clinically;

(15) Until October 28, 2002, each machine produces, over 3.0 seconds, a minimum output of 4.5 mGy air kerma per second (513 milliroentgen (mR) per second) when operating at 28 kVp in the standard mammography (molybdenum/molybdenum) mode at any SID where the system is designed to operate and when measured by a detector with its center located 4.5 cm above the breast support surface with the compression paddle in place between the source and the detector;

(16) After October 28, 2002, each machine produces, over 3.0 seconds, a minimum output of 7.0 mGy air kerma per second (800 milliroentgen (mR) per second) when operating at 28 kVp in the standard mammography (molybdenum/molybdenum) mode at any SID where the system is designed to operate and when measured by a detector with its center located 4.5 cm above the breast support surface with the compression paddle in place between the source and the detector;

(17) If the system is equipped with a provision for automatic decompression after completion of an exposure or interruption of power to the system, it provides:

(A) An override capability to allow maintenance of compression;

(B) A continuous display of the override status; and

(C) A manual emergency compression release that can be activated in the event of power or automatic release failure.

(18) The calibration of the densitometer and sensitometer used by the facility meets the manufacturer's specifications; and

(19) For systems with image receptor modalities other than screen–film, the quality assurance program meets the quality assurance program recommended by the image receptor manufacturer, except that the maximum allowable dose shall not exceed the maximum allowable dose for screen–film systems specified in subsection (e)(10).

(f) Each facility conducting mammography shall ensure that:

(1) The darkroom or the area used to load or unload mammography film is cleaned each day before any mammography is performed;

(2) Intensifying screens are cleaned each week using a screen cleaner recommended by the screen manufacturer; and

(3) All view boxes used to score phantom images and interpret mammograms are cleaned each week. If the view box used to interpret mammograms is at a different location than where the mammograms are taken, the facility shall ensure that documentation establishing the following is available to personnel and Department inspectors:

(A) Physical location(s) where the mammograms produced by the facility are interpreted;

(B) For each location, the individual responsible for ensuring the view boxes are cleaned at intervals not to exceed seven calendar days; and

(C) A log indicating the date and who cleaned the view boxes.

(g) After completion of the tests specified in subsections (a), (b), (d) and (e)(4), (10) and (19), if any of the test results fail to meet the specified criteria, the source of the problem shall be identified and corrective actions shall be taken before any further mammographic examinations are performed or any films are processed using the component of the mammography system that failed the test.

(h) Each facility conducting mammography shall, if any of the results of the tests specified in subsections (c), (e)(1) through (3), (5) through (9)

and (11) through (18) and (f) fall outside the action limits, identify the source of the problem and take corrective actions within 30 days of the test date.

(i) All quality assurance data collected during tests conducted pursuant to this section shall be analyzed and if any problems are detected by analysis of that data, the problems shall be corrected to ensure compliance with this section.

(j) Documentation of the tests performed, the analysis of data obtained, corrective actions and the effectiveness of those actions taken pursuant to this section shall be maintained in accordance with section 30319.20.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of subsections (b)–(b)(2), (c), (e)(2)–(3), (e)(6)(A), (e)(13) and (f)(2)–(3), transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30316.22. Acceptable Phantoms.

(a) A phantom shall not be used unless it is approved by the FDA and is:

(1) Mammographic Accreditation Phantom Model 156 produced by Radiation Measurement, Inc.;

(2) Mammographic Accreditation Phantom Model 18–220 produced by Nuclear Associates; or

(3) Equivalent in thickness to a standard breast and;

(A) Contains six nylon fibers with the following diameters:

1. 1.56 millimeters (mm);
2. 1.12 mm;
3. 0.89 mm;
4. 0.75 mm;
5. 0.54 mm;
6. 0.40 mm;

(B) Contains five aluminum oxide speck groups, each containing six specks and each speck in the group has the same diameter. The diameter of the specks shall be:

1. 0.54 mm;
2. 0.40 mm;
3. 0.32 mm;
4. 0.24 mm;
5. 0.16 mm; and

(C) Contains five nylon massess with decreasing diameters and the following thicknesses:

1. 2.00 mm;
2. 1.00 mm;
3. 0.75 mm;
4. 0.50 mm;
5. 0.25 mm.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of subsection (a), transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30316.30. Phantom Image Scoring Protocol.

(a) This section shall apply only to screen–film mammography systems.

(b) Phantom images shall be scored in accordance with the following protocol. Each of the following object groups shall be scored separately and shall meet the criteria specified in section 30316.20(b)(3) and (e)(4):

(1) Score the fibers as follows:

(A) Begin with the largest fiber and move down in size, adding one point for each full fiber until a score of zero or one half is given, then stop.

(B) If the entire length of the fiber can be seen and its location and orientation are correct, that fiber receives a score of one.

(C) If at least half, but not all, of the fiber can be seen and its location and orientation are correct, that fiber receives a score of one half.

(D) If less than one half of a fiber can be seen or if the location or orientation is incorrect, that fiber receives a score of zero.

(E) After determining the last fiber to be counted, look at the overall background for artifacts. If there are background objects that are fiber–like in appearance and are of equal or greater brightness than the last visible half or full fiber counted, subtract the last half or full fiber scored.

(2) Score the speck groups as follows:

(A) Begin with the largest speck group and move down in size adding one point for each full speck group until a score of one half or zero is given, then stop.

(B) If at least four of the specks in any group are visualized, the speck group is scored as one.

(C) If two or three specks in a group are visualized, the score for the group is one half.

(D) If one speck or no specks from a group are visualized, the score is zero.

(E) After determining the last speck group to receive a full or one–half point, look at the overall background for artifacts. If there are speck–like artifacts within the insert region of the phantom that are of equal or greater brightness than individual specks counted in the last visible half or full speck group counted, subtract the artifact speck from the observed specks, one by one. Repeat the scoring of the last visible speck group after these deductions.

(3) Score the masses as follows:

(A) Begin with the largest mass and add one point for each full mass observed until a score of one half or zero is assigned, then stop.

(B) Score one for each mass that appears as a minus density object in the correct location that can be seen clearly enough to observe round, circumscribed borders.

(C) Score one–half if the mass is clearly present in the correct location, but the borders are not visualized as circular.

(D) After determining the last full or half mass to be counted, look at the overall background for artifacts. If there are background objects that are mass–like in appearance and are of equal or greater visibility than the last visible mass, subtract the last full or half point assigned from the original score.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30316.40. Processing of Mammograms and Phantom Images.

Each facility possessing a facility accreditation certificate and conducting screen–film mammography shall process phantom images in the processor(s) designated by the facility to process mammograms.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30316.50. Mammographic Image Identification.

(a) The following information shall be placed on each mammogram in a permanent, legible manner that does not obscure anatomic structures:

(1) Name of patient and an additional patient identifier;

(2) Date of examination;

(3) View and laterality, which shall be indicated on the image in a position near the axilla using the abbreviations specified in subsections (b) and (c);

(4) Facility name, city, state and zip code of the facility that performed the mammogram;

(5) Technologist identification;

(6) Identification of the cassette/screen used in producing the mammographic image; and

(7) Radiation machine identification if there is more than one radiation machine used for mammography at the facility.

(b) The following abbreviations shall be used to indicate laterality:

(1) Right: "R";

(2) Left: "L".

(c) At a minimum, the following abbreviations shall be used to indicate the view:

(1) Craniocaudal: "CC";

(2) Mediolateral oblique: "MLO";

(3) Mediolateral: "ML";

(4) Lateromedial: "LM";

(5) Lateromedial oblique: "LMO".

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30316.60. Medical Physicist Survey Reports.

(a) Each facility conducting mammography shall undergo an annual survey by a medical physicist or an individual under the direct supervision of a medical physicist, and shall obtain a survey report, dated and signed by the medical physicist and, if an individual performed the survey under the direct supervision of a medical physicist, the individual being supervised, showing:

(1) The results with measurements and calculated data used for the mammography system evaluation and the calibration record required in section 30316.61(a);

(2) The results of the quality assurance testing evaluation, as well as written documentation of any corrective actions taken and their results; and

(3) Written recommendations for corrective actions according to all results required to be in the report, if applicable.

(b) The survey report, specified in subsection (a), shall be obtained within 30 calendar days of the date the medical physicist performed and completed the survey. A facility shall require the medical physicist to notify them within 72 hours of the date the tests were performed of any deficiencies that involve any of the items listed in subsection (g) of section 30316.20.

(c) The survey report shall identify each radiation machine by the facility's radiation machine identification number as specified in section 30317(g).

(d) The survey report, reviews, and calibration documentation required by this section shall be maintained in accordance with section 30319.20.

NOTE: Authority cited: Sections 115060, 131051 and 131200, Health and Safety Code. Reference: Sections 115060 and 115100, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of subsection (a)(1), transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).
3. Amendment of subsection (c) and NOTE filed 7–11–2007; operative 8–10–2007 (Register 2007, No. 28).

§ 30316.61. Instruments Used by Medical Physicists.

(a) Instruments used by medical physicists to measure the air kerma or air kerma rate from a radiation machine shall be calibrated at least once every two years and each time the instrument is repaired. The instrument calibration shall be traceable to a national standard and calibrated with an accuracy of plus or minus 6.0% (95% confidence level) in the mammography energy range. The calibration record shall be maintained in accordance with section 30319.20.

(b) Instrumentation used by the medical physicist to measure the illumination as specified in section 30316(b)(13) shall be calibrated in units of lux or foot candles and shall meet manufacturer specifications.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060 and 115100, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30317. General Facility Requirements.

(a) The facility shall designate a quality assurance technologist.

(b) Tests specified in section 30316.20(a) through (d) and (f) shall be performed by the quality assurance (QA) technologist or by other personnel qualified to perform the tasks. When other personnel are utilized for these tasks, the QA technologist shall ensure that the specified tests are performed correctly. The QA technologist shall maintain documentation of training received by the other personnel.

(c) The facility's lead interpreting physician shall verify that the provisions of this section and sections 30316.20, 30316.40, 30316.50, 30316.60, 30317.10, 30317.20, 30317.30, 30317.40, 30317.60, and 30319.20 are met.

(d) A facility shall ensure an interpreting physician is available by telephone or in person for consultation when mammographic examinations are performed.

(e) A facility shall ensure that mammographic examinations are performed under the supervision, as defined in Health and Safety Code section 114850(g), of an individual who meets the requirements of section 30315.50.

(f) Each facility shall provide and require that all operators of radiation machines used for mammography use a chart or manual that specifies technique factors to be utilized relative to the patient's body habitus.

(g) Each facility shall maintain an inventory of each mammography X-ray machine. The inventory shall identify each machine by a unique radiation machine identification number. That number shall be permanently affixed to the machine.

NOTE: Authority cited: Sections 115060, 131051 and 131200, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).
3. New subsection (g) and amendment of NOTE filed 7–11–2007; operative 8–10–2007 (Register 2007, No. 28).

§ 30317.10. Mammography Quality Assurance Program.

(a) Each facility shall establish and maintain a mammography quality assurance (QA) program to ensure the safety, reliability, clarity and accuracy of mammography services performed at the facility. A review of the QA program shall be conducted and documented by the lead interpreting physician at intervals not to exceed six months. The QA program shall, at a minimum, include the following:

(1) Establishment of operating levels meeting manufacturer specifications by which the criteria specified in section 30316.20(a) is compared.

(2) Documentation of accreditation by an entity approved by the FDA pursuant to 42 United States Code Section 263b(e)(1)(A) and certification by FDA;

(3) Documentation that each interpreting physician who interprets mammograms for the facility meets the requirements of section 30315.50.

(4) Documentation that each mammographic radiologic technologist who performs mammography meets the requirements of section 30315.51;

(5) Documentation that each medical physicist who performs the tests specified in section 30316.20(e) meets the requirements of section 30315.52;

(6) The QA manual required by section 30317.20;

(7) The mammography procedures manual required by section 30317.30; and

(8) If the facility is a mobile service provider, a list identifying the physical location where radiation machines are used.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30317.20. Quality Assurance Manual.

(a) Each facility that performs mammography shall establish and maintain a written quality assurance (QA) manual. The lead interpreting physician shall document a review of the QA manual at intervals not to exceed six months. At a minimum, the QA manual shall contain:

(1) A list of names identifying the following:

(A) The lead interpreting physician designated by the facility;

(B) The quality assurance technologist;

(C) The medical physicist who will perform the tests specified in subsection (e) of section 30316.20; and

(D) The company providing processor and equipment services.

(2) The procedures to be used to ensure that the tests specified in section 30316.20(a) through (d) and (f) are performed and the criteria have been met;

(3) The procedure for correcting each finding that fails to meet the requirements of section 30316.20(a) through (f);

(4) Examples of the forms to be used for each test specified in section 30316.20 (a) through (d) and (f);

(5) Documentation that equipment used during QA tests specified in section 30316.20 meet manufacturer specifications;

(6) The most recent survey report required to be obtained pursuant to section 30316.60 and evidence that instruments used by the medical physicist are calibrated pursuant to section 30316.61;

(7) Documentation of all QA tests required to be performed pursuant to section 30316.20(a) through (d) and (f);

(8) Documentation of compliance with section 30316.20(g) and (h);

(9) Documentation of compliance with section 30316.10 covering the previous two years;

(10) Documentation that each interpreting physician, mammographic radiologic technologist and medical physicist has reviewed the manual annually or, if any update has occurred, evidence that the manual has been reviewed by the said individuals; and

(11) Documentation of preventive and corrective maintenance, chemistry replacement and cleaning of each processor used to process mammograms. The documentation shall contain the signature of the individual who performed the maintenance.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30317.30. Mammography Procedures Manual.

(a) Each facility shall establish a written mammography procedures manual. The lead interpreting physician shall document a review of the manual at intervals not to exceed six months. The mammography procedures manual shall, at a minimum, contain the following:

(1) The procedure for corrective action when the images interpreting physicians are asked to interpret are of poor quality and documentation that the procedure is followed;

(2) A policy that requires each interpreting physician to participate in the mammography medical outcomes audit as specified in section 30317.60;

(3) Examples of mammographic examination reports in lay language for each assessment of findings category and the procedures used to ensure the patient, if the patient does not indicate a health care provider, is referred to a health care provider if the patient's mammogram is interpreted by an interpreting physician as a positive mammogram;

(4) The procedure used to inquire whether or not the patient has prosthetic devices implanted in the breast prior to the mammographic examination and evidence that the procedure is followed. The procedure shall specify that except where contraindicated, or unless modified by a physician's directions, patients with such implants shall have mammographic views to maximize the visualization of breast tissue;

(5) The procedure to be used by each mammographic radiologic technologist to ensure that prior to each mammographic examination the mammography equipment is disinfected. The procedure shall comply with title 29, Code of Federal Regulations section 1910.1030 as of July 1, 2001, title 8, California Code of Regulations section 5193 and with the manufacturer's recommended procedures for cleaning and disinfection of the mammography equipment used in the facility;

(6) The procedures used to comply with section 30317.70 pertaining to consumer complaints;

(7) The procedure used to ensure mammographic examination reports are sent as required by section 30317.40; and

(8) Documentation that the mammography medical outcomes audit is performed as specified in section 30317.60.

(b) Procedures and policies developed to comply with this section shall be followed by the facility.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of subsection (a)(5), transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30317.40. Mammographic Examination Reports.

(a) Each facility shall ensure that a written report of the results of each mammographic examination conducted at that facility is prepared and includes at least the following:

(1) Name of the patient and an additional patient identifier;

(2) Date of the examination;

(3) Name of the interpreting physician who interpreted the mammogram;

(4) Overall assessment of findings, classified in one of the following categories:

(A) "Negative:" Nothing to comment upon (if the interpreting physician is aware of clinical findings or symptoms, despite the negative assessment, these shall be explained);

(B) "Benign:" Also a negative assessment;

(C) "Probably Benign:" Finding(s) has a high probability of being benign;

(D) "Suspicious:" Finding(s) without all the characteristic morphology of breast cancer but indicating a definite probability of being malignant;

(E) "Highly suggestive of malignancy:" Finding(s) has a high probability of being malignant;

(5) In cases where a final assessment category cannot be assigned due to incomplete work–up, "Incomplete: Need additional imaging evaluation" shall be assigned as an assessment and reasons why no assessment can be made shall be stated by the interpreting physician; and

(6) Recommendations made to the patient's health care provider about what additional actions, if any, should be taken. All clinical questions raised by the referring physician shall be addressed in the report to the extent possible, even if the assessment of findings is negative or benign.

(b) Each facility shall ensure that the report specified in subsection (a) is summarized in lay terms and sent no later than 30 calendar days from the date of the mammographic examination to the patient.

(c) Each facility shall ensure that the report specified in subsection (a) is sent no later than 30 calendar days from the date of the mammographic examination to the referring physician(s), or if the patient is self–referred, to the physician indicated by the patient or the physician to whom the facility refers the patient.

(d) Each facility shall verify that:

(1) Patients with an overall assessment of findings of "suspicious" or "highly suggestive of malignancy" and patients needing repeat examinations have received notification; and

(2) Physicians have received notification of patients with an overall assessment of findings of "suspicious" or "highly suggestive of malignancy" and needing repeat examinations.

(e) If an interpreting physician has given a mammogram an assessment of findings as "suspicious" or "highly suggestive of malignancy," the facility shall attempt to communicate the results to the patient within five working days and the health care provider or if the health care provider is unavailable, to a responsible designee of the health care provider within three working days.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Section 115060, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of subsections (a)(6) and (e), transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30317.50. Mammogram and Report Retention.

Unless otherwise required by law, each facility that performs mammography shall:

(a) Unless transferred in accordance with subsection (b), maintain mammograms and the reports specified in section 30317.40 for a minimum of seven years and if no additional mammograms of the patient are taken by the facility, mammograms and reports shall be maintained for a minimum of ten years.

(b) Upon request or on behalf of the patient, permanently or temporarily transfer the original mammograms and copies of the patient's mammographic examination reports to a medical institution, a physician or to the patient directly. Any fee charged for this service shall not exceed the documented cost of the service.

(c) If the facility will discontinue the performance of mammography, notify the Department prior to discontinuing mammography of how all records kept pursuant to subsection (a) will be maintained.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060 and 123145, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30317.60. Mammography Medical Outcomes Audit.

(a) Each facility possessing a facility accreditation certificate shall collect and review outcome data for all mammograms interpreted by the facility as a positive mammogram, including follow–up on the disposition of all positive mammograms and correlation of pathology results with the interpreting physician's mammographic examination report. Each facility shall analyze these outcome data for all interpreting physicians, both individually and collectively. The lead interpreting physician or an interpreting physician designated by the lead interpreting physician shall perform the analysis.

(b) For any cases of an individual diagnosed with breast cancer who was imaged at the facility and whose identity became known to the facility, the facility shall initiate follow–up on surgical and/or pathology results and conduct a review of any mammogram taken prior to the diagnosis of a malignancy. These cases shall be included in the analysis required pursuant to subsection (a).

(c) Each facility possessing a facility accreditation certificate shall ensure that the analysis required by subsection (a) is initiated no later than 12 months after the date of issuance of the facility accreditation certificate. The analysis shall be completed within 12 months of the date the analysis was initiated. Subsequent audit analyses shall be performed at least once every 12 months thereafter.

(d) The facility's lead interpreting physician or an interpreting physician designated by the lead interpreting physician, shall:

(1) Record the dates of the audit period(s);

(2) Document the results;

(3) Review the medical outcomes audit data;

(4) Analyze the results of the audit;

(5) Provide the results of the review of a specific interpreting physician to that interpreting physician and the overall results of the review for the facility review; and

(6) Provide a written description of any follow–up actions and the nature of the follow–up actions taken.

(e) Each facility shall maintain reports, outcome data, analyses and documentation of actions taken specified in this section in accordance with section 30319.20.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30317.70. Consumer Complaints.

Each facility possessing a facility accreditation certificate shall:

(a) Establish a written procedure for collecting and resolving consumer complaints;

(b) Maintain a record of each serious complaint received by the facility in accordance with section 30319.20;

(c) Provide to the consumer, upon request, a copy of the facility's procedure required in subsection (a) and instructions for filing serious complaints to the entity approved by the FDA pursuant to 42 United States Code Section 263b(e)(1)(A) that accredited the facility;

(d) Report unresolved serious complaints to the Department within 30 calendar days of receiving the complaint.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Section 115060, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of subsection (b), transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30318.10. Additional Requirements for Mobile Service Providers.

(a) Prior to the performance of mammography by a mobile service provider at a location other than a location identified on the application submitted pursuant to section 30315.22 or 30315.23, the provider shall notify the Department. The notification shall include:

(1) The name and address of the mobile service provider;

(2) The certificate number as shown on the facility accreditation certificate of the mobile service provider;

(3) The physical location of the new location where mammography will be performed;

(4) The name and telephone number of the individual who is allowing the service to be provided at the new location;

(5) If the radiation machine is moved to where the mammographic examinations will be performed, the designated room number within the physical building at the new location of use; and

(6) The physical location where mammograms produced at the new location will be processed.

(b) After each relocation of the radiation machine and before the performance of mammography on humans, the processor shall be tested to ensure that the criteria specified in section 30316.20(a) are met, and the radiation machine shall be tested to ensure that it meets the requirements of section 30316.20(b)(1) through (3). If a processor is not available at the location where mammography is performed, a phantom image shall be produced by using the procedure specified in section 30316.20(b). The selected kilovoltage–peak and milliampere–seconds (mAs) shall be recorded and compared to the mAs value previously established as meeting the phantom image criteria specified in section 30316.20(b). If the two mAs values are within plus or minus 10 percent of each other, mammography may be performed. If the values exceed the limits, mammography shall not be performed and corrective actions shall be taken to bring the two values within the limit.

(c) If a mobile service provider processes mammograms at a location other than where the mammograms are taken:

(1) The mammograms shall be transported in a container that protects the film from exposure to light, heat, humidity, radiation, and conditions that may damage the mammograms and processed within 48 hours from the time the mammogram is taken;

(2) A log shall be maintained that includes the name of each patient and unique identification number, date, and time of the first exam of each batch, and date and time of batch processing in accordance with section 30319.20; and

(3) The container used to transport the mammograms shall be cleaned at intervals not to exceed seven days or if mammography is performed at greater intervals, before the mammograms are transported.

(d) Prior to processing mammograms, the provider shall ensure that the test specified in section 30316.20(a) has been met and that the phantom image produced during the test specified in subsection (c) of this section meets the phantom image criteria specified in section 30316.20(b) and if the phantom image fails due to processing problems, the problems shall be corrected prior to processing the mammograms. If the phantom image fails due to a non–processor problem, the provider may process the mammograms, but the lead interpreting physician shall evaluate each mammogram to determine whether any patient must be recalled to have their mammograms repeated. Prior to further clinical use, the mammography system shall be evaluated and problems corrected to ensure that the mammography system is in compliance with all requirements of this article.

(e) Documentation demonstrating compliance with this section shall be maintained in accordance with section 30319.20.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order, including amendment of subsections (b) and (c)(1), transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30318.11. Posting Requirements for Mobile Service Providers.

(a) Each mobile service provider shall ensure the following are kept with each radiation machine used to perform mammography in a mobile setting:

(1) All items required to be posted pursuant to section 30255;

(2) The mammographic radiologic technologist's certificate issued pursuant to section 30455.1 to the individual performing the mammographic examination and posted so the patient can view it during the examination;

(3) For facilities performing mammography, the lead interpreting physician's radiology supervisor and operator certificate issued pursuant to section 30466(d) or 30467 and posted so the patient can view it during the examination;

(4) The document required to be posted on the radiation machine pursuant to Health and Safety Code section 115115(b) so the patient can view it during the examination;

(5) A copy of the certificate issued by FDA and posted so the patient can view it during the examination;

(6) The quality assurance records for on–board processors as specified in section 30316.20(a) for at least the last 30 calendar days.

(7) Documentation that, for each location of use visited in the last 30 calendar days, section 30318.10(b) has been met; and

(8) The quality assurance manual as specified in section 30317.10.

(b) Each provider shall maintain a log that identifies the date and physical location where each radiation machine is used.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100 and 115115, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30319. Notification Requirements.

(a) Within 30 calendar days of the occurrence of any of the following events, each facility that performs mammography shall inform the Department of the event:

(1) Change in the information submitted in response to section 30315.22(a)(1);

(2) Change in the identity of the entity approved by the FDA pursuant to 42 United States Code Section 263b(e)(1)(A) that accredited the facility;

(3) Change in certification status with the FDA;

(4) Change in facility personnel and, if adding an interpreting physician, mammographic radiologic technologist, or medical physicist;

(5) Change in location of a radiation machine within the facility;

(6) Change in facility name or owner;

(7) Disassembly and reassembly of any radiation machine or processing equipment;

(8) Change in the accreditation status;

(9) Change in the facility's contact person.

(b) Notifications made pursuant to this section shall be made in writing and contain the name, signature and date of signature of the facility administrator, owner or designee.

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Section 115060, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

§ 30319.20. Record Keeping Requirements.

(a) Each facility shall maintain and make available for inspection by the Department the records specified in Table 1 until Department inspection or the time interval specified which ever is greater:

Table 1. Record Keeping Requirements

Specific Section	*Type of Record*	*Time Interval for Record Keeping*
30315.50	Personnel Qualifications for physicians	At least two years after the physician no longer worked at the facility
30455.1	Personnel Qualifications for mammographic radiologic technologists	At least two years after the technologist no longer worked at the facility
30315.52	Personnel Qualifications for medical physicists	At least two years after the medical physicist no longer worked at the facility
30316.20(a)	QA logs Processor film strips	3 years 1 year
30316.20(b)	Phantom image score sheets Phantom images	3 years 1 year
30316.20(c)(1)	Fixer retention log sheet Fixer retention test film	3 years 1 year
30316.20(c)(2)	Repeat Analysis	3 years
30316.20(d)(1)	Darkroom fog log sheets Darkroom test films	3 years 1 year
30316.20(d)(2)	Screen–film contact log sheets Screen–film contact test films	3 years 1 year
30316.20(d)(3)	Compression test log sheet	3 years
30316.20(f)	Darkroom cleaning logs Intensifying screen cleaning logs View box cleaning logs	3 years 3 years 3 years
30316.60	Medical Physicist Survey Report, evaluations & instrument calibration reports	3 years
30316.10	Evaluations of new or repaired equipment	3 years
30317.60	Medical Outcomes Audit analysis	3 years
30317.70	Consumer complaints	3 years
30318.10	All mobile service provider documents	3 years

(b) Each facility shall maintain records for inspection by the Department showing calibrations, maintenance, and modifications performed on each radiation machine for three years. These records shall include the date of the calibration, maintenance, or modification performed, the name of the individual making the record, and the manufacturer's model and the facility's radiation machine identification number as specified in section 30317(g).

(c) Each facility shall maintain records showing the receipt, transfer, and disposal of radiation machines pursuant to section 30293. These records shall include the date of receipt, transfers, or disposal, the name and signature of the individual making the record, and the manufacturer's model and the facility's radiation machine identification number as specified in section 30317(g). Records shall be maintained for inspection by the Department until the facility ceases use and disposes of the radiation machine.

NOTE: Authority cited: Sections 115060, 131051 and 131200, Health and Safety Code. Reference: Section 115060, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).
3. Amendment of subsections (b)–(c) and amendment of NOTE filed 7–11–2007; operative 8–10–2007 (Register 2007, No. 28).

§ 30320.90. Grounds for Suspension, Revocation, Amendment or Restriction of a Facility Accreditation Certificate.

(a) A facility accreditation certificate may be revoked, suspended, amended or restricted for any of the following:

(1) Violation of any provision of the Act, any regulation promulgated pursuant to the Act, any provision of the Radiologic Technology Act, as defined in Health and Safety Code section 27, any regulation promulgated pursuant to the Radiologic Technology Act, or any order of the Department;

(2) Failure to pay fees pursuant to sections 30145 or 30145.1;

(3) Refusal to submit to clinical image review or mammography review as directed by the Department;

(4) Failure of clinical images to pass clinical image review or mammography review;

(5) Failure to take corrective action when directed by the Department;

(6) Failure to report changes pursuant to section 30319;

(7) Procuring a facility accreditation certificate by fraud, or misrepresentation, or because of mistake;

(8) Failure to maintain mammograms and reports pursuant to section 30317.50;

(9) Failure to ensure the average glandular dose criteria specified in section 30316.20(e)(10) is not exceeded;

(10) Failure during a Department inspection to obtain the phantom image score specified in section 30316.20(b)(3);

Article 5. Special Requirements for the Use of Radioactive Material in the Healing Arts [Repealed]

§ 30321. Accountability, Storage, and Transit. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Repealer of article 8 (30320, 30321) and new article 8 (30321) filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For former article 8 see Register 62, No. 1.
2. Change without regulatory effect adding NOTE (Register 87, No. 11).
3. Amendment of article heading and subsection (b) filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
5. Repealer of article 5 (sections 30321–30322) and section filed 10–13–2010; operative 1–1–2011 (Register 2010, No. 42).

§ 30321.1. Confirming Removal of Implants. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25815, 25875 and 25876, Health and Safety Code; and 10 CFR 35.15(b) (vi) and (vii) (39 FR 26143 and 43 FR 553467).

HISTORY

1. New section filed 6–18–87; operative 7–18–87 (Register 87, No. 28).
2. Repealer filed 10–13–2010; operative 1–1–2011 (Register 2010, No. 42).

§ 30322. Records and Reports of Misadministration. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section field 9–5–89; operative 10–5–89 (Register 89, No. 36)
2. Repealer filed 10–13–2010; operative 1–1–2011 (Register 2010, No. 42).

Article 6. Special Requirements for Radiographic Operations in Industrial Radiography

§ 30330. Definitions Specific to Industrial Radiography.

(a) The definitions in section 30100 apply to this article.

(b) As used in this article:

(1) "Annual refresher safety training" means training conducted or provided by a licensee or registrant for its employees on radiation safety aspects of industrial radiography including the topics specified in sections 30333(d) or 30336.1(q);

(2) "Associated equipment" means equipment that is used in conjunction with a radiographic exposure device to make radiographic exposures that drives, guides, or comes in contact with the sealed source (e.g., guide tube, control tube, control cable, removable source stop, "J" tube and collimator when it is used as an exposure head);

(3) "Cabinet X–ray system" means an X–ray system with the X–ray tube installed in an enclosure independent of existing architectural structures except the floor on which it may be placed and intended to contain at least that portion of a material being irradiated, provide radiation attenuation, and exclude personnel from its interior during generation of radiation. An X–ray tube used within a shielded part of a building, or X–ray equipment that may temporarily or occasionally incorporate portable shielding, is not considered a cabinet X–ray system;

(4) "Collimator" means a radiation shield that is placed on the end of the guide tube or directly onto a radiographic exposure device to restrict the size of the radiation beam when the sealed source is cranked into position to make a radiographic exposure;

(5) "Control cable" means the cable that is connected to the source assembly and used to drive the source to and from the exposure location;

(6) "Control mechanism" means a device that enables the source assembly to be moved to and from the radiographic exposure device;

(7) "Control tube" means a protective sheath for guiding the control cable, which connects the control mechanism to the radiographic exposure device;

(8) "Exposure head" means a device that locates the sealed source in the selected working position;

(9) "Field radiography" means industrial radiography using a radiation machine but excludes cabinet X–ray systems and shielded–room radiography machines;

(10) "Field station" means a facility where licensed material may be stored or used and from which equipment is dispatched;

(11) "Guide tube" means a flexible or rigid tube (i.e., "J" tube) for guiding the source assembly and the attached control cable from the radiographic exposure device to the exposure head;

(12) "Identification card" (ID) means either an ID card issued by:

(A) A licensee, pursuant to section 30333(b)(2), designating the individual as a radioactive materials radiographer's assistant;

(B) A registrant, pursuant to section 30336.5, designating the individual as a radiation machine radiographer's assistant; or

(C) The Department indicating the individual is certified pursuant to sections 30335.2 or 30335.4;

(13) "Industrial radiography" means the examination of the physical structure, but not the microscopic structure, or elemental or chemical composition, of materials, other than human beings or animals, utilizing radiation;

(14) "Permanent radiographic installation" means a shielded installation or structure designed or intended for industrial radiography and in which industrial radiography is performed;

(15) "Practical examination" means a demonstration through practical application of the safety rules and principles in industrial radiography including use of all appropriate equipment and procedures;

(16) "Radiation Safety Officer" means an individual with the responsibility for the overall radiation safety program on behalf of the:

(A) Licensee and who meets the requirements of section 30333.07; or

(B) Registrant and who meets the requirements of section 30336.7;

(17) "Radiographer" means any individual who performs radiographic operations or who, while in attendance at the site where radiographic operations are being performed, personally supervises such operations and who is responsible to the user for assuring compliance with the requirements of this regulation, license or registration conditions and is certified pursuant to sections 30335.2 or 30335.4 or is in compliance with section 30335.3;

(18) "Radiographer certification" means written approval indicating that an individual has satisfactorily met the requirements to be a radiographer;

(19) "Radiographer trainer" means a radiographer who meets the requirements of sections 30333.05 or 30336.6;

(20) "Radiographer's assistant" means any individual who has met the requirements of sections 30333(b) or 30336.5(a)(1) and who must be under personal supervision as required by sections 30333(c) or 30336.1(o);

(21) "Radiographic exposure device" means any device containing a sealed source used to make a radiograph;

(22) "Radiographic operations" means all activities associated with the presence of radiation machines or radioactive sources for the performance of industrial radiography (except when being transported by a common or contract transport), and includes surveys to confirm the adequacy of boundaries, setting up equipment and any activity inside a restricted area;

(23) "Radiographic personnel" means any radiographer, radiographer trainer, or radiographer's assistant;

(24) "Shielded position" means the location within the radiographic exposure device or source changer where the sealed source is secured and restricted from movement;

(11) Failure to comply with policies or procedures required to be developed pursuant to section 30317.30; and

(12) Suspension or revocation of the facility's certificate issued by FDA pursuant to title 21, Code of Federal Regulations, section 900.11(a).

NOTE: Authority cited: Sections 100275 and 115060, Health and Safety Code. Reference: Sections 115060, 115100, 115115, 115145, 115165 and 115215, Health and Safety Code.

HISTORY

1. New section filed 2–10–2003 as an emergency; operative 2–10–2003 (Register 2003, No. 7). A Certificate of Compliance must be transmitted to OAL by 6–10–2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 2–10–2003 order transmitted to OAL 6–6–2003 and filed 7–18–2003 (Register 2003, No. 29).

[The next page is 203.]

Article 5. Special Requirements for the Use of Radioactive Material in the Healing Arts [Repealed]

§ 30321. Accountability, Storage, and Transit. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Repealer of article 8 (30320, 30321) and new article 8 (30321) filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For former article 8 see Register 62, No. 1.
2. Change without regulatory effect adding NOTE (Register 87, No. 11).
3. Amendment of article heading and subsection (b) filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
5. Repealer of article 5 (sections 30321–30322) and section filed 10–13–2010; operative 1–1–2011 (Register 2010, No. 42).

§ 30321.1. Confirming Removal of Implants. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25815, 25875 and 25876, Health and Safety Code; and 10 CFR 35.15(b) (vi) and (vii) (39 FR 26143 and 43 FR 553467).

HISTORY

1. New section filed 6–18–87; operative 7–18–87 (Register 87, No. 28).
2. Repealer filed 10–13–2010; operative 1–1–2011 (Register 2010, No. 42).

§ 30322. Records and Reports of Misadministration. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 9–5–89; operative 10–5–89 (Register 89, No. 36)
2. Repealer filed 10–13–2010; operative 1–1–2011 (Register 2010, No. 42).

Article 6. Special Requirements for Radiographic Operations in Industrial Radiography

§ 30330. Definitions Specific to Industrial Radiography.

(a) The definitions in section 30100 apply to this article.

(b) As used in this article:

(1) "Annual refresher safety training" means training conducted or provided by a licensee or registrant for its employees on radiation safety aspects of industrial radiography including the topics specified in sections 30333(d) or 30336.1(q);

(2) "Associated equipment" means equipment that is used in conjunction with a radiographic exposure device to make radiographic exposures that drives, guides, or comes in contact with the sealed source (e.g., guide tube, control tube, control cable, removable source stop, "J" tube and collimator when it is used as an exposure head);

(3) "Cabinet X-ray system" means an X-ray system with the X-ray tube installed in an enclosure independent of existing architectural structures except the floor on which it may be placed and intended to contain at least that portion of a material being irradiated, provide radiation attenuation, and exclude personnel from its interior during generation of radiation. An X-ray tube used within a shielded part of a building, or X-ray equipment that may temporarily or occasionally incorporate portable shielding, is not considered a cabinet X-ray system;

(4) "Collimator" means a radiation shield that is placed on the end of the guide tube or directly onto a radiographic exposure device to restrict the size of the radiation beam when the sealed source is cranked into position to make a radiographic exposure;

(5) "Control cable" means the cable that is connected to the source assembly and used to drive the source to and from the exposure location;

(6) "Control mechanism" means a device that enables the source assembly to be moved to and from the radiographic exposure device;

(7) "Control tube" means a protective sheath for guiding the control cable, which connects the control mechanism to the radiographic exposure device;

(8) "Exposure head" means a device that locates the sealed source in the selected working position;

(9) "Field radiography" means industrial radiography using a radiation machine but excludes cabinet X-ray systems and shielded room radiography machines;

(10) "Field station" means a facility where licensed material may be stored or used and from which equipment is dispatched;

(11) "Guide tube" means a flexible or rigid tube (i.e., "J" tube) for guiding the source assembly and the attached control cable from the radiographic exposure device to the exposure head;

(12) "Identification card" (ID) means either an ID card issued by:

(A) A licensee, pursuant to section 30333(b)(2), designating the individual as a radioactive materials radiographer's assistant;

(B) A registrant, pursuant to section 30336.5, designating the individual as a radiation machine radiographer's assistant; or

(C) The Department indicating the individual is certified pursuant to sections 30335.2 or 30335.4;

(13) "Industrial radiography" means the examination of the physical structure, but not the microscopic structure, or elemental or chemical composition, of materials, other than human beings or animals, by nondestructive testing, utilizing radiation;

(14) "Permanent radiographic installation" means a shielded installation or structure designed or intended for industrial radiography and in which industrial radiography is performed;

(15) "Practical examination" means a demonstration through practical application of the safety rules and principles in industrial radiography including use of all appropriate equipment and procedures;

(16) "Radiation Safety Officer" means an individual with the responsibility for the overall radiation safety program on behalf of the:

(A) Licensee and who meets the requirements of section 30333.07; or

(B) Registrant and who meets the requirements of section 30336.7;

(17) "Radiographer" means any individual who performs radiographic operations or who, while in attendance at the site where radiographic operations are being performed, personally supervises such operations and who is responsible to the user for assuring compliance with the requirements of this regulation, license or registration conditions and is certified pursuant to sections 30335.2 or 30335.4 or is in compliance with section 30335.3;

(18) "Radiographer certification" means written approval from a certifying entity listed in section 30335.3(b), certifying that the individual has satisfactorily met the requirements to be a radiographer;

(19) "Radiographer trainer" means a radiographer who meets the requirements of sections 30333.05 or 30336.6;

(20) "Radiographer's assistant" means any individual who has met the requirements of sections 30333(b) or 30336.5(a)(1) and who must be under personal supervision as required by sections 30333(c) or 30336.1(o);

(21) "Radiographic exposure device" means any device containing a sealed source used to make a radiograph;

(22) "Radiographic operations" means all activities associated with the presence of radiation machines or radioactive sources for the performance of industrial radiography (except when being transported by a common or contract transport), and includes surveys to confirm the adequacy of boundaries, setting up equipment and any activity inside a restricted area;

(23) "Radiographic personnel" means any radiographer, radiographer trainer, or radiographer's assistant;

(24) "Shielded position" means the location within the radiographic exposure device or source changer where the sealed source is secured and restricted from movement;

(25) "Shielded–room radiography" means industrial radiography using a radiation machine such that irradiation of the material occurs in an enclosed room designed to allow admittance of individuals and the room meets the requirements of subsections (d), (e) and (h) of section 30336;

(26) "Source assembly" means an assembly that consists of the sealed source and a connector that attaches the source to the control cable;

(27) "Source changer" means a device designed and used for replacement of sealed sources in radiographic exposure devices, including those also used for transporting and storage of sealed sources;

(28) "Storage area" means any location, facility, or vehicle which is used to store, to transport, or to secure a radiographic exposure device, a storage container, or a sealed source when it is not in use and which is locked or has a physical barrier to prevent accidental exposure, tampering with, or unauthorized removal of the device, container, or source;

(29) "Storage container" means a container in which sealed sources are secured and stored;

(30) "S–tube" means a tube through which the radioactive source travels when inside a radiographic exposure device;

(31) "Temporary jobsite" means a location where radiographic operations are conducted and where licensed material may be stored other than those location(s) of use authorized on the license.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Repealer of article 9 and new article 9 (sections 30330 through 30336) filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For former article 9, see Register 62, No. 1.
2. Change without regulatory effect adding NOTE (Register 87, No. 11).
3. Amendment of article heading filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
5. Amendment of article heading and repealer and new section heading, section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).
6. Amendment of subsections (b)(13) and (b)(18) and amendment of NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30331. Eligibility for and Renewal of Approval as a Radiation Safety Training Provider and Provider Requirements.

(a) To be eligible for or renewal of approval as a radiation safety training provider an applicant shall submit a complete application consisting of:

(1) The legal name, the mailing address and the telephone number of the applicant;

(2) The applicant's federal employer identification number and California taxpayer identification number, or if the applicant is an individual, the applicant's social security number (pursuant to the authority found in sections 131200 and 115000(b) of the Health and Safety Code and as required by section 17520 of the Family Code, providing the social security number is mandatory. The social security number will be used for purposes of identification);

(3) Proof that the applicant's curriculum covers the subjects specified in section 30335.10 and includes, at a minimum:

(A) A description of course content covering those subjects;

(B) The number of hours spent on each subject; and

(C) A description of all reference materials used in the training such as handouts, slides, and overhead transparencies;

(4) The names of all instructors including each individual's training and experience in industrial radiography. There shall be at least one instructor who meets the requirements specified in sections 30333.05 and 30336.6 or at least two instructors such that one meets the requirements specified in section 30333.05 and the other meets the requirements of section 30336.6;

(5) A copy of a sample written examination and the correct answers to the test questions used for determining an individual's understanding of and competency in the subjects specified in section 30335.10. The examination shall be at least 50 questions in length. Successful completion shall be correctly answering at least 80 percent of the questions in a closed–book testing session; and

(6) The application fee specified in section 30336.8.

(b) Approval as a radiation safety training provider shall be valid for five years except that, for providers who possess a specific license issued pursuant to section 30195.3, the approval shall be valid for the period of time up to and including the expiration date as stated on the specific license unless that period of time is less than five years.

(c) Each approved provider shall:

(1) Issue a certificate of training to each individual who satisfactorily completes radiation safety training. The certificate shall contain, at a minimum, the:

(A) Legal Name of the individual;

(B) Name and provider number as shown on the provider's approval;

(C) Dates of training;

(D) Statement "I (printed name of trainer or radiation safety officer) certify that the individual named on this certificate has satisfactorily completed the radiation safety training curriculum specified in Title 17, California Code of Regulations, section 30335.10;" and

(E) Original signature and date of signature of the provider's trainer or radiation safety officer;

(2) Maintain records of attendance for five years from the individual's completion of the radiation safety training;

(3) Notify the Department 30 calendar days prior to any change in the information submitted pursuant to subsections (a)(1) through (a)(4);

(4) Meet and continually maintain all standards set forth in the application and this section; and

(5) Be subject to Department audit.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965 and 114970, Health and Safety Code.

HISTORY

1. Amendment filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
2. Renumbering of former subsections (a)(5) and (a)(6) to subsections (a)(6) and (a)(7), and the new subsection (a)(5) filed 7–12–89; operative 8–11–89 (Register 89, No. 28).
3. Repealer and new section heading, section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30332. Performance Requirements for Radiographic Exposure Devices, Storage Containers, and Source Changers.

(a) All radiographic exposure devices and associated equipment shall comply with the following:

(1) Except as provided in subsection (b), each radiographic exposure device, source assembly or sealed source and all associated equipment shall meet the requirements specified in American National Standard N432–1980 "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography," published as NBS Handbook 136, issued January 1981 (ANSI N432)*;

(2) Each radiographic exposure device shall have attached to it a durable, legible, clearly visible label bearing the:

(A) Chemical symbol and mass number of the radionuclide in the device;

(B) Activity and date on which this activity was last measured;

(C) Model number and serial number of the sealed source;

(D) Manufacturer of the sealed source; and

(E) Licensee's name, address and telephone number;

(3) Radiographic exposure devices intended for use as Type B transport containers shall meet the applicable requirements of section 30373;

(4) Modification of radiographic exposure devices, source changers, source assemblies and associated equipment is prohibited, unless the design of any replacement component, including source holder, source assembly, controls or guide tubes would not compromise the safety design features of the system;

(5) For radiographic exposure devices and associated equipment that allow the source to be moved out of the device for routine operation:

(A) The coupling between the source assembly and the control cable shall be designed in such a manner that the source assembly will not become disconnected if cranked outside the guide tube. The coupling shall be such that it cannot be unintentionally disconnected under normal and reasonably foreseeable abnormal conditions;

(B) The device shall automatically secure the source assembly when it is cranked back into the fully shielded position within the device. This securing system may only be released by means of a deliberate operation on the exposure device;

(C) The outlet fittings, lock box, and control cable fittings on each radiographic exposure device shall be equipped with safety plugs or covers which shall be installed during storage and transportation to protect the source assembly from water, mud, sand or other foreign matter;

(D) Each sealed source or source assembly shall have attached to it or engraved in it, a durable, legible, visible label with the words "Danger – Radioactive." The label shall not interfere with the safe operation of the exposure device or associated equipment;

(E) The guide tube shall have passed the crushing tests for the control tube as specified in ANSI N432 and a kinking resistance test that closely approximates the kinking forces likely to be encountered during use;

(F) Guide tubes shall be used when moving the source out of the device.

(G) An exposure head or similar device designed to prevent the source assembly from passing out of the end of the guide tube shall be attached to the outermost end of the guide tube during radiographic operations;

(H) The guide tube exposure head connection shall be able to withstand the tensile test for control units specified in ANSI N432; and

(I) Source changers shall provide a system for assuring that the source will not be accidentally withdrawn from the changer when connecting or disconnecting the control cable to or from a source assembly.

(b) Equipment used in radiographic operations need not comply with section 8.9.2(c) of the Endurance Test in ANSI N432, if the prototype equipment has been tested using a torque value representative of the torque that an individual using the industrial radiography equipment can realistically exert on the lever or crankshaft of the control mechanism.

(c) Storage containers and source changers shall not exceed a radiation exposure rate of 200 millirems per hour (mrem/hr) at any exterior surface and 10 mrem/hr at one meter from any exterior surface with the sealed source in the shielded position.

*Copies of American National Standard N432–1980 "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography" (published as NBS Handbook 136, issued January 1981) may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and from the American National Standards Institute, Inc., 25 West 43rd Street, New York, New York 10036 or from IHS Standards Store at "http://global.ihs.com" using the title as the search parameter.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230, 115235, 131051, 131052 and 131052, Health and Safety Code.

HISTORY

1. Renumbering and amendment of former section 30332(a) to section 30332(a) and (b), renumbering and amendment of former section 30332(b) to section 30332.1, renumbering and amendment of former section 30332(c) to section 30332.3, renumbering and amendment of former section 30332(d) to section 30332.4, renumbering and amendment of former section 30332(e) to section 30332.5, renumbering and amendment of former section 30332(f) to section 30332.6, and renumbering and amendment of former section 30332(g) to section 30332.7 filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28). For prior history, see Registers 72, No. 42 and 67, No. 46.
2. Amendment of section heading and NOTE and new subsections (c)–(c)(5)(I) filed 9–16–92; operative 10–16–92 (Register 92, No. 38).
3. Amendment of section, NOTE and footnote filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).
4. Amendment of subsection (a), footnote and NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30332.1. Security of Radiographic Exposure Devices, Storage Containers and Source Changers.

(a) Each radiographic exposure device shall be provided with a lock or outer locked container designed to prevent unauthorized or accidental exposure and shall be kept locked, and if a keyed-lock, with the key removed, at all times except during authorized use or when under the direct surveillance of a radiographer or radiographer's assistant. In addition, during radiographic operations a sealed source assembly shall be secured in the shielded position each time the source is returned to that position.

(b) Each storage container and source changer shall be provided with a lock and kept locked, and if a keyed-lock, with the key removed, when containing a sealed source except when the container is under the direct surveillance of a radiographer or radiographer's assistant.

(c) Locked radiographic exposure devices, storage containers and source changers shall be physically secured to prevent tampering or unauthorized removal.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. Renumbering and amendment of former Section 30332(b) to Section 30332.1 filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28). For prior history, see Registers 72, No. 42 and 67, No. 46.
2. Amendment of section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30332.2. Security of Permanent Radiographic Installations.

(a) Each entrance that is used for personnel access to the high radiation area, defined in title 10, Code of Federal Regulations, Part 20 (10 CFR 20), section 20.1003 incorporated by reference in section 30253, in a permanent radiographic installation shall have either:

(1) A control device that, upon entry into the area, causes the level of radiation to be reduced below that level at which an individual might receive a deep-dose equivalent, defined in 10 CFR 20, section 20.1003 incorporated by reference in section 30253, of 0.1 rem in one hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates; or

(2) Both conspicuously visible and audible warning signals to warn of the presence of radiation. The visible signal shall be continuously actuated by radiation whenever a source is exposed. The audible signal shall be actuated when an attempt is made to enter the installation while the source is exposed.

(b) If access is controlled pursuant to subsection (a)(1), the entrance control device shall be tested monthly. If access is controlled pursuant to subsection (a)(2), the system shall be tested with a radiation source each day before the installation is used for radiographic operations and shall include a check of both the visible and audible warning signals. In either case, if an entrance control device or warning signal is operating improperly, it shall be immediately labeled as defective and repaired within 30 calendar days. The installation may continue to be used during this 30-day period provided the licensee complies with section 30334 and each individual wears an alarming ratemeter in addition to other dosimeters required by section 30333.2(a).

(c) Documentation demonstrating compliance with this section shall be maintained for three years and kept available for inspection.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
2. Repealer and new section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30332.3. Radiation Survey Instruments.

(a) Each user shall maintain a sufficient number of calibrated and operable radiation survey instruments to make radiation surveys as required

by this regulation. Each instrument shall be capable of measuring a range of two millirems per hour through one rem per hour.

(b) Each radiation survey instrument shall be calibrated:

(1) At intervals not to exceed six months and after each instrument servicing;

(2) For linear scale instruments, at two points located approximately one–third and two–thirds of full–scale on each scale; for logarithmic scale instruments, at mid–range of each decade, and at two points of at least one decade; and for digital instruments at three points between two and 1000 millirems per hour; and

(3) So that an accuracy within plus or minus 20 percent of the calibration source can be demonstrated at each point checked.

(c) Records of the results of instrument calibrations shall be maintained for three years and kept available for inspection.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. Renumbering and amendment of former Section 30332(c) to Section 30332.3 filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28). For prior history, see Registers 72, No. 42 and 67, No. 46.
2. Amendment of section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30332.4. Leak Testing, Repair, Tagging, Opening, Modification, and Replacement of Sealed Sources and Depleted Uranium Shielding.

(a) Replacement of any sealed source in a radiographic exposure device, and leak testing, repair, tagging, opening or any other modification of any sealed source shall be performed only by persons specifically authorized by the Department to do so pursuant to Group 2 of this subchapter.

(b) Leak testing of sealed sources and radiographic exposure devices using depleted uranium (DU) shielding and an S–tube configuration shall be performed in accordance with section 30275 except that testing of radiographic exposure devices shall be tested for DU contamination at intervals not to exceed 12 months. If the test reveals the presence of 0.005 microcuries or more of removable DU contamination, the radiographic exposure device shall be removed from service and an evaluation of the S–tube shall be made. If the evaluation reveals that the S–tube is worn through, the radiographic exposure device shall not be used. Radiographic exposure devices with DU shielding need not be tested while in storage and not in use except that before using or transferring such a device, the device shall be tested for DU contamination if the interval of storage or non–use exceeded 12 months.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. Renumbering and amendment of former Section 30332(d) to Section 30332.4 filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28). For prior history, see Registers 72, No. 42 and 67, No. 46.
2. Amendment of section heading, section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30332.5. Quarterly Inventory of Sealed Sources.

(a) Each user shall conduct a quarterly physical inventory, and make a written record thereof, to account for all sealed sources and all devices containing depleted uranium (DU).

(b) The records described in subsection (a) shall be kept available for three years for inspection by the Department and shall include the:

(1) Radionuclide, number of becquerels (curies) or mass (for DU) in each device;

(2) Manufacturer, model, and serial number of each sealed source and/or device, as appropriate;

(3) Location of all sealed sources or devices;

(4) Date of the inventory; and

(5) Name of the individual conducting the inventory.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Renumbering and amendment of former Section 30332(e) to Section 30332.5 filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28). For prior history, see Registers 72, No. 42 and 67, No. 46.
2. Amendment of section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).
3. Amendment of section and NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30332.6. Utilization Logs.

(a) Each user shall maintain current logs, which shall be maintained for three years and kept available for inspection at the address specified in his license, containing the following information for each sealed source:

(1) A description, including the make, model, and serial number of the radiographic exposure device or transport or storage container in which the sealed source is located;

(2) The identity and signature of the radiographer to whom the sealed source is assigned; and

(3) Locations where used and dates of use, including the dates removed and returned to storage.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Renumbering and amendment of former Section 30332(f) to Section 30332.6 filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28). For prior history, see Registers 72, No. 42 and 67, No. 46.
2. Amendment of section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).
3. Amendment of subsections (a)(1)–(3) and NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30332.7. Inspection and Maintenance of Radiographic Exposure Devices, Storage Containers, Source Changers and Survey Instruments.

(a) Each user shall perform visual and operability checks on survey instruments, radiographic exposure devices, transport and storage containers, associated equipment and source changers before use on each day the equipment is to be used to ensure that the equipment is in good working condition, that the sources are adequately shielded, and that required labeling is present. Survey instrument operability shall be performed using a radiation source. If equipment problems are found, the equipment shall be removed from service until repaired.

(b) Each user shall establish and implement written procedures for:

(1) Inspection and routine maintenance of radiographic exposure devices, source changers, associated equipment, transport and storage containers, and survey instruments at intervals not to exceed three months or before the first use thereafter to ensure components important to safety are functioning. Replacement components shall meet design specifications. If equipment problems are found, the equipment shall be removed from service until repaired; and

(2) Inspection and maintenance necessary to assure that Type B packages are shipped and maintained in accordance with section 30373.

(c) Records of equipment problems and of any maintenance performed pursuant to this section shall be maintained for three years after the record is made. The record shall include the date of check or inspection, name of inspector, equipment involved, any problems found, and what repair and/or maintenance, if any, was done.

(d) Documentation demonstrating compliance with this section shall be maintained for three years and kept available for inspection.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. Renumbering and amendment of former Section 30332(g) to Section 30332.7 filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28). For prior history, see Registers 72, No. 42 and 67, No. 46.
2. Amendment of section heading and repealer and new section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30332.8. Reporting Requirements.

(a) In addition to the reporting requirements specified in section 30295 and under other sections of this subchapter, each licensee shall provide a written report to the Department within 30 days of the occurrence of any of the following incidents involving radiographic exposure devices and associated equipment:

(1) Unintentional disconnection of the source assembly from the control cable;

(2) Inability to retract the source assembly to its fully shielded position and secure it in this position; or

(3) Failure of any component (critical to safe operation of the device) to properly perform its intended function.

(b) The licensee shall include the following information in each report submitted under subsection (a):

(1) A description of the equipment problem;

(2) Cause of each incident, if known;

(3) Manufacturer and model number of equipment involved in the incident;

(4) Place, time and date of the incident;

(5) Actions taken to establish normal operations;

(6) Corrective actions taken or planned to prevent recurrence; and

(7) Qualifications of personnel involved in the incident.

(c) Reports of radiation exposures submitted to the Department under title 10, Code of Federal Regulations section 20.2203, incorporated by reference in section 30253, which involve failure of safety components of radiography equipment, shall also include the information specified in subsection (b).

(d) Any licensee conducting radiographic operations or storing radioactive material at any location not listed on the license for a period in excess of 180 days in a calendar year shall notify the Department prior to exceeding the 180 days.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115105, 115110, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 9–9–97; operative 10–9–97 (Register 97, No. 37). For prior history, see Register 94, No. 28.
2. Amendment of section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).
3. New subsections (c), subsection relettering and amendment of NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30332.9. Labeling, Storage, and Transportation.

(a) A user may not use a source changer or a container to store licensed material unless the source changer or the storage container has securely attached to it a durable, legible, and clearly visible label bearing:

(1) The standard radiation trefoil symbol (section 20.1901 of title 10, Code of Federal Regulations, Part 20 incorporated by reference in section 30253) in the conventional colors of magenta, purple or black, which has a minimum diameter of 25 millimeters, and which is imposed on a yellow background, which encompasses it; and

(2) In the immediate vicinity of the trefoil symbol, the following language prominently displayed:

CAUTION (or "DANGER")

RADIOACTIVE MATERIAL

NOTIFY CIVIL AUTHORITIES (or "NAME OF COMPANY")

(b) A user may not transport licensed material unless the material is packaged, and the package is labeled, marked, and accompanied with appropriate shipping papers in accordance with section 30373.

(c) A user shall ensure that locked radiographic exposure devices and storage containers are physically secured to prevent tampering or removal by unauthorized personnel. The user shall store licensed material in a manner which will minimize danger from explosion or fire.

(d) A user shall lock and physically secure the transport package containing licensed material in the transporting vehicle to prevent accidental loss, tampering, or unauthorized removal of the licensed material from the vehicle.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30333. Training and Supervision for Radiographers and Radiographers' Assistants Using Sealed Sources.

(a) Prior to allowing an individual to perform as a radiographer, a user shall ensure the individual is a certified radioactive materials radiographer and has:

(1) Received copies of, instruction in, and demonstrated understanding of, applicable provisions of Group 3 of this subchapter, the conditions of the user's radioactive material license and operating and emergency procedures by successful completion of a written or oral examination covering this material. Instruction in this material shall be at least eight hours long. The examination shall be at least 50 questions in length. Successful completion shall be correctly answering at least 80 percent of the questions in a closed book testing session;

(2) Demonstrated competence to use the radiographic exposure devices, sealed sources, related handling tools, and radiation survey instruments employed by the user by successful completion of a practical examination covering this material. Instruction in this material shall be at least four hours long; and

(3) Received the instruction and training specified in subsections (a)(1) and (a)(2) from a radioactive materials radiographer trainer or radiation safety officer.

(b) Prior to allowing an individual to perform as a radioactive materials radiographer's assistant, a user shall:

(1) Ensure the individual has:

(A) Received copies of, instruction in, and demonstrated understanding of, applicable provisions of Group 3 of this subchapter, the conditions of the user's radioactive material license and operating and emergency procedures by successful completion of a written examination covering this material. Instruction in this material shall be at least eight hours long. The examination shall be at least 50 questions in length. Successful completion shall be correctly answering at least 80 percent of the questions in a closed–book testing session;

(B) Demonstrated competence to use the radiographic exposure devices, sealed sources, related handling tools, and radiation survey instruments employed by the user by successful completion of a practical examination covering this material. Instruction in this material shall be at least four hours long; and

(C) Received the instruction and training specified in subsections (b)(1)(A) and (b)(1)(B) from a radioactive materials radiographer trainer or the user's radiation safety officer.

(2) Once the individual has met the requirements of subsection (b)(1), issue to the individual a durable identification card, resistant to water, containing:

(A) The statement "I certify that (the printed name of the individual) has met the requirements to be a radiographer's assistant.";

(B) The name and license number, as shown on the specific license, of the user issuing the card; and

(C) The printed name, signature and date of signature of the instructor or the user's radiation safety officer.

(c) Whenever a radiographer's assistant uses radiographic exposure devices, sealed sources or related source handling tools, or conducts radiation surveys required by section 30334 to determine that the sealed source has returned to the shielded position after an exposure, the radiographer's assistant shall be under the personal supervision of a radiographer trainer. The personal supervision shall include:

(1) The radiographer trainer's physical presence at the site where the sealed sources are being used;

(2) The ability of the radiographer trainer to give immediate assistance if required; and

(3) The radiographer trainer's watching the assistant's performance of the operations referred to in this section.

(d) Each user shall provide annual refresher safety training to all radiographic personnel at intervals not to exceed 12 months. The radiation safety officer (RSO) or an individual designated by the RSO shall conduct this training and, at a minimum, address or provide:

(1) Results of internal and Department inspections;

(2) New procedures or equipment;

(3) New or revised regulations about industrial radiography using sealed sources;

(4) Accidents or errors that have been observed and steps to prevent their recurrence; and

(5) Opportunities for individuals to ask safety questions.

(e) Except in those operations where a single individual serves as one of the radiographers required by section 30334(b) and the radiation safety officer (RSO) and performs all radiographic operations, the RSO or the RSO's designee shall conduct an internal inspection program to assure that radiographers and radiographer's assistants comply with this regulation and license conditions and the licensee's operating and emergency procedures. The inspection program shall include or provide:

(1) Observation of the performance of each radiographer and radiographer's assistants during an actual radiographic operation at intervals not to exceed six months; and

(2) That, if a radiographer or a radiographer's assistant has not participated in a radiographic operation for more than six months since the last inspection, that individual's performance shall be observed and recorded the next time the individual participates in a radiographic operation.

(f) Each user shall maintain and keep available for inspection for a period of three years, the following:

(1) Records of training of each radiographer and each radiographer's assistant. The record shall include radiographer certification documents and verification of certification status, copies of written tests, dates of oral and practical examinations, and names of individuals conducting and receiving the oral and practical examinations; and

(2) Records of annual refresher safety training and semi–annual inspections of job performance for each radiographer and each radiographer's assistant. The records shall list the topics discussed during the refresher safety training, the dates the annual refresher safety training was conducted, and names of the instructors and attendees. For inspections of job performance, the records shall also include a list showing the items evaluated and any non–compliances observed by the radiation safety officer.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Renumbering and amendment of former Section 30333(a) to Section 30333(a)–(c), renumbering and amendment of former Section 30333(b) to Section 30333.1, and renumbering and amendment of former Section 30333(c) to Section 30333.2 filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28). For prior history, see Register 72, No. 42.
2. Amendment of section heading, section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).
3. Amendment of section heading and subsection (f), new subsections (f)–(f)(2) and amendment of NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30333.05. Radioactive Materials Radiographer Trainer Requirements.

(a) A user shall not allow any individual to act as a radioactive materials radiographer trainer unless the:

(1) Individual is a radioactive materials radiographer who:

(A) Is certified pursuant to section 30335.2 or is in compliance with section 30335.3;

(B) Has complied with the requirements of section 30333(a)(1) and (2); and

(C) Has at least 2,000 hours of experience as a radiographer using sealed sources, performing radiographic operations, radiation surveys and radiation safety related activities. The experience may not include film development and interpretation, darkroom activities, travel, safety meetings, classroom training, and any work activity not related to the performance of industrial radiography; and

(2) User has received, pursuant to subsection (b), an amended license identifying the individual as a radiographer trainer.

(b) A user may apply for amendment of the specific license to identify a radiographer trainer by submitting:

(1) The name and license number as shown on the applicant's specific license; and

(2) For each individual who will perform as a radiographer trainer:

(A) The name and number as shown on the individual's radiographer certificate issued by the Department or a copy of both sides of the certification identification card issued by one of the entities listed in section 30335.3(b); and

(B) Documentation that the individual has complied with subsections (a)(1)(B) and (a)(1)(C). The documentation shall include the beginning and ending dates of the experience, the name of licensee under whom the experience was obtained and, for each radiographic exposure device used, the model and manufacturer's name.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060 and 115235, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30333.07. Radioactive Material Radiation Safety Officer Requirements.

(a) For an individual to be a radiation safety officer (RSO) for a specific licensee, the individual shall:

(1) Meet the requirements of section 30333.05(a)(1). Possession of a provisional radiographer certificate issued pursuant to section 30335.4 is not acceptable for complying with this section. No more than 900 hours of experience as a radiographer using radiation machines may be counted toward meeting the 2,000 hours specified in section 30333.05(a)(1)(C); and

(2) Have completed 4,000 hours of experience using radioactive materials and experience in radiation protection activities such as developing or implementing procedures relating to the protection of workers and the public from radiation including the development or implementation of procedures for radiation surveys, leak testing of radioactive sources, assessment of dosimetry for radiation work, determination of necessary radiation shielding, review of survey, leak testing, and personnel dose measurements, training of personnel, use and maintenance of sealed sources and devices, monitoring of radiation emergency events, sealed source and device security, disposal of radioactive material, audits of radiographic operations, survey meter maintenance and calibration, and transportation of radioactive material.

(b) The RSO shall ensure that radiation safety activities are being performed in accordance with approved procedures, conditions of the licensee's license, and the requirements of this regulation in the daily operation of the licensee's radiation safety program. Designation of an RSO does not relieve the specific licensee of any of its responsibility for complying with the Act and this regulation.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060 and 115235, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30333.1. Operating and Emergency Procedures.

(a) Each user shall establish, implement, maintain and keep current written operating and emergency procedures which shall include detailed instructions in at least the following matters:

(1) The handling and use of radiographic exposure devices and the manner of employment to control and limit radiation exposures to individuals;

(2) Methods and occasions for conducting radiation surveys;

(3) Methods and occasions for controlling access to radiography areas;

(4) Methods and occasions for locking and securing radiographic exposure devices, transport and storage containers and sealed sources;

(5) Personnel monitoring and the use of personnel monitoring devices;

(6) Steps that must be taken immediately by radiographic personnel in the event a pocket dosimeter is found to be off scale or an alarm ratemeter alarms unexpectedly;

(7) Transporting sealed sources to field locations, including packing of radiographic exposure devices and storage containers in the vehicle, placarding of vehicles when needed and control of the sealed sources during transportation;

(8) Procedures in the event of an accident, including sealed source handling, minimizing radiation exposure to individuals, and notifying proper persons;

(9) Maintenance of records;

(10) The inspection, maintenance, and operability checks of radiographic exposure devices, survey instruments, transport and storage containers and source changers; and

(11) Source recovery procedures if licensee will perform source recovery.

(b) Each user shall maintain a copy of current operating and emergency procedures until the Department terminates the license. Superseded material shall be retained for three years after the change is made.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Renumbering and amendment of former Section 30333(b) to Section 30333.2 filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28). For prior history, see Register 72, No. 42.
2. Amendment of section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).
3. New subsection (b) and amendment of NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30333.2. Personnel Monitoring Control.

(a) Radiographic operations using sealed sources shall not be performed unless, at all times during radiographic operations, all radiographic personnel wear, on the trunk of the body, a direct reading pocket dosimeter, an operating alarm ratemeter, and a personnel dosimeter that requires processing to determine the radiation dose except that at permanent radiographic installations, the wearing of an alarming ratemeter is not required. Each personnel dosimeter shall be assigned to and worn by only one individual.

(b) Film badges shall be replaced at periods not to exceed one month and other personnel dosimeters that require processing to determine the radiation dose shall be replaced at periods not to exceed three months. After replacement, personnel dosimeters shall be sent for processing by the users' dosimetry processor meeting the requirements of section 20.1501(c) of title 10, Code of Federal Regulations incorporated by reference in section 30253 as soon as possible but no later than recommended by the dosimetry processor.

(c) Pocket dosimeters shall have a range from zero to 200 millirems and be recharged at the start of each shift. Electronic personal dosimeters may only be used in place of ion–chamber pocket dosimeters.

(d) Pocket or electronic personal dosimeters shall be read and exposures recorded at the beginning and end of each shift. A record of these exposures shall be retained for three years after the record is made and indicate, for each dosimeter used, the manufacturers name, model and serial number and name of individual to whom assigned.

(e) Pocket and electronic personal dosimeters shall be checked at periods not to exceed one year for correct response to radiation and shall read within plus or minus 20 percent of the true radiation exposure.

(f) If an individual's pocket dosimeter is found to be discharged beyond its range or if the individual's electronic personal dosimeter reads greater than 200 millirems and the possibility of radiation exposure cannot be ruled out as the cause, the individual's personnel dosimeter shall be sent for processing within 24 hours. The individual may not resume work associated with any source of radiation until the individual's radiation exposure has been determined. The user's radiation safety officer or his designee shall make this determination and the results shall be kept available for inspection and maintained until the Department terminates the license.

(g) Reports received from the dosimetry processor shall be retained for inspection until the Department terminates each license that authorizes the activity that is subject to the recordkeeping requirement.

(h) Each alarming ratemeter shall:

(1) Be checked to ensure that the alarm functions properly (sounds) prior to use at the start of each shift;

(2) Be set to give an alarm signal at a preset dose rate of 500 millirems per hour;

(3) Require special means to change the preset alarm function;

(4) Be calibrated at periods not to exceed one year for correct response to radiation; and

(5) Alarm within plus or minus 20 percent of the true radiation dose rate.

(i) Alarming ratemeter calibration records shall be maintained for three years.

(j) If a personnel dosimeter that requires processing to determine the radiation dose is lost or damaged during radiographic operations, the worker shall cease work immediately until a replacement personnel dosimeter is provided and the exposure is calculated for the time period from issuance to loss or damage of the personnel dosimeter. The radiation safety officer shall perform the calculation. The results with measurements, calculated data, and assumptions made to obtain the calculated exposure and the time period for which the personnel dosimeter was lost or damaged shall be retained for inspection until the Department terminates the license.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060 and 115235, Health and Safety Code.

HISTORY

1. Repealer and new section filed 7–18–94 as an emergency; operative 7–18–94 (Register 94, No. 29). A Certificate of Compliance must be transmitted to OAL by 11–15–94 or emergency language will be repealed by operation of law on the following day. For prior history, see Register 86, No. 28.
2. Editorial correction of subsection (a) (Register 94, No. 51).
3. Certificate of Compliance as to 7–18–94 order including amendment of NOTE transmitted to OAL 11–7–94 and filed 12–21–94 (Register 94, No. 51).
4. Amendment of section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30333.3. Location of Documents and Records.

(a) In addition to the requirements of section 30293, each licensee shall maintain copies of records required by this regulation at the location identified in the specific license.

(b) Each licensee shall also maintain copies of the following documents and records sufficient to demonstrate compliance at each applicable field station and each temporary jobsite:

(1) The license authorizing the use of licensed material;

(2) A copy this regulation, as defined in section 30100;

(3) Utilization records for each radiographic exposure device dispatched from that location as required by section 30332.6.

(4) Records of equipment problems identified in daily checks of equipment as required by section 30332.7;

(5) Records of alarm system and entrance control checks required by section 30332.2, if applicable;

(6) Records of direct reading dosimeters such as pocket dosimeter and/or electronic personal dosimeters readings as required by section 30333.2;

(7) Operating and emergency procedures required by section 30333.1;

(8) Evidence of the latest calibration of the radiation survey instruments in use at the site, as required by section 30332.3;

(9) Evidence of the latest calibrations of alarm ratemeters and operability checks of pocket dosimeters and/or electronic personal dosimeters as required by section 30333.2;

(10) Latest survey records required by section 30334(h);

(11) Shipping papers for the transportation of radioactive materials required by section 30373; and

(12) When operating under reciprocity pursuant to section 30225, a copy of the Department's Notice of Reciprocal Recognition.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060 and 115235, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30334. Precautionary Procedures in Radiographic Operations Using Sealed Sources.

(a) Radiographic operations shall not be performed unless performed by radiographic personnel.

(b) Industrial radiography, at a location other than at a permanent radiographic installation, shall not be performed, unless there are at least two radiographic personnel one of whom is a radiographer. If one of the personnel is a radiographer's assistant, the other shall be a radiographer trainer indicated as such on the specific license.

(c) Radiographic operations shall not be performed unless, during such operations:

(1) Each radiographer has in their possession a current and valid certification identification (ID) card issued to them by the Department or the radiographer is in compliance with section 30335.3(a); and

(2) Each radiographer's assistant has in their possession the ID card issued to them by the licensee pursuant to section 30333(b)(2).

(d) During each radiographic operation, radiographic personnel shall maintain direct visual surveillance of the operation to protect against unauthorized entry into a high radiation area, except at permanent radiographic installations where all entryways are locked and the requirements of section 30332.2 are met.

(e) Areas in which industrial radiography is being performed shall be conspicuously posted as required by section 20.1902 of title 10, Code of Federal Regulations, part 20 (10 CFR 20) incorporated by reference in section 30253. Section 20.1903 of 10 CFR 20 shall not apply to industrial radiography.

(f) Radiographic operations shall not be performed unless calibrated and operable radiation survey instruments meeting the requirements of section 30332.3 are available and used.

(g) A radiation survey shall be made after each radiographic exposure and before exchanging films, repositioning the exposure head, or dismantling equipment to determine that the sealed source has been returned to its shielded position. The entire circumferences of the radiographic exposure device shall be surveyed. If the radiographic exposure device has a source guide tube, the survey shall include the guide tube.

(h) A radiation survey shall be made to determine that each sealed source is in its shielded condition prior to locking a radiographic exposure device, storage container or source changer as required by section 30332.1. Records of all such surveys shall indicate the manufacturer's name, model and serial number of the alarming ratemeter worn by and survey instrument used by the surveyor and the exposure value obtained. These records shall be maintained for three years and kept available for inspection.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. Amendment of subsection (b) filed 10–12–72; effective thirtieth day thereafter (Register 72, No. 42).
2. Amendment filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28).
3. Change without regulatory effect of subsection (c) (Register 87, No. 4).
4. Amendment of subsections (c)–(e), relettering of former subsection (f) to subsection (g) and new subsection (f) filed 7–12–89; operative 8–11–89 (Register 89, No. 28).
5. Change without regulatory effect amending subsection (f) filed 11–1–91 pursuant to section 100, title 1, California Code of Regulations (Register 92, No. 5).
6. Amendment of subsections (a)(1) and (b) filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
7. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
8. Amendment of section heading, section and NOTE filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).
9. Amendment of subsection (d) filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30335. Minimum Subjects to Be Covered in Training Radiographers. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25811, 25815 and 25876, Health and Safety Code.

HISTORY

1. Amendment of subsection (c) filed 11–16–67; effective thirtieth day thereafter (Register 67, No. 46).
2. New subsections (b)(3)(D), (d) and (e) filed 7–7–86; effective thirtieth day thereafter (Register 86, No. 28)
3. Repealer filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30335.1. Radiographer Certification Categories.

(a) The categories for radiographer certificates are:

(1) Radioactive materials;

(2) Radiation machines; and

(3) Combination (Radioactive materials and radiation machines).

(b) A radiographer certificate in the:

(1) Category of radioactive materials authorizes the individual to perform radiographic operations using sealed sources under a specific licensee;

(2) Category of radiation machines authorizes the individual to perform radiographic operations using radiation machines under a registrant; and

(3) Combination category authorizes the individual to perform radiographic operations using sealed sources and radiation machines under a licensee and registrant as applicable.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30335.2. Eligibility for and Renewal of a Radiographer Certificate.

(a) Except as provided in sections 30335.3 or 30335.4, to be eligible for or renewal of a radiographer certificate an individual shall:

(1) Submit the application described in section 30335.5; and

(2) Pass a Department examination. If any applicant fails the test three times, the individual shall no longer be eligible unless they obtain additional radiation safety training and experience as directed by the Department. If any applicant fails the test on the fourth try, the individual shall not be eligible to take the exam for one year after which they may reapply pursuant to this section if the radiation safety training and experience requirements have been met in the year immediately preceding the date of re–application.

(b) The radiographer certificate shall be valid for five years.

(c) To renew an expired radiographer certificate, an applicant shall comply with subsection (a) and shall be considered as an initial applicant.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30335.3. Reciprocal Recognition.

(a) Individuals certified by one of the entities listed in subsection (b) for the specified category need not possess a Department issued radiographer certificate provided:

(1) The individual's certification is current and valid;

(2) No escalated enforcement action is pending with the U.S. Nuclear Regulatory Commission, the certifying entity or any other state; and

(3) The certification identification card issued by the certifying entity is in the possession of the individual during radiographic operations within the jurisdiction of the Department in which the individual participates.

(b) The following certifying entities are recognized for compliance with subsection (a) in the:

(1) Category of radioactive materials by the:

(A) State of Alabama, Georgia, Illinois, Iowa, Louisiana, Maine, North Dakota, Oklahoma, South Carolina, or Texas; or

(B) American Society of Nondestructive Testing, Inc. in Industrial Radiography Radiation Safety Personnel Certification;

(2) Category of radiation machines by the:

(A) State of Alabama, Illinois, Iowa, Louisiana, Maine, North Dakota, or Texas; or

(B) American Society of Nondestructive Testing, Inc. in Industrial Radiography Radiation Safety Personnel Certification; or

(3) Combination category (radioactive materials and radiation machines) by the:

(A) State of Alabama, Illinois, Iowa, Louisiana, Maine, North Dakota, or Texas; or

(B) American Society of Nondestructive Testing, Inc. in Industrial Radiography Radiation Safety Personnel Certification.

(c) Reciprocal recognition granted pursuant to this section may be revoked, suspended, amended or restricted for any of the following:

(1) Failure to maintain the certification upon which the reciprocal recognition was granted;

(2) Violation of any provision of the Act, any regulation promulgated pursuant to the Act, or any order of the Department;

(3) Incompetence or gross negligence in performing radiographic operations; or

(4) Exposing any individual to radiation with the intent to harm that individual.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 4-11-2008; operative 5-11-2008 (Register 2008, No. 15).

§ 30335.4. Provisional Radiographer Certificates.

(a) Until December 31, 2009, an application for a provisional radiographer certificate shall be considered complete if the applicant submits the information for the certificate category as specified below. After December 31, 2009, applications for provisional radiographer certificates will not be accepted. To obtain a provisional radiographer certificate in the:

(1) Radioactive materials category, submit the information specified in section 30335.5(b)(1) and (2), the application fee specified in section 30336.8 and:

(A) If specified on a specific license as a radiographer, the name and license number as shown on the specific license; or

(B) Except as provided in subsection (b), if designated as a radiographer by a licensee, the name and license number of the licensee as shown on the specific license, and a letter from the licensee signed by the licensee's radiation safety officer verifying that the applicant has met the requirements of section 30335.10, has participated in (number of hours) hours of radiographic operations using radioactive materials and has demonstrated the capability of working independently as a radiographer. The number of hours of participation shall be at least 200 but shall not include the number of hours spent in safety meetings, classroom training, travel, darkroom activities, film development and interpretation, and any work activity not related to the performance of industrial radiography. If the training specified in section 30335.10 and the required hours were obtained under multiple licensees, the applicant shall submit enough documents to support completion of all required training;

(2) Radiation machine category, submit the information specified in section 30335.5(b)(1) and (2), the application fee specified in section 30336.8 and, except as provided in subsection (b):

(A) Documentation that the requirements of section 30335.10 have been met. Documentation shall indicate where the training occurred, total number of hours spent on the subjects listed in section 30335.10, and include a copy of the training certificate if one was issued. If a training certificate was not issued, the applicant shall so state; and

(B) Documentation of at least 120 hours of participation in radiographic operations using radiation machines. The hours of participation shall not include safety meetings, classroom training, travel, darkroom activities, film development and interpretation, and any work activity not related to the performance of industrial radiography. Documentation shall indicate the name and registration number of the registrant under whom the operations were performed, the dates and total number of hours of participation. If participation occurred under multiple registrants, the applicant shall submit enough documents to support completion of the 120 hours; or

(3) Combination category, submit the information specified in section 30335.5(b)(1) and (2), the information specified in subsections (a)(1) and (a)(2)(B) of this section and the application fee specified in section 30336.8. Individuals applying for the combination category must complete both the 200 hours of participation using radioactive material and 120 hours using radiation machines for a total of 320 hours.

(b) In lieu of the requirement in subsections (a)(1)(B) or (a)(2), training obtained through providers approved by one of the entities listed in section 30335.3(b) for the specified certificate category shall be accepted if the applicant completed that training. Documentation of completion shall be submitted.

(c) Certificates issued pursuant to this section shall be valid for two years and shall not be renewable. Applications for a renewable radiographer certificate shall be submitted pursuant to section 30335.2 and be considered as initial applications.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 4-11-2008; operative 5-11-2008 (Register 2008, No. 15).

§ 30335.5. Complete Radiographer Certificate Application.

(a) For applicants possessing a current provisional radiographer certificate in a specified category issued pursuant to section 30335.4, an application submitted for compliance with section 30335.2 shall be considered complete if the application contains the applicant's legal name, mailing address, telephone number, the certificate number as shown on their provisional certificate and the examination fee as specified in section 30336.8.

(b) For applicants who do not possess a current provisional radiographer certificate, an application submitted for compliance with section 30335.2 shall be considered complete if the application contains:

(1) The legal name, mailing address, and telephone number of the applicant;

(2) The applicant's social security number (pursuant to the authority found in sections 131200 and 115000(b) of the Health and Safety Code and as required by section 17520 of the Family Code, providing the social security number is mandatory. The social security number will be used for purposes of identification);

(3) Except as provided in subsection (c), for a radiographer certificate in the radioactive materials category:

(A) A copy of the applicant's certificate of training issued by a radiation safety training provider approved pursuant to section 30331 or if renewing the radiographer certificate, the certificate number as shown on the certificate; and

(B) Except for renewal applicants, documentation of at least 200 hours of participation in radiographic operations using radioactive material. The hours of participation shall not include the time spent on completing the requirements specified in section 30333(b)(1), safety meetings, classroom training, travel, darkroom activities, film development and interpretation, and any work activity not related to the performance of industrial radiography. Documentation shall be a letter from the licensee

under whom the operations were performed verifying that the applicant has demonstrated the capability of independently working as a radiographer. The letter shall indicate the licensee's name and license number as shown on the specific license, the dates and total number of hours of participation and be signed by the licensee's radiation safety officer. If participation occurred under multiple licensees, the applicant shall submit enough documents to support completion of the 200 hours;

(4) Except as provided in subsection (c), for a radiographer certificate in the radiation machine category:

(A) A copy of the applicant's certificate of training issued by a radiation safety training provider approved pursuant to section 30331 or if renewing the radiographer certificate, the certificate number as shown on the certificate; and

(B) Except for renewal applicants, documentation of at least 120 hours of participation in radiographic operations using radiation machines. The hours of participation shall not include the time spent on completing the requirements specified in section 30336.5(a)(1), safety meetings, classroom training, travel, darkroom activities, film development and interpretation, and any work activity not related to the performance of industrial radiography. Documentation shall indicate the name and registration number of the registrant under whom the operations were performed, the dates and total number of hours of participation. If participation occurred under multiple registrants, the applicant shall submit enough documents to support completion of the 120 hours;

(5) Except as provided in subsection (c), for a radiographer certificate in the combination category, all items specified in subsections (b)(3) and (b)(4)(B). Individuals applying for the combination category must complete both the 200 hours of participation using radioactive material and 120 hours using radiation machines for a total of 320 hours; and

(6) An application fee and an examination fee as specified in section 30336.8.

(c) In lieu of the requirement in subsections (b)(3), (b)(4) or (b)(5) to obtain training from providers approved pursuant to section 30331 and experience under a licensee or registrant, training obtained through providers approved by one of the entities listed in section 30335.3(b) for the specified certificate category shall be accepted if the applicant has completed that training. Documentation of completion shall be submitted.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30335.6. Notification of Change of Name or Address.

Each individual certified pursuant to this Article shall report to the Department in writing any change of name or mailing address within 30 calendar days of the change.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30335.10. Radiation Safety Training Curriculum.

An applicant for approval as a radiation safety training provider shall ensure each student completes at least 40 hours of training in:

(a) Fundamentals of Radiation Safety that addresses:

(1) Characteristics of radiation;

(2) Units of radiation dose and quantity of radioactivity;

(3) Significance of radiation dose to include hazards of excessive exposure to radiation, biological effects of radiation dose, radiation protection standards and case histories of industrial radiography accidents;

(4) Levels of radiation from radiation machines and radiographic exposure devices; and

(5) Methods of controlling radiation dose: working time, working distance, shielding.

(b) Radiation instrumentation that addresses:

(1) Use of radiation survey instruments: operation, calibration, and limitations;

(2) Radiation survey techniques; and

(3) Characteristics and use of personnel monitoring equipment: film badges, pocket dosimeters and chambers, thermoluminescent dosimeters, alarming ratemeters, and optically stimulated luminescent dosimeters.

(c) Radiographic equipment that addresses:

(1) Operation and control of radiographic exposure devices, remote handling equipment, storage and transport containers, source changers, storage, control and disposal of radioactive material;

(2) Operation and control of radiation machines; and

(3) Inspection and maintenance of equipment.

(d) Federal and State radiation control regulations pertaining to industrial radiography.

(e) Generic written operating and emergency procedures addressing the procedures specified in section 30333.1.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30336. Requirements for Shielded–Room Radiography.

(a) A user conducting shielded–room radiography shall designate an individual as the radiation safety officer. This individual shall meet the criteria specified in section 30336.7.

(b) A user shall not allow any individual to perform shielded–room radiography unless the individual:

(1) Has completed the training specified in section 30335.10 from a provider approved pursuant to section 30331;

(2) Has received copies of, instruction in, and demonstrated understanding of, the user's operating and emergency procedures by obtaining a passing grade of at least 80 percent on a written examination covering this material. The written examination shall be at least 50 questions in length. Instruction in this material shall be at least eight hours long; and

(3) Has demonstrated competence to use the radiation machines and survey instruments employed by the user and in the kinds of radiographic operations that will be performed by obtaining a passing grade of at least 80 percent on a practical examination covering this material. The practical examination shall be at least 25 questions in length. Instruction in this material shall be at least four hours long.

(c) A user shall supply personnel dosimeters that require processing to determine the radiation dose to and require the use by every individual who operates, who makes "setups," or who performs maintenance on a shielded–room radiography unit. Each personnel dosimeter shall be assigned to and worn by only one individual and processed in accordance with section 30333.2(b). Reports received from the dosimetry processor shall be available for inspection and maintained until the Department terminates the user's registration. If a personnel dosimeter is lost or damaged during radiographic operations, the worker shall immediately cease work using radiation sources until a replacement personnel dosimeter is provided and the exposure is calculated for the time period from issuance to loss or damage of the personnel dosimeter. The radiation safety officer shall perform the calculation. The results with measurements, calculated data, and assumptions made to obtain the calculated exposure and the time period for which the personnel dosimeter was lost or damaged shall be retained for inspection until the Department terminates the user's registration.

(d) All openings through which an individual could gain access to the room shall be interlocked so that the radiation machine will not operate unless all openings are securely closed. The required controls shall be designed such that an individual is not prevented from leaving the room.

(e) The room shall not be occupied during radiation exposures.

(f) A device shall be installed within the room that will, upon actuation, terminate production of radiation. It shall not be possible to reset, override, or bypass the device from outside the room.

(g) Radiation machines used in shielded–room radiography shall meet the requirements specified in American National Standard N537–1976 "Radiological Safety Standard for the Design of Radiographic and Fluoroscopic Industrial X–ray Equipment" published as NBS Handbook 123, issued August 1977*, which is incorporated by reference.

(h) The interior of the room shall be shielded so that every location on the exterior does not exceed the dose limits for an unrestricted area as specified in 10 CFR 20, subpart D incorporated by reference in section 30253.

(i) Documentation demonstrating compliance with this section shall be maintained for three years and kept available for inspection.

*Copies of American National Standard N537–1976 "Radiological Safety Standard for the Design of Radiographic and Fluoroscopic Industrial X–ray Equipment" (published as NBS Handbook 123, issued August 1977) may be purchased from the American National Standards Institute, Inc., 25 West 43rd Street, New York, New York 10036 or from IHS Standards Store at "http://global.ihs.com." Insert "NBS HDBK 123" for the document number in the Standards Search box.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of subsection (c)(4) filed 5–13–69; effective thirtieth day thereafter (Register 69, No. 20).
2. Amendment of subsection (c)(5) filed 10–12–72; effective thirtieth day thereafter (Register 72, No. 42).
3. Change without regulatory effect adding NOTE (Register 87, No. 11).
4. Amendment of subsections (a), (b) and (c)(5) filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
5. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
6. Repealer and new section heading, section and NOTE and filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).
7. Amendment of footnote and NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30336.1. Requirements for Field Radiography.

(a) A user conducting field radiography shall designate an individual as the radiation safety officer. This individual shall meet the criteria specified in section 30336.7.

(b) Except as provided in subsection (c), field radiography shall not be performed unless:

(1) Performed by radiographic personnel; and

(2) There are at least two radiographic personnel one of whom is a radiation machine radiographer. If one of the personnel is a radiation machine radiographer's assistant, the other shall be a radiation machine radiographer trainer; and

(3) During each radiographic operation, radiographic personnel maintain visual surveillance of the operation to protect against unauthorized entry into a high radiation area.

(c) Except as provided in subsection (e), a user shall not allow any individual to act as a radiation machine radiographer unless the individual:

(1) Is a certified radiation machine radiographer or is in compliance with section 30335.3; and

(2) Has met the requirements of section 30336.5(a)(1).

(d) Except as provided in subsection (e), a user shall not allow any individual to act as a radiation machine radiographer's assistant unless the individual meets the requirements of section 30336.5(a)(1) and is under personal supervision of a radiation machine radiographer trainer or the radiation safety officer as required pursuant to subsection (o).

(e) The requirements of subsections (b), (c), (d), (n) and (o) do not apply if:

(1) Field radiography is performed with a radiation machine that is not capable of exceeding an operating potential of 150 kVp;

(2) The operator of the radiation machine has received at least eight hours of instruction in, and demonstrated, by successful completion of a written examination, an understanding of the following subjects. The examination shall be at least 50 questions in length. Successful completion shall be correctly answering at least 80 percent of the questions in a closed book testing session:

(A) Characteristics of X–radiation;

(B) Units of radiation dose;

(C) Radiation hazards;

(D) Radiation levels from radiation machines;

(E) Methods of controlling radiation exposure: time, distance, and shielding;

(F) Use of radiation survey instruments: operation, calibration, and limitations;

(G) Radiation survey techniques;

(H) Characteristics and use of personnel monitoring equipment; and

(I) Use of radiation machines in radiography; and

(3) The operator has demonstrated competence to safely use the radiation machine in the kinds of radiographic operations that will be performed. Demonstration shall be by successful completion of a practical examination covering this material. Instruction in this material shall be at least four hours long.

(f) Each user shall implement, keep current, and maintain written operating procedures for the kinds of radiation machines and the kinds of radiographic procedures employed. These procedures shall include detailed instructions in at least the following:

(1) Means to be employed to control and limit exposure to individuals;

(2) Methods and occasions for conducting radiation surveys and for controlling access to radiography areas; and

(3) The use of radiation survey instruments and personnel monitoring devices.

(g) Radiographic operations shall not be performed unless, for each radiation machine energized, at least one radiation survey instrument, which meets the requirements of section 30332.3, capable of measuring radiation of the energies and at the dose rates to be encountered is available and used. Each registrant shall perform visual and operability checks on all survey instruments before use on each day the radiographic equipment is to be used to ensure that the radiographic equipment is in good working condition. Survey instrument operability shall be performed using a radiation source. If equipment problems are found, the equipment shall be removed from service until repaired.

(h) Areas in which field radiography is being performed shall be conspicuously posted as required by title 10 Code of Federal Regulation (CFR) Part 20, subpart J incorporated by reference in section 30253. The limits of a high radiation area need not be separately defined and posted if the surrounding radiation area is posted and controlled as a high radiation area.

(i) The boundaries of the controlled area for each "setup" shall be determined by a radiation survey during the first radiographic exposure to confirm that subsection (e) has been met and that unrestricted areas do not have radiation levels in excess of the limits specified in 10 CFR 20, subpart D incorporated by reference in section 30253. A radiation survey shall be made after each radiographic exposure to determine that the radiation machine is "off." Survey results and records of boundary locations shall be maintained for three years and kept available for inspection.

(j) Protection against unauthorized entry into a high radiation area shall be controlled in accordance with section 20.1601(a) through (d) of 10 CFR 20 incorporated by reference in section 30253.

(k) Each user shall maintain current utilization logs, which shall be maintained for three years and kept available for inspection, containing the following information for each radiation machine:

(1) The identity of the machine;

(2) The location, date, and the identity of the individual operator for each use; and

(3) The voltage, current, and exposure time for each use.

(l) All requirements of section 30333.2 apply.

(m) Radiation machines used in field radiography shall meet the requirements specified in American National Standard N537 1976 "Radiological Safety Standard for the Design of Radiographic and Fluoro-

scopic Industrial X–ray Equipment" published as NBS Handbook 123, issued August 1977*, which is incorporated by reference.

(n) Unless exempted pursuant to subsection (e), field radiography shall not be performed unless, during radiographic operations:

(1) Each radiographer has in their possession the identification (ID) card issued to them by the Department and the ID card is current and valid or the radiographer is in compliance with section 30335.3(a); and

(2) Each radiographer's assistant has in their possession the ID card issued to them by the registrant pursuant to section 30336.5(a)(2).

(o) Unless exempted pursuant to subsection (e), whenever a radiation machine radiographer's assistant (RA) uses radiation machines or conducts radiation surveys to determine that the radiation machine is "off," the RA shall be under the personal supervision of a radiation machine radiographer trainer or the radiation safety officer. The personal supervision shall include:

(1) The radiographer trainer's physical presence at the site where the radiation machine is being used;

(2) The ability of the radiographer trainer to give immediate assistance if required; and

(3) The radiographer trainer's watching the RA's performance of the operations referred to in this section.

(p) If a user possesses a radiation machine such that an individual could, in a single exposure to the primary beam with the machine set at maximum exposure factors, receive an exposure exceeding 10 percent of the occupational dose limits specified in title 10, Code of Federal Regulations, Part 20, subpart C incorporated by reference in section 30253, the user shall establish and maintain an internal inspection program to ensure radiographers and radiographers' assistants comply with this regulation and registration conditions and the registrant's operating and emergency procedures. The inspection program shall include or provide:

(1) Observation of the performance of each radiographer and radiographer's assistant during an actual radiographic operation at intervals not to exceed six months;

(2) That, if a radiographer or a radiographer's assistant has not participated in a radiographic operation for more than six months since the last inspection, that individual's performance shall be observed and recorded the next time the individual participates in a radiographic operation; and

(3) Retention of inspection records on the performance of radiographers or radiographers' assistants for three years.

(q) Each user shall provide annual refresher safety training to each radiographer and radiographer's assistant at intervals not to exceed 12 months. This training shall, at a minimum, address or provide:

(1) If an inspection program is required pursuant to subsection (p), results of internal inspections;

(2) Results of Department inspections;

(3) New procedures or equipment;

(4) New or revised regulations about industrial radiography using radiation machines;

(5) Accidents or errors that have been observed and steps to prevent recurrence; and

(6) Opportunities for individuals to ask safety questions.

(r) Unless otherwise stated in this section, documentation demonstrating compliance with this section shall be maintained for three years and available for inspection.

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*Copies of American National Standard N537–1976 "Radiological Safety Standard for the Design of Radiographic and Fluoroscopic Industrial X–ray Equipment" (published as NBS Handbook 123, issued August 1977) may be purchased from the American National Standards Institute, Inc., 25 West 43rd Street, New York, New York 10036 or from IHS Standards Store at "http://global.ihs.com." Insert "NBS HDBK 123" for the document number in the Standards Search box.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).
2. Amendment of subsections (p) and (p)(3), footnote and NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30336.5. Requirements for Radiation Machine Radiographers' Assistants.

(a) Prior to allowing an individual to perform as a radiation machine radiographer's assistant, a user shall:

(1) Ensure the individual has:

(A) Received copies of, instruction in, and demonstrated understanding of, the user's operating and emergency procedures by obtaining a passing grade of at least 80 percent on a written examination covering this material. The written examination shall be at least 50 questions in length. Instruction in this material shall be at least eight hours long; and

(B) Demonstrated competence to use the radiation machines and survey instruments employed by the user and in the kinds of radiographic operations that will be performed by obtaining a passing grade of at least 80 percent on a practical examination covering this material. The practical examination shall be at least 25 questions in length. Instruction in this material shall be at lest four hours long; and

(C) Received the instruction and training specified in subsections (a)(1)(A) and (a)(1)(B) from a radiation machine radiographer trainer or the registrant's radiation safety officer.

(2) Once the individual has met the requirements of subsection (a)(1), issue to the individual a durable identification (ID) card, resistant to water, containing the:

(A) Statement "I certify that (the name of the individual) has met the requirements to be a radiation machine radiographer's assistant.";

(B) Name and registration number of the registrant issuing the ID card; and

(C) Printed name, signature and date of signature of the registrant's radiation safety officer or radiation machine radiographer trainer.

(b) A user may apply to be an approved provider of radiation safety training in accordance with section 30331.

(c) Documentation demonstrating compliance with this section shall be maintained and available for inspection.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).
2. Amendment of section heading and NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30336.6. Radiation Machine Radiographer Trainer Requirements.

(a) A user shall not allow any individual to act as a radiation machine radiographer trainer unless the individual:

(1) Is a certified radiation machine radiographer or is in compliance with section 30335.3;

(2) Has complied with the requirements of section 30336.5(a)(1); and

(3) Has at least 2,000 hours of experience using radiation machines, performing radiographic operations, radiation surveys and radiation safety related activities. The experience shall not include film development and interpretation, darkroom activities, travel, safety meetings, classroom training, performance of cabinet radiography, and/or any work activity not related to the performance of industrial radiography. Documentation shall specify:

(A) The user's name, registration number and name of the user's radiation safety officer;

(B) The beginning and ending dates of the experience; and

(C) For each radiation machine used, the model and manufacturer's name.

(b) Documentation demonstrating compliance with this section shall be maintained and available for inspection.

NOTE: Authority cited: Sections 114975, 115000, 115060, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970 and 115060, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30336.7. Radiation Machine Radiation Safety Officer Requirements.

(a) Except as specified in subsection (c), for an individual to be a radiation safety officer (RSO) for a registrant, the individual shall:

(1) Meet the requirements of section 30336.6(a). Possession of a provisional radiographer certificate issued pursuant to section 30335.4 is not acceptable for complying with this section. No more than 900 hours of experience as a radiographer using radioactive material may be counted toward meeting the 2,000 hours specified in section 30336.6(a)(3); and

(2) Have completed 4,000 hours of experience using radiation machines and experience in radiation protection activities such as developing or implementing procedures relating to the protection of workers and the public from radiation including the development or implementation of procedures for radiation surveys, assessment of dosimetry for radiation work, determination of necessary radiation shielding, review of survey and personnel dose measurements, training of personnel, use and maintenance of radiation machines, monitoring of radiation emergency events, radiation machine security, audits of radiographic operations, and survey meter maintenance and calibration.

(b) The RSO shall ensure that radiation safety activities are being performed in accordance with the requirements of this regulation in the daily operation of the registrant's radiation safety program. Designation of an RSO does not relieve the registrant of any of its responsibility for complying with the Act and this regulation.

(c) Registrants only using cabinet X–ray systems shall be exempt from this section.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000 and 115060, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30336.8. Industrial Radiography Certification and Provider Fees.

(a) The application fee for any category of radiographer certificate shall be $88.00.

(b) The examination fee for any category of radiographer certificate shall be $88.00. Each individual repeating a failed examination shall pay a fee of $88.00.

(c) The application fee for a provider of radiation safety training specified in section 30331 shall be $904.00.

(d) The fee for replacement of a Department identification card shall be $12.00.

(e) Fees required by this section shall be nonrefundable.

NOTE: Authority cited: Sections 114975, 115000, 115065, 115080 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115065, 115080, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).
2. Amendment of section and NOTE filed 6–15–2015; operative 6–15–2015. Submitted to OAL for filing and printing only pursuant to Health and Safety Code section 100425 (Register 2015, No. 25).

§ 30337. Requirements for Use of Cabinet X–ray Systems.

(a) As used in this section:

(1) "Access panel" means any barrier or panel which is designed to be removed or opened for maintenance or service purposes, requires tools to open, and permits access to the interior of the cabinet;

(2) "Aperture" means any opening in the outside surface of the cabinet, other than a port, which remains open during generation of X–rays;

(3) "Door" means any barrier which is designed to be movable or opened for routine operation purposes, does not generally require tools to open, and permits access to the interior of the cabinet;

(4) "External surface" means the outside surface of the radiation machine, including the high–voltage generator, doors, access panels, latches, control knobs, and other permanently mounted hardware and including the plane across any aperture or port;

(5) "Ground fault" means an accidental electrical grounding of an electrical conductor;

(6) "Port" means any opening in the outside surface of the radiation machine which is designed to remain open, during generation of X–rays, for the purpose of conveying material to be irradiated into and out of the cabinet, or for partial insertion for irradiation of an object whose dimensions do not permit complete insertion into the cabinet;

(7) "Primary beam" means the radiation emitted directly from the target and passing through the window of the X–ray tube;

(8) "Safety interlock" means a device, which is intended to prevent the generation of radiation when access by any part of the human body to the interior of the detection system through a door or access panel is possible;

(9) X–ray system means an assemblage of components for the controlled generation of X–rays;

(10) "X–ray tube" means any electron tube, which is designed for the conversion of electrical energy into X–ray energy.

(b) Cabinet X–ray systems shall meet and be continually maintained to ensure the following are met:

(1) Radiation emitted from the system shall not, under any condition of use, exceed an exposure of 0.5 milliroentgen in one hour at any point five centimeters (cm) outside the external surface, or any door or port. The exposure shall be determined by measurements averaged over a cross–sectional area of ten square cm with no linear dimension greater than five cm with doors and access panels fully closed as well as fixed at any position, which will allow the generation of X–rays;

(2) The insertion of any part of the human body through any port into the primary beam shall not be possible. The insertion of any part of the human body through any aperture shall not be possible;

(3) The system shall have a lock–and–key control, which will ensure that X–ray generation is not possible with the key removed. When the system is not in use, the key shall be removed and controlled to prohibit unauthorized use of the system;

(4) The system shall have a control or controls to initiate and terminate the generation of X–rays other than by functioning of a safety interlock or the main power control;

(5) The system shall have two independent means (indicators), which indicate when and only when X–rays are being generated. At least one of the indicators shall be illuminated when X–rays are being generated. One, but not both, of the required indicators may be a milliammeter labeled to indicate X–ray tube current. All other indicators shall be legibly labeled "X–RAY ON." If the X–ray generation period is less than one–half second, the indicators shall be activated for one–half second and shall be discernible from any point at which initiation of X–ray generation is possible. Failure of a single component of the system shall not cause failure of both indicators to perform their intended function. The system shall have additional means other than milliammeters as needed to insure that at least one indicator is visible from each door, access panel, and port. If the X–ray generation period is less than one–half second, the indicators shall be activated for one–half second and be legibly labeled "X–RAY ON";

(6) In systems used to inspect objects such as, but not limited to, baggage, boxes, backpacks, purses, and mail, the system shall be designed such that:

(A) During an exposure or preset succession of exposures of one–half second or greater duration, the operator can terminate the exposure or preset succession of exposures at any time and is in a position that permits surveillance of the ports and doors during X–ray generation; and

(B) During an exposure or preset succession of exposures of less than one–half second duration, completion of the exposure in progress may continue but shall enable the operator to prevent additional exposures;

(7) There shall be permanently affixed or inscribed:

(A) At the location of any controls which can be used to initiate X–ray generation, a clearly legible and visible label bearing the statement: "Caution: X–Rays Produced When Energized;" and

(B) Adjacent to each port a clearly legible and visible label bearing the statement: "Caution: Do Not Insert Any Part of the Body When System is Energized—X–ray Hazard;"

(8) Each door shall have a minimum of two safety interlocks. One, but not both of the required interlocks shall be such that door opening results in physical disconnection of the energy supply circuit to the high–voltage generator, and such disconnection shall not be dependent upon any moving part other than the door;

(9) Each access panel shall have at least one safety interlock;

(10) Following interruption of X–ray generation by the functioning of any safety interlock, use of a control provided in accordance with subsection (b)(4) shall be necessary for resumption of X–ray generation;

(11) Failure of any single component of the system shall not cause failure of more than one required safety interlock; and

(12) A ground fault shall not result in the generation of X–rays.

(c) A user shall not allow any individual to operate a cabinet X–ray system until such individual has:

(1) Received copies of, instruction in, and demonstrated understanding of, the user's operating and emergency procedures by obtaining a passing grade of at least 80 percent on a written examination covering this material. The written examination shall be at least 50 questions in length; and

(2) Demonstrated competence to use the radiation machines by obtaining a passing grade of at least 80 percent on a practical examination covering this material. The practical examination shall be at least 25 questions in length. An individual operating such a system need not obtain radiographer certification.

(d) Interlocks shall be annually tested to ensure they function as designed.

(e) The user shall conduct an annual evaluation of the cabinet X–ray system to ensure compliance with title 10, Code of Federal Regulations, Part 20, subpart D incorporated by reference in section 30253.

(f) Individuals shall not be exposed to the primary beam.

(g) Documentation demonstrating compliance with this section shall be maintained for three years and kept available for inspection.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970 and 115060, Health and Safety Code.

HISTORY

1. New section filed 10–29–73 as an emergency; effective upon filing (Register 73, No. 44).
2. Certificate of Compliance filed 2–22–74 (Register 74, No. 8).
3. Change without regulatory effect adding NOTE (Register 87, No. 11).
4. Amendment of section heading, section and NOTE and filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

§ 30338. Grounds for Suspension, Revocation, Amendment, or Restriction of Radiographer Certificates and Radiation Safety Training Provider Approvals.

Radiographer certificates and any approval as a radiation safety training provider issued under this article may be revoked, suspended, amended or restricted for any of the following:

(a) Violation of any provision of the Act, any regulation promulgated pursuant to the Act, or any order of the Department.

(b) Failure to pay fees pursuant to section 30336.8.

(c) Failure to report changes pursuant to sections 30331 or 30335.6.

(d) Failure to take corrective action when directed by the Department.

(e) Failure to maintain the standard under which the training provider was approved pursuant to section 30331.

(f) Incompetence or gross negligence in performing radiographic operations.

(g) Procuring any certificate or approval by fraud, or misrepresentation, or because of mistake.

(h) Exposing any individual to radiation deliberately.

(i) Failure to comply with policies or procedures required to be developed pursuant to sections 30333.1 or 30336.1(e).

(j) Failure to provide complete and accurate information to the Department when required.

(k) Failure to pass a Department audit or inspection.

NOTE: Authority cited: Sections 114975, 115000, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115000, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 4–11–2008; operative 5–11–2008 (Register 2008, No. 15).

Article 7. Radiation Safety Requirements for Well Logging Operations

§ 30345.1. Scope.

The regulations in this Article shall apply to all licensees or registrants who use sources of radiation for well logging operations including oil, gas, mineral–logging, radioactive markers, or subsurface tracer studies.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5). For prior history of former article 10, see Register 85, No. 48.
2. Amendment of article heading filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30345.2. Definitions.

(a) The definitions in section 30100 apply to this article.

(b) As used in this article:

(1) "Energy compensation source" means a small sealed source (not exceeding an activity of 100 microcuries), used within a logging tool, or other tool components, to provide a reference standard to maintain the tool's calibration when in use;

(2) "Field station" means a facility where licensed radioactive material or radiation machines may be stored or used and from which equipment is dispatched to temporary jobsites;

(3) "Fresh Water Aquifer" means a geologic formation that is capable of yielding fresh water to a well or spring;

(4) "Injection tool" means a device used for controlled subsurface injection of radioactive tracer material;

(5) "Irretrievable well logging source" means any sealed source containing radioactive material that is pulled off or not connected to the wireline that suspends the source in the well and for which all reasonable effort at recovery has been expended;

(6) "Logging assistant" means any individual who, under the personal supervision of a logging supervisor, handles radiation sources that are not in logging tools or shipping containers or who performs surveys required by section 30348.4;

(7) "Logging supervisor" means any individual who uses radiation sources or provides personal supervision in the use of radiation sources at a temporary jobsite and who is responsible to the user for assuring compliance with the requirements of this regulation and the conditions of the license;

(8) "Logging tool" means a device used subsurface to perform well logging;

(9) "Personal supervision" means guidance and instruction by a logging supervisor who is physically present at a temporary jobsite, who is in personal contact with logging assistants, and who can give immediate assistance;

(10) "Radioactive marker" means radioactive material used for depth determination or direction orientation. The term includes radioactive collar markers and radioactive iron nails;

(11) "Safety review" means a periodic review provided by the user for its employees on radiation safety as it relates to well logging. The review may include, as appropriate, the results of internal inspections, new procedures or equipment, accidents or errors that have been observed, and safety questions by employees;

(12) "Source holder" means a housing or assembly into which a sealed source is placed to facilitate the handling and use of the source in well logging;

(13) "Subsurface tracer study" means the release of unsealed radioactive material or a substance labeled with radioactive material in a single well for the purpose of tracing the movement or position of the material or substance in the well or adjacent formation;

(14) "Surface casing for protecting fresh water aquifers" means a pipe or tube used as a lining in a well to isolate fresh water aquifers from the well;

(15) "Temporary jobsite" means a place where licensed radioactive materials or radiation machines are present for the purpose of performing well logging or subsurface tracer studies;

(16) "Tritium neutron generator target source" means a tritium source used within a neutron generator tube to produce neutrons for use in well logging applications;

(17) "Uranium sinker bar" means a weight containing depleted uranium used to pull a logging tool towards the bottom of a well;

(18) "Well" means a drilled hole in which well logging may be performed and includes drilled holes for the purpose of oil, gas, mineral, groundwater, or geological exploration;

(19) "Well logging" means all operations involving the lowering and raising of measuring devices or tools which contain radiation sources or are used to detect radiation sources in wells for the purpose of obtaining information about the well or adjacent formations which may be used in oil, gas, mineral, groundwater, or geological exploration;

(20) "Wireline" means a cable containing one or more electrical conductors, which is used to lower and raise logging tools in the well–bore.

NOTE: Authority cited: Sections 100275, 114975, 115000 and 115060, Health and Safety Code. Reference: Sections 114965, 114970, 114985, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).
2. Amendment of section and NOTE filed 4–10–2006; operative 5–10–2006 (Register 2006, No. 15).

§ 30345.3. Specific License for Well Logging.

(a) The applicant for licensure or registration as described in Section 30194 shall meet the requirements specified in that section and any special requirements contained in this section.

(b) The applicant shall develop a program for training logging supervisors and logging assistants and submit to the Department a description of this program which specifies:

(1) Initial training;

(2) On the job training;

(3) Annual safety reviews provided by the licensee;

(4) Means the applicant will use to demonstrate the logging supervisor's knowledge and understanding of and ability to comply with the regulations and licensing requirements and the applicant's operating and emergency procedures; and

(5) Means the applicant will use to demonstrate the logging assistant's knowledge and understanding of and ability to comply with the regulations and licensing requirements and the applicant's operating and emergency procedures.

(c) The applicant shall submit to the Department written operating and emergency procedures as described in Section 30348.2 or an outline or summary of the procedures that include the important radiation safety aspects of the procedures.

(d) The applicant shall establish and submit to the Department its program for annual inspections of the job performance of each logging supervisor to ensure that the Department regulations, license requirements, and the applicant's operating and emergency procedures are followed. Inspection records must be retained for three years after each annual internal inspection.

(e) The applicant shall submit a description of its overall organizational structure as it applies to the radiation safety responsibilities in well logging, including specified delegations of authority and responsibility.

(f) If an applicant wants to perform leak testing of sealed sources, the applicant shall identify the manufacturers and the model numbers of the leak test kits to be used. If the applicant wants to analyze its own wipe samples, the applicant shall establish procedures to be followed and submit a description of these procedures to the Department. The description shall include:

(1) Instruments to be used;

(2) Methods of performing the analysis; and

(3) Pertinent experience of the person who will analyze the wipe samples.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).

§ 30346. Agreement with Well Owner or Operator.

(a) No licensee shall perform well logging services operations with a sealed source unless, prior to commencement of the operation, the licensee has a written agreement with the well operator, well–owner, drilling contractor, or land owner describing who shall be responsible for meeting the following requirements:

(1) In the event a sealed source is lodged downhole, a reasonable effort shall be made to recover it.

(2) A person may not attempt to recover a sealed source in a manner which, in the licensee's opinion, could result in its rupture.

(3) Radiation monitoring required in section 30348.5(a) shall be performed.

(4) If the environment, any equipment, or any personnel are contaminated with licensed radioactive material, they shall be decontaminated before release from the site or release for unrestricted use, as applicable.

(5) If the sealed source is classified as irretrievable after reasonable efforts at recovery have been expended, the following requirements shall be implemented within 30 days:

(A) Each irretrievable well logging source shall be immobilized and sealed in place with a cement plug.

(B) A means to prevent inadvertent intrusion on the source, unless the source is not accessible to any subsequent drilling operations.

(C) A permanent identification plaque, constructed of long lasting material such as stainless steel, brass, bronze, or monel, shall be mounted at the surface of the well, unless the mounting of the plaque is not practical. The size of the plaque shall be at least 7 inches square and 1/8 inch thick. The plaque shall contain the word "Caution", the radiation symbol (color requirements as described in section 20.1901(a) of title 10, Code of Federal Regulations, Part 20, incorporated by reference in section 30253, need not be met), the date the source was abandoned, the name of the well owner or well operator as appropriate, the well name and well identification number(s) or other designations, an identification of the sealed source(s) by radionuclide and quantity, the depth of the source and the depth to the top of the plug, and an appropriate warning such as "Do not reenter this well".

(b) The licensee shall retain a copy of the written agreement for three years after the completion of the well logging operation.

(c) A licensee may apply, pursuant to section 30104, for approval on a case–by–case basis of proposed procedures to abandon an irretrievable well logging source in a manner not otherwise authorized in subsection (a)(5) above.

(d) A written agreement between the licensee and the well owner or operator is not required if the licensee and the well owner or operator are part of the same corporate structure or otherwise similarly affiliated. However, the licensee shall still otherwise meet the requirements in subsection (a).

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5). For prior history, see Register 87, No. 28.

2. Amendment of section and NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30346.1. Labels, Security and Transportation.

(a) The license shall not use a radiation source or source holder or logging tool that contains radioactive material unless the smallest component that is transported as a separate piece of equipment with the radioactive material inside bears a durable, legible, and clearly visible marking or label. The marking or label shall contain the radiation symbol specified in the United States, title 10, Code of Federal Regulations, part 20, subpart J as incorporated by reference in section 30253 and the wording "Danger (or Caution) Radioactive Material".

(b) The licensee shall not use a container to store radioactive material unless the container has securely attached to it a durable, legible, and clearly visible label. The label must contain the radiation symbol specified in the United States, title 10, Code of Federal Regulations, part 20, subpart J as incorporated by reference in section 30253 and the wording "CAUTION (or DANGER) RADIOACTIVE MATERIAL. NOTIFY CIVIL AUTHORITIES (OR NAME OF COMPANY)".

(c) For transportation of radioactive material, the licensee shall comply with section 30373.

(d) The licensee shall store each source containing radioactive material in a storage container or transportation package. The container or package must be locked and physically secured to prevent tampering or removal of radiation sources from storage by unauthorized personnel. The licensee shall store radiation sources in a manner which will minimize danger from explosion or fire.

(e) The licensee shall lock and physically secure the transport package containing radiation sources in the transporting vehicle to prevent accidental loss, tampering, or unauthorized removal of the radioactive material from the vehicle.

NOTE: Authority cited: Sections 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).
2. Amendment of subsections (a) and (b) filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
4. Amendment of subsection (c) and NOTE filed 4–24–2009; operative 5–24–2009 (Register 2009, No. 17).

§ 30346.2. Radiation Detection Instruments.

(a) The licensee or registrant shall keep a calibrated and operable radiation survey instrument capable of detecting beta and gamma radiation at each field station and temporary jobsite to make the radiation surveys required by this Article and by section 30275. To satisfy this requirement, the radiation survey instrument must be capable of measuring 0.1 mR per hour through at least 50 mR per hour.

(b) The licensee or registrant shall have available additional calibrated and operable radiation survey instruments with the sensitivity to detect the low radiation and contamination levels that could be encountered if a sealed source ruptured. The licensee may own the instrument or may have a procedure to obtain them quickly from a second party.

(c) The licensee or registrant shall have each radiation survey instrument required under subsection (a) above calibrated:

(1) At intervals not to exceed six months and after instrument servicing;

(2) At two points located approximately 1/3 and 2/3 of full scale on each scale for linear scale instruments, at mid range of each decade and at two points on each decade for logarithmic scale instruments, and at appropriate points for digital instruments; and

(3) So that an accuracy within plus or minus 20 percent of the calibration standards can be demonstrated on each scale.

(d) The licensee or registrant shall retain calibration records for at least three years after the date of calibration for inspection by the Department.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).
2. Amendment of subsection (a) and NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30346.3. Leak Testing of Sealed Sources.

Each licensee who uses a sealed source shall have the source tested for leakage as described in section 30275, except that energy compensation sources (ECS) that are not exempt from testing pursuant to section 30275(c) shall be tested at intervals not to exceed three years. In the absence of a certificate from a transferor that a test has been made within the three years before the transfer, the ECS may not be used until tested.

NOTE: Authority cited: Sections 100275 and 115000, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).
2. Amendment of section and NOTE filed 3–1–2007; operative 3–31–2007 (Register 2007, No. 9).

§ 30346.4. Physical Inventory.

Each licensee shall conduct a semi–annual physical inventory to account for all licensed radioactive material received and possessed under the license. The licensee shall retain records of the inventory for three years from the date of the inventory for inspection by the Department. The inventory shall indicate the quantity and kind of radioactive material, the location of the radioactive material, the date of the inventory, and the name of the individual conducting the inventory. Physical inventory records may be combined with leak test records.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).

§ 30346.5. Records of Material Use.

(a) Each licensee or registrant user shall maintain records for each use of radiation sources showing:

(1) The make, model number, and a serial number or a description of each radiation source used;

(2) In the case of unsealed radioactive material used for subsurface tracer studies, the radionuclide and quantity of activity used in a particular well and the disposition of any unused tracer materials;

(3) The identity of the logging supervisor who is responsible for the radiation sources and the identity of logging assistants present; and

(4) The location and date of use of the radiation source.

(b) The licensee or registrant shall make the records required by subsection (a) of this section available for inspection by the Department. The records shall be kept for three years from the date of the recorded event.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).

§ 30346.6. Design and Performance Criteria for Sealed Sources.

(a) A licensee shall not use a sealed source in well logging unless the sealed source:

(1) Is doubly encapsulated;

(2) Contains licensed radioactive material whose chemical and physical forms are as insoluble and nondispersible as practical; and

(3) Meets one of the following:

(A) For a sealed source manufactured on or before July 14, 1989, meets the requirements of USASI N5.10–1968, "Classification of Sealed Radioactive Sources"* which is incorporated by reference; or

(B) For a sealed source manufactured after July 14, 1989, meets the oil–well logging requirements of ANSI/HPS N43.6–1997, "Sealed Radioactive Sources—Classification"* which is incorporated by reference; or

(C) For a sealed source manufactured after July 14, 1989, if the sealed source's prototype has been tested and found to maintain its integrity after each of the following tests:

1. The test source shall be held at – 40 deg. C. for 20 minutes, 600 deg. C. for one hour, and then be subject to a thermal shock test with a temperature drop from 600 deg. C. to 20 deg. C. within 15 seconds;

2. A 5 kg. steel hammer, 2.5 cm. in diameter, shall be dropped from a height of 1 meter onto the test source;

3. The test source shall be subject to a vibration from 25 Hz to 500 Hz at 5 g amplitude for 30 minutes;

4. A one gram hammer and pin, 0.3 cm pin diameter, shall be dropped from a height of 1 m onto the test source; and

5. The test source shall be subjected to an external pressure of 24,600 pounds per square inch absolute (1.695×10^7 pascals).

(b) The requirements in subsection (a) do not apply to sealed sources that contain radioactive material in gaseous form or to energy compensation sources (ECS). ECSs shall be registered pursuant to section 30192.1(b).

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*Copies of USASI N5.10–1968, "Classification of Sealed Radioactive Sources" may be obtained from the Department. Copies of American National Standard N43.6–1997," Sealed Radioactive Sources –Classification" may be purchased from the American National Standards Institute, Inc., Global Engineering Documents, 1819 L Street, NW, Suite 600, Washington DC 20036 or at "http://global.ihs.com" using "ANSI N43.6" as the document number; or the Health Physics Society at http://hps.org/documents/hpsstandardsorder.pdf.

NOTE: Authority cited: Sections 100275, 114975, 115000 and 115060, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).

2. Amendment of section and NOTE filed 4–10–2006; operative 5–10–2006 (Register 2006, No. 15).

§ 30346.7. Inspection, Maintenance and Opening of a Source Holder.

(a) Each licensee shall visually check source holders, logging tools, and source handling tools, for defects before each use to ensure that the equipment is in good working condition and that required labeling is present. If defects are found, the equipment must be removed from service until repaired, and a record must be made listing the date of check, name of inspector, equipment involved, defects found, and repairs made. These record shall be retained for three years after the defect is found.

(b) Each licensee shall have a program of semi–annual visual inspection and routine maintenance of source holders, logging tools, injection tools, source handling tools, storage containers, transport containers, and uranium sinker bars to ensure that the required labeling is legible and that no physical damage is visible. If defects are found, the equipment must be removed from service until repaired, and a record must be made listing date, equipment involved, inspection and maintenance operations performed, any defects found, and any actions taken to correct the defects. These records must be retained for three years after the defect is found.

(c) Removal of a sealed source from a source holder or logging tool, and maintenance on sealed sources or holders in which sealed sources are contained shall not be performed by the licensee unless a written procedure developed pursuant to Section 30348.2 has been approved by the Department.

(d) If a sealed source is stuck in the source holder, the licensee shall not perform any operation, such as drilling, cutting, or chiseling on the source holder unless the licensee is specifically approved by the Department.

(e) The opening, repair, or modification of any sealed source is prohibited unless performed by persons specifically approved to do so by the Department.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).

§ 30346.8. Subsurface Tracer Studies.

(a) The licensee shall require all personnel handling radioactive tracer material to use protective gloves and, if required by the license, other protective clothing and equipment. The licensee shall take precautions to avoid ingestion or inhalation of radioactive tracer material and to avoid contamination of field stations and temporary jobsites.

(b) The licensee shall not knowingly inject radioactive material into fresh water aquifers unless specifically authorized to do so by the Department.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25608, 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).

§ 30346.9. Radioactive Markers.

The licensee shall use radioactive markers in wells only if the individual markers contain quantities of radioactive material not exceeding the quantities specified in Section 30235 Schedule A. The use of markers is subject to the requirements of Section 30346.4 only.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).

§ 30346.10. Uranium Sinker Bars.

The licensee shall use a uranium sinker bar in well logging, only if it is legibly impressed with the words "Caution—Radioactive–Depleted Uranium" and "Notify Civil Authorities (or Company Name) If Found."

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).

§ 30346.11. Use of Energy Compensation Sources.

A licensee may use an energy compensation source (ECS), which is contained in a logging tool, or other tool components, provided the ECS contains quantities of licensed materials not exceeding 100 microcuries. For well logging applications with a surface casing for protecting fresh water aquifers, use of the ECS is only subject to the requirements of sections 30346.3, 30346.4 and 30346.5. For well logging applications without a surface casing for protecting fresh water aquifers, use of the ECS is only subject to the requirements of sections 30346, 30346.3, 30346.4, 30346.5 and 30350.3 and the procedure required to be developed and implemented pursuant to section 30348.2(a)(1).

NOTE: Authority cited: Sections 100275, 114975, 115000 and 115060, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 4–10–2006; operative 5–10–2006 (Register 2006, No. 15).

§ 30346.12. Use of Tritium Neutron Generator Target Sources.

(a) Use of a tritium neutron generator target source shall be subject to the requirements of this article except:

(1) Sections 30346, 30346.6, and 30350.3 shall not apply when the:

(A) Activity of the source is no more than 30 curies; and

(B) Source is used in a well with a surface casing for protecting fresh water acquifers; or

(2) Section 30346.6 shall not apply when the:

(A) Activity of the source is greater than 30 curies; or

(B) Source is used in a well without a surface casing to protect fresh water acquifers.

NOTE: Authority cited: Sections 100275, 114975, 115000 and 115060, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 4–10–2006; operative 5–10–2006 (Register 2006, No. 15).

§ 30348.1. Training Requirements.

(a) The licensee or registrant shall not permit an individual to act as a logging supervisor until that person:

(1) Has completed training in the subjects outlined in subsection (e);

(2) Has received copies of, and instruction in:

(A) Regulations contained in this subchapter;

(B) The Department license or registration under which the logging supervisor will perform well logging; and

(C) The licensee or registrant's operating and emergency procedures required by section 30348.2;

(3) Has completed on–the–job training and demonstrated competence in the use of radiation sources, remote handling tools, and radiation survey instruments by a field evaluation; and

(4) Has demonstrated an understanding of the requirements in paragraphs (1) and (2) by successfully completing a written test.

(b) The licensee or registrant shall not permit an individual to act as a logging assistant until that person:

(1) Has received instruction in applicable requirements of the United States, title 10, Code of Federal Regulations, Part 20, subparts C, D, F, G, I, J, K, L, and M, as incorporated by reference in section 30253;

(2) Has received copies of, and instruction in, the licensee's or registrant's operating and emergency procedures required by section 30348.2;

(3) Has demonstrated an understanding of the materials listed in paragraphs (1) and (2) by successfully completing a written or oral test; and

(4) Has received instruction in the use of radiation sources, remote handling tools, and radiation survey instruments, as appropriate for the logging assistant's intended job responsibilities.

(c) The licensee or registrant shall provide safety reviews for logging supervisors and logging assistants at least once during each calendar year.

(d) The licensee or registrant shall maintain a record on each logging supervisor's and logging assistant's training and annual safety review. The training records must include copies of written tests and dates of oral tests. The training records must be retained for three years following the date of termination of employment. Records of annual safety reviews must list the topics discussed and be retained for three years.

(e) The licensee or registrant shall include the following subjects in the training required in subsection (a)(1):

(1) Fundamentals of radiation safety including:

(A) Characteristics of radiation;

(B) Units of radiation dose and quantity of radioactivity;

(C) Hazards of exposure to radiation;

(D) Levels of radiation from licensed material;

(E) Methods of controlling radiation dose (time, distance, and shielding); and

(F) Radiation safety practices, including prevention of contamination, and methods of decontamination.

(2) Radiation detection instruments including:

(A) Use, operation, calibration, and limitations of radiation survey instruments;

(B) Survey techniques; and

(C) Use of personnel monitoring equipment;

(3) Equipment to be used including:

(A) Operation of equipment, including source handling equipment and remote handling tools;

(B) Storage, control, and disposal of licensed material; and

(C) Maintenance of equipment.

(4) The requirement of pertinent regulations, and

(5) Case histories of accidents in well logging.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).
2. Amendment of subsection (b)(1) filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
4. Amendment of section and NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30348.2. Operating and Emergency Procedures.

(a) Each licensee shall develop and follow written operating and emergency procedures that cover:

(1) The handling and use of radiation sources, including protection of fresh water aquifers, if appropriate;

(2) The use of remote handling tools for handling sealed sources and radioactive tracer material except low–activity calibration sources;

(3) Methods and occasions for conducting radiation surveys, including surveys for detecting contamination, as required by Section 30348.4 (c)–(e);

(4) Minimizing personnel exposure including exposures from inhalation and ingestion of radioactive tracer materials;

(5) Methods and occasions for locking and securing stored radioactive materials;

(6) Personnel monitoring and the use of personnel monitoring equipment;

(7) Transportation of radioactive materials to field stations or temporary jobsites, packaging of licensed materials for transport in vehicles, placarding of vehicles when needed, and physically securing radioactive materials in transport vehicles during transportation to prevent accidental loss, tampering, or unauthorized removal;

(8) Picking up, receiving, and opening packages containing radioactive materials, in accordance with the United States, title 10, Code of Federal Regulations, part 20, section 20.1906 as incorporated by reference in section 30253;

(9) For the use of tracers, decontamination of the environment, equipment, and personnel;

(10) Maintenance of records generated by logging personnel at temporary fieldsites;

(11) Inspection and maintenance of sealed sources, source holders, logging tools, injection tools, source handling tools, storage containers, transport containers, and uranium sinker bars as required by Section 30346.10;

(12) Actions to be taken if a sealed source is lodged in a well;

(13) Notifying proper persons in the event of an accident; and

(14) Actions to be taken if a sealed source is ruptured including actions to prevent the spread of contamination and minimize inhalation and ingestion of radioactive materials and actions to obtain suitable radiation survey instruments as required by Section 30346.2(b).

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).
2. Amendment of subsection (a)(8) filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).

§ 30348.3. Personnel Monitoring.

(a) The user shall not permit an individual to act as a logging supervisor or logging assistant unless that person wears, at all times during the handling of radiation sources, a personnel dosimeter that requires processing to determine the radiation dose. Each personnel dosimeter shall be assigned to and worn by only one individual. Film badges shall be replaced at least monthly and other personnel dosimeters replaced at least quarterly. After replacement, personnel dosimeters shall be sent for processing by the users' dosimetry processor meeting the requirements of section 20.1501(c) of title 10, Code of Federal Regulations incorporated by reference in section 30253 as soon as possible but no later than recommended by the dosimetry processor.

(b) The licensee shall provide bioassay services to individuals using radioactive materials in subsurface tracer studies if required by the license.

(c) Reports received from the dosimetry processor shall be retained for inspection until the Department terminates each license or registration

that authorizes the activity that is subject to the recordkeeping requirement.

NOTE: Authority cited: Sections 100275, 114975, 115000 and 115060, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115110, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).
2. Repealer of subsection (c) filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28).
4. Amendment of subsection (a), new subsection (c) and amendment of NOTE filed 4–10–2006; operative 5–10–2006 (Register 2006, No. 15).

§ 30348.4. Radiation Surveys.

(a) The licensee shall make radiation surveys including, but not limited to, the surveys required under subsections (b) through (c) of this section, of each area where radioactive materials are used and stored.

(b) Before transporting radioactive materials, the licensee shall make a radiation survey of the position occupied by each individual in the vehicle and of the exterior of each vehicle used to transport radioactive materials.

(c) If the sealed source assembly is removed from the logging tool before departure from the temporary jobsite, the licensee shall confirm that the logging tool is free of contamination by energizing the logging tool detector or by using a survey meter.

(d) If the licensee has reason to believe that, as a result of any operation involving a sealed source, the encapsulation of the sealed source could be damaged by the operation, the licensee shall conduct a radiation survey, including a contamination survey, during and after the operation.

(e) The licensee shall make a radiation survey at the temporary jobsite before and after each subsurface tracer study to confirm the absence of contamination.

(f) The results of surveys required under subsections (a) through (e) of this section must be recorded and must include the date of the survey, the name of the individual making the survey, the identification of the survey instrument used, and the location of the survey. The licensee shall retain records of surveys for inspection by the Department for three years after they are made.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).

§ 30348.5. Radioactive Contamination Control.

(a) If the licensee detects evidence that a sealed source has ruptured or radioactive materials have caused contamination, the licensee shall initiate immediately the emergency procedures required by Section 30348.2.

(b) If contamination results from the use of radioactive material in well logging, the licensee shall decontaminate all work areas, equipment, and unrestricted areas.

(c) During efforts to recover a sealed source lodged in a well, the licensee shall continuously monitor, with an appropriate radiation detection instrument or a logging tool with a radiation detector, the circulating fluids from the well, if any, to check for contamination resulting from damage to the sealed source.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).

§ 30350. Security.

(a) A logging supervisor shall be physically present at a temporary jobsite whenever radioactive materials or particle accelerators are being handled or are not stored and locked in a vehicle or storage place. The logging supervisor may leave the jobsite in order to obtain assistance if a source becomes lodged in a well.

(b) During well logging, except when radiation sources are below ground or in shipping or storage containers, the logging supervisor or other individual designated by the logging supervisor shall maintain direct surveillance of the operation to prevent unauthorized entry into a "restricted area," as defined in title 10, Code of Federal Regulations, section 20.1003, as incorporated by reference by section 30253.

NOTE: Authority cited: Sections 114975, 115000 and 131200, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115230, 115235, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5). For prior history, see Register 87, No. 28.
2. Repealer of article 11 heading filed 3–3–94 as an emergency; operative 3–3–94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7–1–94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3–3–94 order transmitted to OAL 6–7–94 and filed 7–14–94 (Register 94, No. 28)
4. Amendment of subsection (b) and NOTE filed 10–15–2001; operative 11–14–2001 (Register 2001, No. 42).
5. Amendment of subsection (b) and NOTE filed 12–30–2014; operative 4–1–2015 (Register 2015, No. 1).

§ 30350.1. Documents and Records Required at Field Stations.

(a) Each licensee or registrant shall maintain the following documents and records at the field station:

(1) A copy of the California Code of Regulations, Title 17; Subchapter 4;

(2) The license or registration authorizing the use of radioactive material or particle accelerators;

(3) Operating and emergency procedures required by Section 30348.2.

(4) The record of radiation survey instrument calibrations required by Section 30346.2.

(5) The record of leak test results required by Section 30346.3.

(6) Physical inventory records required by Section 30346.4.

(7) Utilization records required by Section 30346.5.

(8) Records of inspection and maintenance required by Section 30346.7.

(9) Training records required by Section 30348.1; and

(10) Survey records required by Section 30348.4.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).

§ 30350.2. Documents and Records Required at Temporary Jobsites.

(a) Each licensee or registrant conducting operations at a temporary jobsite shall maintain the following documents and records at the temporary jobsite until the well logging operation is completed:

(1) Operating and emergency procedures required by Section 30348.2.

(2) Evidence of latest calibration of the radiation survey instruments in use at the site required by Section 30346.2.

(3) Latest survey records required by Section 30348.4(a)(2), (3), and (5).

(4) The shipping papers for the transportation of radioactive materials required by Group 4, Article 1 of this chapter; and

(5) When operating under reciprocity pursuant to Section 30225 of this chapter, a copy of the U.S. Nuclear Regulatory Commission or Agreement State license authorizing use of radioactive materials.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. New section filed 11–4–91; operative 12–4–91 (Register 92, No. 5).

§ 30350.3. Notification of Incidents and Lost Sources; Abandonment Procedures for Irretrievable Sources.

(a) The licensee shall immediately notify the Department by telephone and subsequently, within 30 days, by confirmation letter if the licensee knows or has reason to believe that a sealed source has been ruptured. The

letter must designate the well or other location, describe the magnitude and extent of the escape of radioactive materials, assess the consequences of the rupture, and explain efforts planned or being taken to mitigate these consequences.

(b) If a sealed source becomes lodged in a well, and when it becomes apparent that efforts to recover the sealed source will not be successful, the licensee shall:

(1) Notify the Department by telephone of the circumstances that resulted in the inability to retrieve the source and:

(A) Obtain approval to implement abandonment procedures; or

(B) Report that abandonment was implemented before receiving Department approval because the licensee believed there was an immediate threat to public health and safety;

(2) Advise the well owner or operator, as appropriate, of the abandonment procedures under section 30346(a)(5); and

(3) Either ensure that abandonment procedures are implemented within 30 days after the sealed source has been classified as irretrievable or request an extension of time if unable to complete the abandonment procedures.

(c) The licensee shall, within 30 days after a sealed source has been classified as irretrievable, make a report in writing to the Department. The licensee shall send a copy of the report to each appropriate State or Federal agency that issued permits or otherwise approved of the drilling operation. The report shall contain the following information:

(1) Date of occurrence;

(2) A description of the irretrievable well logging source involved including the radionuclide and its quantity, chemical, and physical form;

(3) Surface location and identification of the well;

(4) Results of efforts to immobilize and seal the source in place;

(5) A brief description of the attempted recovery effort;

(6) Depth of the source;

(7) Depth of the top of the cement plug;

(8) Depth of the well;

(9) If the licensee implemented abandonment procedures prior to Department approval pursuant to subsection (b)(1)(B), the reasons why the licensee believed there was an immediate threat to public health and safety including any documents on which those reasons are based;

(10) Any other information, such as a warning statement, contained on the permanent identification plaque; and

(11) State and Federal agencies receiving a copy of this report.

NOTE: Authority cited: Sections 100275 and 115000, Health and Safety Code. Reference: Sections 114965, 114970, 115060, 115230 and 115235, Health and Safety Code.

HISTORY

1. New section filed 11-4-91; operative 12-4-91 (Register 92, No. 5).
2. Repealer of subsection (b) and subsection redesignation filed 3-3-94 as an emergency; operative 3-3-94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7-1-94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3-3-94 order transmitted to OAL 6-7-94 and filed 7-14-94 (Register 94, No. 28).
4. Amendment of subsection (b)(1), new subsections (b)(1)(A)-(B), amendment of subsection (b)(2), new subsection (b)(9), subsection renumbering and amendment of NOTE filed 3-1-2007; operative 3-31-2007 (Register 2007, No. 9).

§ 30353. Particle Accelerators For Well Logging.

(a) Registrants who use particle accelerators for well logging purposes shall comply with Group 1.5, and Articles 1, 3, 4, and 13 of Group 3.

(b) No registrant shall permit above ground testing of particle accelerators designed for use in well logging which results in the production of radiation except in areas or facilities controlled or shielded so that the requirements of the United States, title 10, Code of Federal Regulations, part 20, subpart C and D as incorporated by reference in section 30253 are met.

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, and 25815, Health and Safety Code.

HISTORY

1. New section filed 11-4-91; operative 12-4-91 (Register 92, No. 5).
2. Amendment of subsection (b) filed 3-3-94 as an emergency; operative 3-3-94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7-1-94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3-3-94 order transmitted to OAL 6-7-94 and filed 7-14-94 (Register 94, No. 28).

§ 30355. Appendix A. Concentrations in Air and Water Above Natural Background. [Repealed]

NOTE: Authority cited: Sections 102, 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Amendment filed 11-29-65; effective thirtieth day thereafter (Register 65, No. 23). For former section see Register 62, No. 1, and 63, No. 26.
2. Repealer and new section filed 11-16-67; effective thirtieth day thereafter (Register 67, No. 46).
3. Amendment filed 7-22-71; effective thirtieth day thereafter (Register 71, No. 30).
4. Amendment filed 6-19-73; effective thirtieth day thereafter (Register 73, No. 25).
5. Amendment filed 7-7-86; effective thirtieth day thereafter (Register 86, No. 28).
6. Repealer of article 12 heading and section filed 3-3-94 as an emergency; operative 3-3-94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7-1-94 or emergency language will be repealed by operation of law on the following day.
7. Certificate of Compliance as to 3-3-94 order transmitted to OAL 6-7-94 and filed 7-14-94 (Register 94, No. 28).

§ 30356. Appendix B. [Repealed]

HISTORY

1. Amendment filed 6-19-73; effective thirtieth day thereafter (Register 73, No. 25). For prior history, see Register 71, No. 46.
2. Repealer filed 3-3-94 as an emergency; operative 3-3-94 (Register 94, No. 9). A Certificate of Compliance must be transmitted to OAL by 7-1-94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3-3-94 order transmitted to OAL 6-7-94 and filed 7-14-94 (Register 94, No. 28).

§ 30357. Form RH 2364—Notice to Employees. [Repealed]

HISTORY

1. Repealer filed 8-23-76; effective thirtieth day thereafter (Register 76, No. 35). For prior history, see Register 73, No. 25.

§ 30358. Form RH 2365—Current Occupational External Radiation Exposure. [Repealed]

NOTE: Authority cited: Sections 208 and 25811, Health and Safety Code. Reference: Sections 25801, 25802, 25815, 25875 and 25876, Health and Safety Code.

HISTORY

1. Amendment filed 5-13-69; effective thirtieth day thereafter (Register 69, No. 20).
2. Repealer filed 6-18-87; operative 7-18-87 (Register 87, No. 28).

Group 4. Transportation of Radioactive Material

Article 1. Requirements for Transportation of Radioactive Material

§ 30373. Transportation Regulations.

(a) Except as authorized in a general license or a specific license, or as exempted in this subchapter, a licensee may not deliver radioactive material to a carrier for transport or transport radioactive material. Licensees authorized to receive, possess, use or transfer radioactive material shall, if they deliver radioactive material to a carrier for transport, transport it outside the site of usage as specified in the specific license, or on public highways, comply with, appropriate to the mode of transport, title 10, Code of Federal Regulations, part 71 (10 CFR 71) and Appendix A (as of January 1, 2007), which is hereby incorporated by reference with the following exceptions:

(1) 10 CFR 71, sections 71.0 through 71.3, 71.6 through 71.13, 71.14(b), 71.16, 71.18, 71.19, 71.24, 71.25, 71.31 through 71.45, 71.51 through 71.81, 71.91, 71.93, 71.95, 71.99, 71.100, 71.101(c)(2), (d), (e), and (f), 71.103(a), (c) through (f), and 71.107 through 71.131 are not incorporated by reference;

(2) Any references to the United States Nuclear Regulatory Commission or any component thereof shall be deemed to be a reference to the "Department" as defined in section 30100, except for the reference found in the definition of "certificate of compliance" in 10 CFR 71.4;

(3) The terms "Close reflection by water," "Containment system," "Maximum normal operating pressure," "Optimum interspersed hydrogenous moderation," "Spent nuclear fuel or spent fuel," and "State" found in 10 CFR 71.4 are not incorporated by reference;

(4) When the term "licensed material" is used within the material incorporated by this section, it shall mean any radioactive material including source material, special nuclear material, or byproduct material received, possessed, used, transferred or disposed of under a general or specific license issued by the NRC, or by any other Agreement State or by any state that has been either provisionally or finally designated as a Licensing State by the Conference of Radiation Control Program Directors, Inc.; and

(5) Federal Department of Transportation regulations as of January 1, 2007 referenced in 10 CFR 71.5 are hereby incorporated by reference.

(b) Persons are exempt from this regulation to the extent that they transport any radioactive material or offer any radioactive material to a carrier for transportation where such transportation is subject to the exclusive jurisdiction of the United States Federal Government.

(c) Physicians are exempt from the requirements of this section to the extent that they transport radioactive material for use in the practice of medicine. However, any physician operating under this exemption shall possess a specific license issued pursuant to section 30195 authorizing human use of radioactive material.

NOTE: (1) Authority cited: Sections 114765, 114820, 115000 and 131200, Health and Safety Code. Reference: Sections 114740, 114765, 131050, 131051 and 131052, Health and Safety Code.

NOTE: (2) Copies of Title 10, Code of Federal Regulations—Energy, and Title 49, Code of Federal Regulations—Transportation, are for sale by the Superintendent of Documents, U.S.Government Printing Office, Washington, D.C. 20402. Copies can also be obtained at: http://www.access.gpo.gov/nara/cfr/cfr-table-search.html#page1.

HISTORY

1. Repealer of group 4 and new group 4 (sections 30365–30380) filed 11–29–65; effective thirtieth day thereafter (Register 65, No. 23). For prior history, see Register 62, No. 1.
2. Repealer of article 1 (sections 30365, 30366 and 30368); repealer of article 2 (section 30370); renumbering and amendment of former article 3 (section 30373) to article 1 (section 30373); repealer of article 4 (section 30378) and repealer of article 5 (section 30380) filed 6–6–85; effective thirtieth day thereafter (Register 85, No. 23). For prior history, see Registers 76, No. 4; 73, No. 25; 69, No. 20; and 67, No. 46.
3. Change without regulatory effect of NOTE (Register 88, No. 6).
4. Amendment of subsection (a) filed 9–16–92; operative 10–16–92 (Register 92, No. 38).
5. Amendment of section and NOTE filed 4–24–2009; operative 5–24–2009 (Register 2009, No. 17).

Group 5. Participation by Local Health Departments

§ 30385. Authority. [Repealed]

HISTORY

1. Repealer of Article 1 (Sections 30385 and 30386) filed 1–10–86; effective thirtieth day thereafter (Register 86, No. 2).

§ 30390. General Definitions. [Repealed]

HISTORY

1. Amendment filed 1–22–76; effective thirtieth day thereafter (Register 76, No. 4).
2. Repealer of Article 2 (Section 30390) filed 1–10–86; effective thirtieth day thereafter (Register 86, No. 2).

Article 1. Local Health Departments

§ 30393. Participation in Control Program.

Participation in the State radiation control program shall be pursuant to an approved contract between the Department and the local health department. A local health department desiring to participate in the State radiation control program within its area of jurisdiction shall apply to the Department.

NOTE: Authority cited: Sections 208, 25651 and 25811, Health and Safety Code. Reference: Sections 25801, 25810, 25875 and 25876, Health and Safety Code.

HISTORY

1. Renumbering of former Article 3 to Article 1 and amendment of Section 30393 filed 1–10–86; effective thirtieth day thereafter (Register 86, No. 2).

§ 30394. Application for Participation.

Application shall be made in writing, and shall set forth:

(a) The names and qualifications of personnel to be assigned to the radiation control program;

(b) The numbers and types of radiation survey instruments available;

(c) The administrative relationship between the radiation control program and other programs of the local health department; and

(d) A showing that the radiation control program proposed by the local health department is compatible with standards imposed upon the State by the U.S. Nuclear Regulatory Commission pursuant to the agreement contained in the Health and Safety Code, Section 25876, and the general policy statement "Guidelines for NRC Review of Agreement State Radiation Control Programs" (46 FR 59341).

NOTE: Authority cited: Sections 208, 25651 and 25811, Health and Safety Code. Reference: Sections 25801, 25810, 25875 and 25876, Health and Safety Code.

HISTORY

1. Amendment filed 1–10–86; effective thirtieth day thereafter (Register 86, No. 2).
2. Change without regulatory effect of subsection (d) (Register 88, No. 6).

§ 30395. Contract Authorizing Participation.

(a) An application will be approved if the Department determines with the concurrence of the Department of Industrial Relations that the showings required by Section 30394 are complete.

(b) Any authorization pursuant to this article shall be in the form of a contract setting forth, as a minimum:

(1) Duties and responsibilities of the local health department;

(2) Conditions of financial reimbursement to the local health department; and

(3) Terms and conditions for termination of the contract.

NOTE: Authority cited: Sections 208, 25651 and 25811, Health and Safety Code. Reference: Sections 25801, 25810, 25875 and 25876, Health and Safety Code.

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(32) "Mammographic radiologic technology" means the performance of radiologic technology for purposes of obtaining a mammogram.

(33) "Outside of Department jurisdiction" means any location within the State that is not subject to the laws and regulations of the Department.

(34) "Program director" means that individual who is responsible for those items specified in section 30419(a), and who meets the requirements of section 30418.

(35) "Qualified practitioner" means any of the following persons acting within the scope of the person's certificate or permit:

(A) A certified supervisor and operator; or

(B) Any CRT or XT who has at least two years of radiologic technology experience.

(36) "Radiography" means the procedure for creating an X-ray image, and includes one or more of the following:

(A) Positioning the patient;

(B) Selecting exposure factors; or

(C) Exposing the patient and the recording medium to X-rays.

(37) "Radiologic technology" means the application of X-rays on human beings for diagnostic or therapeutic purposes.

(38) "Radiologic technology certification school" means an entity approved pursuant to section 30412 that provides to individuals an educational program designed to establish eligibility for a certificate in:

(A) Diagnostic Radiologic Technology issued pursuant to section 30440; or

(B) Therapeutic Radiologic Technology issued pursuant to section 30440.

(39) "Radiologic technologist fluoroscopy permit school" means an entity approved pursuant to section 30412 that provides to individuals an educational program designed to establish eligibility for a radiologic technologist fluoroscopy permit issued pursuant to section 30451.

(40) "Supervising licentiate" means a certified supervisor and operator who is responsible for supervision of X-ray machine use at a clinical site.

(41) "Supervision" means responsibility for, and control of, quality, radiation safety, and technical aspects of all X-ray examinations and procedures.

(42) "Therapeutic radiologic technology" means the performance of radiologic technology for therapeutic purposes.

(43) "X-ray bone densitometry" means a radiologic examination of all or part of the skeleton, utilizing X-rays from an X-ray source which is mechanically joined to a detector for scanning all or part of the skeleton under computer control.

(44) "XT" means a limited permit X-ray technician.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 106990, 114850, 114870, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10-11-2013; operative 10-11-2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41). For prior history, see Register 2001, No. 44.

§ 30400.5. Approved Continuing Education Credit. [Repealed]

NOTE: Authority cited: Sections 100275 and 114870(a), Health and Safety Code. Reference: Sections 106995, 114840, 114845, 114870(b), 114870(c) and 114870(e), Health and Safety Code.

HISTORY

1. New section filed 10-29-2001; operative 11-28-2001 (Register 2001, No. 44).
2. Repealer filed 10-11-2013; operative 10-11-2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30400.40. Fluoroscopy. [Repealed]

NOTE: Authority cited: Sections 100275 and 114870(a), Health and Safety Code. Reference: Sections 106965, 107110, 114870(b), 114870(c) and 114870(e), Health and Safety Code.

HISTORY

1. Renumbering of former section 30400 to new section 30400.40, including amendment of NOTE, filed 10-29-2001; operative 11-28-2001 (Register 2001, No. 44).
2. Repealer filed 10-11-2013; operative 10-11-2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30400.60. Mammographic Examination. [Repealed]

NOTE: Authority cited: Sections 100275 and 114870(a), Health and Safety Code. Reference: Sections 106995, 114845, 114870(b) and (c), Health and Safety Code.

HISTORY

1. New section filed 10-29-2001; operative 11-28-2001 (Register 2001, No. 44).
2. Repealer filed 10-11-2013; operative 10-11-2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30400.85. Radiography. [Repealed]

NOTE: Authority cited: Sections 100275 and 114870(a), Health and Safety Code. Reference: Sections 106965, 106975, 107045, 107110, 114850, 114870(b), 114870(c) and 114870(e), Health and Safety Code.

HISTORY

1. Renumbering of former section 30401 to new section 30400.85, including amendment of NOTE, filed 10-29-2001; operative 11-28-2001 (Register 2001, No. 44).
2. Repealer filed 10-11-2013; operative 10-11-2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30400.95. X-ray Bone Densitometry. [Repealed]

NOTE: Authority cited: Sections 100275 and 114870(a), Health and Safety Code. Reference: Sections 106965, 107045 and 114870(c), Health and Safety Code.

HISTORY

1. Renumbering of former section 30401.6 to new section 30400.95, including amendment of NOTE, filed 10-29-2001; operative 11-28-2001 (Register 2001, No. 44).
2. Repealer filed 10-11-2013; operative 10-11-2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30401. Radiography. [Renumbered]

NOTE: Authority cited: Section 25668(a), Health and Safety Code. Reference: Section 25668, Health and Safety Code.

HISTORY

1. Renumbering of former section 30401 to new section 30400.85 filed 10-29-2001; operative 11-28-2001 (Register 2001, No. 44).

§ 30401.6. X-ray Bone Densitometry. [Renumbered]

NOTE: Authority cited: Section 114870(a), Health and Safety Code. Reference: Section 114870(c), Health and Safety Code.

HISTORY

1. New section filed 9-15-97 as an emergency; operative 9-15-97 (Register 97, No. 38). A Certificate of Compliance must be transmitted to OAL by 1-13-98 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 9-15-97 order, including amendment of section heading and section, transmitted to OAL 1-8-98 and filed 2-24-98 (Register 98, No. 9).
3. Renumbering of former section 30401.6 to new section 30400.95 filed 10-29-2001; operative 11-28-2001 (Register 2001, No. 44).

Article 2. Special Permits

§ 30402. Special Permits.

(a) To obtain a special permit an applicant shall have on file with the Department a complete application.

(b) The Department considers an application for a special permit complete if all of the following conditions have been met:

(1) Application is made on forms furnished by the Department.

(2) Fee is paid pursuant to Section 30408.

(3) The application is accompanied by:

(A) A statement from a licentiate of the healing arts who holds a certificate or permit issued pursuant to Sections 30466 or 30467 attesting that efforts to employ a Certified Radiologic Technologist were unsuccessful.

(B) A copy of a notice of employment opportunity for a radiologic technologist in a local newspaper or periodical for the position for which the special permit is being sought.

(4) The Department ascertains, by reviewing X-ray machine registration records, that no other medical X-ray facility capable of providing the same radiologic health care that would be delivered at the applicant's facility is available in the locality where the special permit is being sought.

(c) Special permits shall be issued for a period of time not to exceed one year.

NOTE: Authority cited: Section 25668(a), Health and Safety Code. Reference: Section 25670, Health and Safety Code.

Article 3. Requirements for Continuing Education

§ 30403. Requirements for Continuing Education.

(a) Each individual certified or permitted pursuant to sections 30440, 30444, 30451, and/or 30455.1 shall, in the two years immediately preceding the expiration date of the certificate or permit, earn 24 approved continuing education credits, four of which shall be in digital radiography. Any credits required in subsections (a)(1) through (a)(3) may be applied to digital radiography credits if applicable. If an individual holds:

(1) A mammographic radiologic technology certificate issued pursuant to section 30455.1, 10 of the 24 credits shall be in mammography;

(2) A radiologic technologist fluoroscopy permit issued pursuant to section 30451, four of the required 24 credits shall be in radiation safety for the clinical uses of fluoroscopy; or

(3) Both authorizations specified in subsections (a)(1) and (a)(2), of the 24 required credits, 10 shall be in mammography and four in radiation safety for the clinical uses of fluoroscopy.

(b) Each individual certified or permitted pursuant to section 30466 shall, in the two years immediately preceding the expiration date of the certificate or permit, earn 10 approved continuing education credits. If an individual holds a fluoroscopy supervisor and operator permit, four of the 10 credits shall be in radiation safety for the clinical uses of fluoroscopy.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 106965, 106995, 107015, 107070, 107110, 114840, 114845, 114870(b), 114870(c), 114870(e), 114870(f), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of article 3 heading and repealer and new section heading, section and NOTE filed 10–29–2001; operative 11–28–2001 (Register 2001, No. 44).
2. Amendment of article heading and section heading, repealer and new section and amendment of NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30403.5. Renewal Procedures.

Each individual seeking renewal of a certificate or permit issued pursuant to this subchapter shall:

(a) At least 30 calendar days prior to the expiration date on the certificate or permit, submit to the Department a complete application for renewal consisting of the applicant's name, mailing address, telephone number, and certificate or permit type and number, and for licentiates of the healing arts, the license number and expiration date of the applicant's healing arts license.

(b) Every two years, submit to the Department the following information for each approved continuing education credit, as required by section 30403:

(1) The identity of the group listed in section 30400(a)(4) that has accepted the instruction;

(2) The provider of the instruction and their contact information;

(3) A description of the instruction; and

(4) The date(s) of the instruction.

(c) Pay the fee as required by section 30408.

(d) The Department may deny any certificate or permit renewal on the basis of any of the reasons set forth in section 107070 of the Health and Safety Code which pertain to denial of certificates and permits, notwithstanding the fact that the individual has otherwise satisfied the requirements of this section.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 106965, 106995, 107015, 107070, 107110, 114840, 114845, 114870(b), 114870(c), 114870(e), 114870(f), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–29–2001; operative 11–28–2001 (Register 2001, No. 44).
2. Amendment of section and NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30403.8. Recordkeeping.

Each individual certified or permitted pursuant to this subchapter shall maintain documents that evidence the individual having earned approved continuing education credits for four years following the dates the credits were earned. Such documents shall be made available to the Department upon request.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 106965, 106995, 107015, 107035, 107070, 107110, 114840, 114845, 114870(b), 114870(c), 114870(e), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–29–2001; operative 11–28–2001 (Register 2001, No. 44).
2. Amendment of section heading, section and NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Article 4. Providing Certificate or Permit to User

§ 30404. Providing Certificate or Permit to User.

An individual who holds a certificate or permit issued pursuant to this subchapter shall provide to the user, as defined in section 30100, or the person designated by the user to receive the document, a copy of the individual's certificate or permit.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 106985, 114880, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Repealer and new article heading and section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Article 5. Deadlines

§ 30405. Deadlines.

(a) For purposes of this subchapter:

(1) Receipt of an application for any certificate, permit, or approval issued pursuant to this subchapter shall be deemed to occur on the date the application, information, documents, or fees are received by the Department; and

(2) An application is considered acceptable when all documents, information, or fees required to be submitted on or with the application have been received by the Department, so as to allow the Department to determine if the applicant:

(A) Is qualified for examination pursuant to sections, 30440, 30444, 30451, 30455.1, or 30466, as applicable;

(B) For an approval, meets the eligibility requirements pursuant to section 30412; or

(C) When submitting an application pursuant to section 30414, meets the eligibility requirements specified in that section; and

(3) Written notification by the Department to applicants shall be deemed to occur on the date the notifications are postmarked, or if electronically received, date of receipt as indicated on the electronic communication.

(b) For any certificate or permit issued pursuant to this subchapter, the Department shall notify the applicant of one of the following:

(1) Within 30 calendar days of receipt of an application, as specified in subsection (a)(1), that the application is not acceptable and what specific information, documentation or fee the applicant shall submit within 30 calendar days in order for the Department to consider the application acceptable as specified in subsection (a)(2)(A). The application shall be denied if the applicant, after a second request for specific information, documentation, or fees, fails to address the Department's specific request for information, documentation, or fees, submission of which is required

to make the application acceptable. The applicant may alternatively submit a new application;

(2) Within 30 calendar days of receipt of an application, that the application is an acceptable application, as specified in subsection (a)(2)(A), and what examinations the applicant shall pass within one calendar year;

(3) Within 45 calendar days of taking an examination, whether the applicant has met the applicable eligibility requirement.

(c) Within 120 calendar days of receipt of an application, as specified in subsection (a)(1), for an approval issued pursuant to this subchapter, the Department shall notify the applicant of one of the following:

(1) That the application is not acceptable, or that the applicant did not pass the inspection required pursuant to section 30412(b)(2), and what specific information, documentation or fee the applicant shall submit within 30 calendar days in order for the Department to consider the application acceptable as specified in subsection (a)(2)(B) or (C). The application shall be denied if the applicant, after a second request for specific information, documentation, or fees, fails to address the Department's specific request for information, documentation, or fees, submission of which is required to make the application acceptable. The applicant may alternatively submit a new application;

(2) That the application is acceptable and that the applicant has met the applicable eligibility requirements.

(d) The Department shall deem an application to have been withdrawn by any applicant who fails to:

(1) Pursuant to subsections (b)(1) or (c)(1), respond to the Department's request to submit specific information, documentation or a required fee; or

(2) Pursuant to subsection (b)(2), pass Department–approved examinations.

(e) Any applicant deemed by the Department to have withdrawn an application pursuant to subsection (d) may reapply by submitting a new application.

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Sections 107000, 107005, 107010, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of section and NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Article 6. Change of Name and Address

§ 30406. Change of Name and Address.

Each individual certified or permitted pursuant to this subchapter shall report to the Department any change of name or mailing address within 30 calendar days of the change.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 106965, 107015, 107110, 114870(b), 114870(c), 114870(e), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New article 6 (section 30406) and section filed 10–29–2001; operative 11–28–2001 (Register 2001, No. 44).
2. Amendment of NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Article 7. Fees

§ 30408. Certificate and Permit Fees.

(a) For any certificate or permit issued pursuant to this subchapter in accordance with the Radiologic Technology Act (Health and Safety Code section 27(f)), the application fee shall be $100.00 for licentiates and $88.00 for technologists and limited permittees. If required to pass an examination to obtain the certificate or permit, the examination fee shall be $88.00 for each examination administered by the Department or as specified by the entities or organizations designated by the Department to administer Department–approved examinations.

(b) The fee for repeating an examination failed within the previous 12 months shall be $88.00 per examination.

(c) Each individual applying to renew a certificate or permit shall pay an annual renewal fee of $41.00. The renewal fee shall be collected biennially and such fee shall be twice the annual renewal fee.

(d) The fee for a duplicate certificate or permit shall be $1.28.

(e) The penalty fee for renewal of any expired certificate or permit shall be $6.40 and shall be in addition to the fee for renewal.

(f) Failure to pay the annual fee for renewal on or before the expiration date of the certificate or permit shall automatically suspend the certificate or permit. If the annual renewal fee is not paid within six months following such date, the certificate or permit shall be revoked. A certificate or permit revoked for nonpayment of the renewal fee may be reinstated within five years from the time of revocation upon payment of the penalty fee specified in subsection (e) plus twice the annual renewal fee specified in subsection (c). If the application for reinstatement is not made within five years from the date of suspension of the certificate or permit, the certificate or permit shall be canceled and shall not be subject to reinstatement.

(g) Fees required by this section are:

(1) Subject to adjustment pursuant to section 100425 of the Health and Safety Code; and

(2) Nonrefundable.

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Sections 107080, 107085, 107090, 107095, 107100, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment filed 3–7–78; effective thirtieth day thereafter (Register 78, No. 10).
2. Amendment of subsections (a)–(f), and adoption of subsections (g), (h), and NOTE filed 11–1–93 as an emergency; operative 11–1–93 (Register 93, No. 45). A Certificate of Compliance must be transmitted to OAL by 3–1–94 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 11–1–93 order transmitted to OAL 2–24–94; disapproved by OAL 4–7–94 (Register 94, No. 27).
4. Amendment of subsections (a)–(f) and new subsections (g)–(h) and NOTE refiled 7–6–94 as an emergency; operative 7–6–94 (Register 94, No. 27). A Certificate of Compliance must be transmitted to OAL by 11–3–94 or emergency language will be repealed by operation of law on the following day.
5. Certificate of Compliance as to 7–6–94 order transmitted to OAL 6–30–94 and filed 7–20–94 (Register 94, No. 29).
6. Amendment of section and NOTE filed 6–22–2005 as an emergency; operative 6–22–2005 (Register 2005, No. 25). A Certificate of Compliance must be transmitted to OAL by 10–20–2005 or emergency language will be repealed by operation of law on the following day.
7. Certificate of Compliance as to 6–22–2005 order transmitted to OAL 9–20–2005 and filed 10–18–2005 (Register 2005, No. 42).
8. Amendment of section heading, repealer of subsections (g)–(k), new subsections (g)–(g)(2) and amendment of NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).
9. Amendment filed 6–15–2015; operative 6–15–2015. Submitted to OAL for filing and printing only pursuant to Health and Safety Code section 100425 (Register 2015, No. 25).

§ 30409. Schedule of Fees for Schools.

(a) Each person or entity applying to be an approved school pursuant to section 30412 shall pay an application fee of $1,383.00 with the application for approval.

(b) Each approved school shall, on or before the anniversary of the effective date of approval, pay a fee of $224.00 and, for each physical location where clinical education is given, a fee of $129.00.

(c) Each person or entity approved as a limited permit X–ray technician school pursuant to section 30412 that requests approval to provide training in a new limited permit category as specified in sections 30442 and 30443 shall pay an application fee of $506.00 with the application for approval.

(d) Any approved school failing to pay the annual fees by the anniversary of the effective date of the approval shall immediately cease operations requiring Department approval until such time as the annual fees and a late fee of 25 percent of the annual fees has been paid.

(e) Fees required by this section are:

(1) Subject to adjustment pursuant to section 100425 of the Health and Safety Code; and

(2) Nonrefundable.

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Sections 107080, 107085, 107090, 107095, 107100, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).
2. Amendment of subsections (a)–(c) filed 6–15–2015; operative 6–15–2015. Submitted to OAL for filing and printing only pursuant to Health and Safety Code section 100425 (Register 2015, No. 25).

Article 8. Authorization to X–Ray Technicians to Perform Digital Radiography

§ 30410. Authorization to X–Ray Technicians to Perform Digital Radiography.

(a) Any individual holding a current and valid limited permit in the following categories, as defined in section 30443, may perform digital radiography within their respective scopes of practice if the individual has completed 20 hours or more of the instruction specified in section 30410.2:

(1) Chest radiography.

(2) Extremities radiography.

(3) Gastrointestinal radiography.

(4) Genitourinary radiography.

(5) Leg–podiatric radiography.

(6) Skull radiography.

(7) Torso–skeletal radiography.

(b) To be eligible for authorization pursuant to subsection (a), the individual shall submit the following to the department:

(1) Name and permit number, as specified on the individual's limited permit issued by the Department; and

(2) Documentation that the individual has completed the instruction in digital radiologic technology specified in section 30410.2 from a:

(A) Diagnostic radiologic technology school approved by the Department pursuant to section 30412;

(B) Limited permit X–ray technician school approved by the Department pursuant to section 30412; or

(C) Provider whose continuing education activity pertaining to the subject areas specified in section 30410.2 is designated as "Category A" credit by an organization approved by the American Registry of Radiologic Technologists as a Recognized Continuing Education Evaluation Mechanism.

(c) Completion of the instruction specified in section 30410.2 shall be considered 20 approved continuing education credits for purposes of complying with section 30403 only if the credit is identified in accordance with section 30403.5(b).

NOTE: Authority cited: Sections 114870, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 106995, 114840, 114845 and 114870, Health and Safety Code.

HISTORY

1. New article 8 (sections 30410–30140.2) and section filed 2–14–2008; operative 3–15–2008 (Register 2008, No. 7).
2. Amendment of subsections (b)(1) and (b)(2)(A)–(B) filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30410.2. Instruction in Digital Radiologic Technology.

(a) Instruction in digital radiologic technology shall be no less than 20 hours in length and shall include all of the following:

(1) Basic principles of digital radiography addressing digital image characteristics, types of digital receptors in cassette–less systems and cassette–based systems, comparison of detector properties and evaluative criteria, and dynamic range versus latitude;

(2) Image acquisition addressing raw data acquisition, and image extraction and exposure indicators in cassette–less and cassette–based systems;

(3) Image acquisition errors addressing exposure field recognition, histogram analysis error, low intensity radiation response, scatter control such as coning and use of optimal exposures, and grid use including Moiré effect;

(4) Software (default) image processing addressing automatic rescaling, final image processing, effects of excessive processing, and recognition of image processing errors that affect image clarity;

(5) Fundamental principles of exposure addressing optimal receptor exposure, receptor response and detective quantum efficiency, selection of exposure factors, exposure myths associated with digital imaging systems, controlling patient exposure, monitoring patient exposure;

(6) Image evaluation addressing evidence of appropriate exposure level and exposure recognition failure or histogram analysis error, contrast, recorded detail, and artifacts;

(7) Quality assurance and maintenance issues addressing initial acceptance testing, cassette–based system reader preventive maintenance, plate maintenance, uniformity of default processing codes, and reject analysis; and

(8) Image display issues to include types of viewing monitors as compared to film/screen, picture archiving and communication systems, teleradiology, and operator responsibilities such as image annotation and manipulation, and patient confidentiality.

NOTE: Authority cited: Sections 114870, 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 106995, 114840, 114845 and 114870, Health and Safety Code.

HISTORY

1. New section filed 2–14–2008; operative 3–15–2008 (Register 2008, No. 7).

Group 2. Training of Students of Radiologic Technology

Article 1. General

§ 30411. General Provisions.

(a) A person may not perform radiologic technology unless they meet the requirements of the Act.

(b) Unless approved pursuant to section 30412, a person or entity may not offer, conduct, or attempt to offer or conduct an educational program, or use any title or designation indicating or implying they are an approved school, approved to operate, or have an approval to operate.

(c) An approved school may not use a clinical site unless and until the site is approved as an affiliated clinical site pursuant to sections 30412 or 30414.

(d) A clinical site may be shared between approved schools only if approved pursuant to sections 30412 or 30414.

(e) An approved radiologic technology certification school accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT) shall be deemed to meet sections 30418, 30419 and 30423 and 30421 or 30422, as applicable. Once a school is no longer JRCERT–accredited, the school shall be subject to sections 30418, 30419 and 30423 and 30421 or 30422, as applicable.

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Section 107035, 107045, 107050, 107055, 114870, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30412. Eligibility for and Issuance of Approval and Renewal of Approval of Schools.

(a) The Department may grant approval or renewal of approval of the following types of approved schools:

(1) Diagnostic Radiologic Technology (RT) School;

(2) Therapeutic RT School;

(3) Radiologic Technologist Fluoroscopy Permit School; and

(4) Limited Permit X–ray Technician School.

(b) To be eligible for approval as an approved school an applicant shall:

(1) Submit to the Department the application described in section 30413; and

(2) Pass a Department inspection verifying the content and commitments made in the application and further verifying that the applicant meets the applicable requirements of this subchapter.

(c) Approved schools shall be responsible for complying with any commitment made within the application material or correspondence. If a commitment is less restrictive than a regulation, the regulation shall apply. Failure to follow commitments shall be considered a reason pursuant to section 30436 to revoke, suspend, limit or condition any approval. An approved school may amend its commitments and upon Department approval implement those commitments, provided that the school submits an amendment request to the Department containing:

(1) The school's name and number as shown on the approval;

(2) The nature and scope of the request; and

(3) The reasons for the request and supporting justifications, including any documents relied upon.

(d) Approval to operate shall be granted when the Department determines the applicant meets the requirements of the Act and this subchapter. Approval shall be valid for one year and may be re–validated pursuant to section 30413.5.(e) Approved schools shall be subject to Department inspections, both announced and unannounced.

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Section 107035, 107045, 107055, 114870, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30413. Complete School Approval Application.

(a) An application submitted for compliance with section 30412 shall be considered acceptable if the application contains the following:

(1) The legal and institutional name of the applicant, together with its street and mailing addresses, email address, and the telephone numbers;

(2) The name, title, email address, and telephone number of the chief executive officer, dean, or department administrator and program director;

(3) The type of school approval pursuant to section 30412(a) that is requested;

(4) An attestation that curricula meet the requirements of sections 30421, 30422, 30423, 30424, 30425, or 30427.2, as applicable.

(5) The number of proposed students;

(6) Copies of the following;

(A) For each clinical site, the information required pursuant to section 30414(a)(2) through (a)(4);

(B) If required to be approved by the Bureau of Private and Postsecondary Education (BPPE), the BPPE approval documentation or the exemption verification document issued by the BPPE pursuant to Education Code section 94874.7;

(C) The names of the program director and clinical coordinators required pursuant to section 30418, applicable to the type of school approval requested;

(D) The radiation protection program required pursuant to section 30420; and

(E) An example of the certificate or diploma to be issued to each student upon completion of program pursuant to section 30437(a)(1);

(7) The signature and date of signature of each individual specified in subsection (a)(2); and

(8) The application fee required pursuant to section 30409.

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Section 107035, 107045, 107055, 114870, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30413.5. Approval Re–Validation, Maintenance of Approval, and Annual Report.

(a) To re–validate and maintain approval, an approved school shall submit to the Department at least 60 days prior to the approval's expiration date an annual report containing the following:

(1) Attestation to the following:

(A) All changes required to be submitted pursuant to section 30435 were submitted as required;

(B) The radiation protection program required pursuant to section 30420 was annually reviewed as required;

(C) All affiliated clinical sites comply with applicable requirements;

(D) All affiliation agreements are current and up to date;

(E) Supervision of students at affiliated clinical sites is conducted in accordance with section 30417; and

(F) Faculty qualifications specified in section 30418 are documented and available for Department inspection; and

(2) The annual fee specified in section 30409.

(b) Failure to submit the annual report on or before the anniversary of the approval shall automatically suspend the approval. If the report is not submitted within six months following the date, the approval shall be revoked and shall not be subject to reinstatement. A new initial application may be submitted pursuant to section 30412.

(c) The Department shall review the annual report only upon receipt of any required fees. If the report and fees are acceptable, approval shall be re–validated for one year.

NOTE: Authority cited: Sections 107045, 114870 and 131200, Health and Safety Code. Reference: Sections 107045, 107055, 114870, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30414. Approval as an Affiliated Clinical Site.

(a) For clinical sites that have not been approved pursuant to section 30412 as an affiliated clinical site (ACS) to be eligible for approval as an ACS, an approved school shall submit an acceptable application containing the following:

(1) Name of requesting school and its school identification number as indicated on the Department's approval to operate;

(2) For each clinical site, the following:

(A) Name, physical address, and telephone number of the proposed clinical site;

(B) Radiation machine registration number of the clinical site as indicated on the certificate of registration issued to the site for purposes of Article 1 (commencing at section 30108), Group 1.5 of subchapter 4.0 of this chapter; and

(C) Except for approved schools whose clinical site is under the same business entity, a copy of the affiliation agreement between the approved school and the clinical site containing the information required pursuant to section 30415;

(3) For clinical sites outside of Department jurisdiction, an original letter on facility letterhead from the proposed clinical site verifying that the facility meets and voluntarily agrees to comply with the requirements of section 30416. The letter shall be signed by an individual who has the authority to commit the facility to comply with section 30416; and

(4) Name and signature, and date of signature, of the school official or the school's program director.

(b) Approval as an ACS granted pursuant to this section shall be:

(1) Coterminous with the school's approval pursuant to section 30412(d); and

(2) Valid only if the school's approval remains valid.

(c) An approved school may not allow the total number of students at a clinical site to exceed the total clinical capacity (TCC) calculated as follows:

(1) For diagnostic radiologic technology (RT) schools and limited permit (LP) X–ray technician schools (except that an LP school teaching the category of dermatology X–ray therapy shall use the calculation in subsection (c)(2)):

TCC = the lesser of A or B where:

A = total number of qualified practitioners, as defined in section 30400, at the clinical site who provide direct or indirect oversight.

B = total number of available physical resources determined as follows:

B = R + RF + (M4 or M5 as applicable) + (S4 or S5 as applicable) + ER

Where (do not double count rooms or units in the following categories):

R = One times the total number of radiography only rooms;

RF = One times the total number of radiography/fluoroscopy combination rooms;

M4 = 0.5 (if the site has four or fewer mobile units (e.g. radiography or fluoroscopy));

M5 = 1 (if the site has five or more mobile units);

S4 = 0.5 (if the site has four or fewer fixed units in surgery suites);

S5 = 1 (if the site has five or more fixed units in surgery suites); and

ER = One times the total number of fixed units in the emergency department, if applicable; and

(2) For therapeutic RT schools and LP schools teaching the dermatology X–ray therapy category:

TCC = the lesser of A or B where:

A = total number of qualified practitioners, as defined in section 30400, at the clinical site. Section 30417(e) shall be accounted for in determining the value of "A."

B = total number of available physical resources determined as follows:

B = T + S + D + PC

Where:

T = One times the total number of treatment rooms;

S = One times the total number of simulators, if applicable;

D = One times the total number of dosimetry units, if applicable; and

PC = One times the total number of patient care areas.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Section 114870, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30415. Affiliation Agreement Content.

(a) Except as specified in subsection (c), an affiliation agreement shall, at a minimum:

(1) Identify each party by name;

(2) Contain a termination clause that at a minimum provides three months notice of termination or assurance that currently enrolled students assigned to the facility will be able to complete their clinical assignment at that facility;

(3) Include the name, signature, and date of signature of the:

(A) Person, including the person's title, who has the authority to commit the clinical site to the affiliation agreement; and

(B) Program director of the approved school; and

(4) Be updated as changes, including changes to personnel and party names, occur.

(b) All affiliated clinical sites are subject to announced and unannounced Department inspections.

(c) An affiliation agreement is not required of approved schools whose clinical site is under the same business entity.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 107035, 114870, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30416. Use of Clinical Sites Outside of Department Jurisdiction.

(a) Upon Department approval pursuant to section 30412 or 30414, an approved school may use clinical sites outside of Department jurisdiction, if the school and the clinical site have an affiliation agreement in accordance with section 30415, and provided that each clinical site voluntarily agrees to:

(1) Register with the Department pursuant to section 30108, except that registration fees required pursuant to Group 1.5 (commencing at section 30108) of subchapter 4.0 of this chapter are waived;

(2) For each licensed physician providing supervision, provide to the approved school a copy of the physician's current and valid certificate or permit issued pursuant to section 30466;

(3) For each person acting as a qualified practitioner for direct or indirect oversight, provide to the approved school evidence that the person is a qualified practitioner as defined in section 30400. The clinical site shall provide to the approved school a copy of the qualified practitioner's certificate issued pursuant to section 30440 and 30455.1, as applicable, and if that practitioner performs any activity identified in section 30450, a copy of that practitioner's permit issued pursuant to sections 30451;

(4) Fulfill the requirements of section 30417; and

(5) Allow Department personnel access to the clinical site for announced or unannounced inspections to determine compliance with the Act or the Radiation Control Law (RCL) (Health and Safety Code section 114960 et. seq.), or the regulations adopted pursuant to the Act or RCL.

(b) Each approved school shall confirm that X–ray machines used and personnel involved in the education and training of students in clinical sites located outside of Department jurisdiction are in compliance with this subchapter and subchapter 4.0 (commencing at section 30100) of this chapter, and shall provide documentation of that compliance to the Department upon request.

NOTE: Authority cited: Sections 114870(a), 131051, 131052, 131055, and 131200, Health and Safety Code. Reference: Sections 107035, 114870(d), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30417. Student Supervision at Clinical Sites.

(a) Each clinical site used by the following approved schools shall designate in writing a lead supervising licentiate who possesses the specified certificate or permit, as follows:

(1) For diagnostic radiologic technology schools, radiologic technologist fluoroscopy permit schools, and limited permit X–ray technician schools, the lead supervising licentiate shall possess either a:

(A) Radiology supervisor and operator certificate. For limited permit X–ray technician schools teaching the dental X–ray laboratory category, the radiology supervisor and operator certificate holder may only be a licensed physician and surgeon; or

(B) Radiography supervisor and operator permit and, when applicable, a fluoroscopy supervisor and operator permit. For limited permit X–ray technician schools teaching the dental X–ray laboratory category, the radiography supervisor and operator permit holder may only be a licensed physician and surgeon;

(2) For therapeutic radiologic technology schools, the lead supervising licentiate shall possess a radiology supervisor and operator certificate.

(b) The lead supervising licentiate shall:

(1) Be responsible for supervision of students and for the acts and omissions of both students and any other individual providing direct or indirect oversight to students;

(2) Ensure a supervising licentiate is available for consultation by both students and any other individuals providing direct or indirect oversight to students; and

(3) Be responsible for compliance with the clinical site's affiliation agreement, or, if an affiliation agreement is not required, section 30415(a)(2).

(c) Except as provided in subsection (e), diagnostic radiologic technology students, when operating X–ray equipment, shall be under direct oversight until the person providing direct oversight has determined that the student has achieved competency for the particular procedure. For students in a radiologic technology certification school, the determination that the student has achieved competency shall be made by a qualified practitioner who is either a certified radiologic technologist, as applicable, or a supervising licentiate. For students in a limited permit X–ray technician school, the determination that the student has achieved competency shall be made by a supervising licentiate. Once a student has achieved competency, the student may then perform procedures under indirect oversight. However, students shall continue to be under direct oversight during performance of a repeat of any unsatisfactory radiograph or image. The competency determination shall be written, dated, and printed and signed by the person providing direct oversight.

(d) Students of therapeutic radiologic technology, when operating X–ray equipment, shall be under direct oversight at all times.

(e) Students in an approved limited permit X–ray technician school teaching the category of X–ray bone densitometry, when operating X–ray equipment, shall be under direct oversight at all times.

(f) Persons providing direct or indirect oversight:

(1) May only act as a qualified practitioner for students within the scope of the certificate or permit that qualifies that person as a qualified practitioner; and

(2) Except for a certified supervisor and operator, shall have at least two years of radiologic technology experience.

(g) Approved schools shall maintain and make available to the department for inspection records of competency determinations and documentation of personnel qualifications.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Section 114870, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30418. Faculty Requirements and Qualifications.

(a) Radiologic technology (RT) certification schools shall have:

(1) A program director who:

(A) By January 1, 2016, possesses at least a master's degree from an accredited college or university;

(B) Has at least three years of experience in diagnostic or therapeutic radiologic technology, as applicable; and

(C) Is a qualified practitioner who holds:

1. For diagnostic RT certification schools, either a radiology supervisor and operator certificate issued pursuant to section 30466, both a radiography supervisor and operator permit and, if required pursuant to section 30463, a fluoroscopy supervisor and operator permit issued pursuant to section 30466, or both a diagnostic radiologic technology certificate issued pursuant to section 30440 and, if required pursuant to section 30450, a fluoroscopic radiologic technologist permit; and

2. For therapeutic RT certification schools, either a radiology supervisor and operator certificate issued pursuant to section 30466, or a therapeutic radiologic technology certificate issued pursuant to section 30440; and

(2) If the school has more than 30 students or six or more affiliated clinical sites, at least one full–time equivalent (FTE) clinical coordinator position. This position may be shared by no more than four individuals. Any person who functions as a clinical coordinator shall:

(A) By January 1, 2016, possess at least a baccalaureate degree from an accredited college or university; and

(B) Be a qualified practitioner who meets subsection (a)(1)(C), as applicable.

(b) Limited permit X–ray technician schools shall have:

(1) A program director who:

(A) By January 1, 2016, possesses at least a baccalaureate degree from an accredited college or university;

(B) Has at least three years of experience in diagnostic or therapeutic radiologic technology, as applicable;

(C) Is a qualified practitioner who holds either a radiology supervisor and operator certificate issued pursuant to section 30466, a radiography supervisor and operator permit, a diagnostic radiologic technology certificate issued pursuant to section 30440, or a limited permit, issued pursuant to section 30444, in all permit categories the school is authorized to provide; and

(2) Except for approved schools whose clinical sites are within the same business entity as the school, if the school has more than 30 students or six or more affiliated clinical sites, at least one FTE clinical coordinator position. One FTE position may be shared by multiple individuals but no more than four individuals. Any person who functions as a clinical coordinator shall:

(A) By January 1, 2016, possesses at least an associate degree from an accredited college or university; and

(B) Be a qualified practitioner who meets subsection (b)(1)(C), as applicable.

(c) Radiologic technologist fluoroscopy permit schools shall have:

(1) A program director who:

(A) By January 1, 2016, possesses at least an associate degree from an accredited college or university; and

(B) Has at least three years of experience in diagnostic radiologic technology, as applicable;

(C) Is a qualified practitioner who holds either a radiology supervisor and operator certificate issued pursuant to section 30466, a fluoroscopy supervisor and operator permit issued pursuant to section 30466, or a radiologic technologist fluoroscopy permit issued pursuant to section 30451; and

(2) Except for approved schools whose clinical sites are within the same business entity as the school, if the school has more than 30 students or six or more affiliated clinical sites, at least one FTE clinical coordinator position. One FTE position may be shared by multiple individuals but no more than four individuals. Any person who functions as a clinical coordinator shall:

(A) By January 1, 2016, possesses at least an associate degree from an accredited college or university; and

(B) Be a qualified practitioner who meets subsection (c)(1)(C), as applicable.

(d) Approved schools shall ensure that instructors providing instruction specified in those sections identified in subsection (d)(1) meet the criteria specified in subsection (d)(2):

(1) Sections 30421(a), 30422(a), 30423(b), (c), and (f)(1), 30424(a)(1) through (a)(5), 30425(a)(1) through (a)(3), or 30427.2(a) and (b); and

(2) Instructors shall be qualified to teach the subject, hold academic or professional credentials appropriate to the subject content area taught, be knowledgeable of course development, instruction, evaluation, and academic advising, and, if applicable, be certified or permitted pursuant to the Act. The approved school shall document how the individual meets the criteria and shall maintain that documentation for Department inspection.

(e) Except for when a clinical coordinator is not required pursuant to subsections (a)(2), (b)(2), or (c)(2) a person may not serve as both clinical coordinator and program director.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 114870(a), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30419. Program Director, Clinical Coordinator and Instructor Responsibilities.

(a) The program director shall be responsible for:

(1) Assuring effective program operations;

(2) Overseeing on–going program assessment;

(3) Participating in budget planning;

(4) Maintaining current knowledge of the professional discipline and educational methodologies through continuing professional development; and

(5) Assuming the leadership role in the continued development of the program.

(b) The clinical coordinator shall be responsible for:

(1) Correlating clinical education with didactic education;

(2) Evaluating students;

(3) Participating in didactic and/or clinical instruction;

(4) Supporting the program director to help assure effective program operation;

(5) Coordinating clinical education and evaluates its effectiveness;

(6) Participating in the assessment process;

(7) Cooperating with the program director in periodic review and revision of clinical course materials;

(8) Maintaining current knowledge of the discipline and educational methodologies through continuing professional development; and

(9) Maintaining current knowledge of program policies, procedures, and student progress.

(c) Didactic instructors required pursuant to section 30418(c) shall be responsible for:

(1) Preparing and maintaining course outlines and objectives, instructing and evaluating students, and reporting progress;

(2) Participating in the assessment process;

(3) Supporting the program director to help assure effective program operation;

(4) Cooperating with the program director in periodic review and revision of course materials; and

(5) Maintaining expertise and competence through continuing professional development.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 114870(a), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30420. Radiation Protection Program.

(a) Each approved school shall develop, document and implement a radiation protection program (RPP) commensurate with the scope and extent of the school's activities that will ensure compliance with subchapter 4.0 (commencing at section 30100) of this chapter. As part of the RPP, the school shall:

(1) Designate a faculty member as the school's radiation safety officer (RSO) and another faculty member to serve as the RSO's alternate. The program director shall document and maintain for Department inspection the acceptance by these designated persons to serve as RSO and alternate RSO. Qualifications of the RSO and alternate shall be documented and maintained for Department inspection. Responsibilities of the RSO shall be delineated by the school to include at least the following:

(A) Reviewing the RPP content and implementation annually;

(B) Ensuring the requirements of this section are met;

(C) Reviewing all personnel monitoring dosimetry reports within 10 days of receipt to ensure the occupational dose limits specified in Subpart C of Title 10, Code of Federal Regulations, Part 20 (10 CFR Part 20), incorporated by reference in section 30253, are not exceeded;

(D) Overseeing reporting of student accidents, incidents, or errors related to radiation safety;

(E) If the school possesses reportable sources of radiation, as defined in section 30100, ensuring compliance with the applicable requirements of subchapter 4.0 (commencing at section 30100) of this chapter for reportable sources of radiation;

(2) Monitor occupational radiation exposure to, and supply and require the use of personnel monitoring equipment, as defined in section 30100, by all students;

(3) Ensure personnel monitoring equipment that require processing to determine the radiation dose are processed and evaluated by a dosimetry processor that meets 10 CFR Part 20.1501(c) as incorporated by reference in section 30253;

(4) Investigate, perform an analysis, and take corrective action to prevent future occurrences of radiation exposure to a student exceeding any of the following:

(A) Occupational dose limits specified in 10 CFR Part 20, Subpart C, as incorporated by reference in section 30253; or

(B) Investigational levels established pursuant to subsection (b)(5);

(5) Establish investigational levels to monitor student radiation exposures that when exceeded, will initiate a review or investigation by the RSO. The methodology or reasons for the established levels and actions that will be taken by the RSO when the levels are exceeded shall be documented and maintained for inspection. The investigational levels and actions that will be taken by the RSO to maintain student exposure as low as reasonably achievable shall be documented and provided to students.

(6) Verify that each clinical site used by the school has an RPP as required by 10 CFR Part 20.1101, as incorporated by reference in section 30253;

(7) Establish and implement written policies and procedures pertaining to pregnancy status of students in accordance with 10 CFR Part 20.1208, as incorporated by reference in section 30253. Policies and procedures developed to comply with this provision shall:

(A) Be followed by the school;

(B) Be published and made known to accepted and enrolled students;

(C) Include a notice of voluntary disclosure; and

(D) Provide options for student continuance in the program; and

(8) Be subject to sections 30254, 30255(b)(4) through (b)(6), and 30295 and the applicable record keeping and reporting requirements of Subparts L and M of 10 CFR Part 20, as incorporated by reference in section 30253. The word "user" found in the aforementioned provisions, and defined in section 30100, shall be construed broadly to include an approved school. The report required pursuant to section 30255(b)(6) shall be provided to the student upon graduation, dismissal, suspension, or voluntary withdrawal from the program, or, if the final report has not been received by the date of that event, within 30 days after the student's report is received from the dosimetry processor.

(b) Documentation demonstrating compliance with this section shall be maintained for Department inspection.

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Sections 107045, 114870(d), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New Group 2 (Articles 1–7, Sections 30420–30436, not consecutive) filed 8–21–85; effective thirtieth day thereafter (Register 85, No. 34). For prior history, see Registers 78, No. 10; 72, No. 32; 72, No. 26; 71, No. 25; 71, No. 17 and 71, No. 16.

2. Repealer and new section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Article 2. Radiologic Technology Schools

§ 30421. Curriculum for Approved Diagnostic Radiologic Technology Schools.

Approved diagnostic radiologic technology schools shall require that each student who graduates from the school completes:

(a) The "Radiography Curriculum"* published 2012 by the American Society of Radiologic Technologists (ASRT), which is hereby incorporated by reference.

(b) At least 1,850 hours of clinical training, demonstrating competence in those areas required to meet the clinical competency requirements specified in the "Radiography Didactic and Clinical Competency Requirements"* effective January 2012, published by the American Registry of Radiologic Technologists, which is hereby incorporated by reference.

(c) The training and education specified in Health and Safety Code Section 106985(d).

*Copies of the ARRT and ASRT documents referenced in this section may be obtained at https://www.arrt.org/ and https://www.asrt.org/content/educators/_educatorsstudents.aspx

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Sections 106985, 107045, 114870(d), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of subsection (b)(1), new subsection (c)(18) and amendment of NOTE filed 2–14–2008; operative 3–15–2008 (Register 2008, No. 7).
2. Amendment of section heading, repealer and new section and amendment of NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30422. Curriculum for Approved Therapeutic Radiologic Technology Schools.

Approved therapeutic radiologic technology schools shall require that each student who graduates from the school completes:

(a) The "Radiation Therapy Professional Curriculum"* published 2009 by the American Society of Radiologic Technologists (ASRT), which is hereby incorporated by reference.

(b) At least 1,500 hours of clinical training, demonstrating competence in those areas required to meet the clinical competency requirements specified in "Radiation Therapy Didactic and Clinical Competency Requirements"* effective January 2011, published by the American Registry of Radiologic Technologists, which is hereby incorporated by reference.

(c) The training and education specified in Health and Safety Code Section 106985(d).

*Copies of the ARRT and ASRT documents referenced in this section may be obtained at https://www.arrt.org/ and https://www.asrt.org/content/educators/_educatorsstudents.aspx

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Sections 106985, 107045, 114870(d), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Repealer and new section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Article 3. Radiologic Technologist Fluoroscopy Permit Schools

§ 30423. Radiologic Technologist Fluoroscopy Permit Schools.

(a) Subject to subsection (h), in order to be approved by the Department as a radiologic technologist fluoroscopy permit school, a school shall offer a course of study that includes in its curriculum all requirements of subsections (b) and (c) of this section.

(b) Subject to subsection (h), the classroom instruction shall include at least the following:

Subject	*Hours of Instruction*
(1) Fluoroscopy regulations and radiation safety	10
(2) Fluoroscopy equipment	5
(3) X–ray image intensifiers	4
(4) Television, including closed circuit equipment	4
(5) Image recording and image recording equipment	6
(6) Special fluoroscopy equipment	5
(7) Mobile image intensified units	2
(8) Anatomy and physiology of the eye	2
(9) Three–dimensional and radiological anatomy	2

(c) Subject to subsection (h), at least 15 hours of laboratory in which each student shall conduct experiments on phantoms to illustrate at least the following:

(1) Methods of reducing dose to patients during fluoroscopy procedures.

(2) Methods of reducing exposure to self and personnel.

(3) Image recording during the exposure of phantom.

(4) Quality control of fluoroscopy equipment.

(d) Subject to subsection (h), each training facility approved as a radiologic technology fluoroscopy permit school shall meet and maintain all standards set forth in this section. Failure of an applicant to meet any of these standards shall be grounds for denial of approval. Failure of an approved radiologic technology fluoroscopy permit school to maintain any of these standards shall be grounds for suspension or revocation of approval.

(e) Subject to subsection (h), approved radiologic technology fluoroscopy schools shall require that each student who graduates from the school completes the fluoroscopy coursework and clinical training specified in subsection (f).

(f) Subject to subsection (h), fluoroscopy coursework and clinical training shall include:

(1) Coursework comprising no less than 40 hours of instruction that fully covers the content categories listed in the document "Content Specifications for the Fluoroscopy Examination"* published November 2010 by the American Registry of Radiologic Technologists (ARRT), which is hereby incorporated by reference. The school shall use the detailed listing of topics identified in that document to ensure the categories are addressed; and

(2) Supervised clinical training of at least 40 hours in duration during which fluoroscopic procedures are performed. Procedures may be performed only if a holder of a current and valid radiology supervisor and operator certificate issued pursuant to section 30466, a fluoroscopy supervisor and operator permit issued pursuant to section 30466, or a radiologic technologist fluoroscopy permit issued pursuant to section 30451 is physically present to observe, verify, and correct as needed the performance of the individual operating the fluoroscopy equipment during the procedures. Performance, for purposes of this paragraph, means, and is limited to, the individual's competence to effectively and safely use fluoroscopy equipment.

(g) Subject to subsection (h), documentation of clinical training as specified in subsection (f)(2) shall include an orientation check–off of each fluoroscopic room or portable fluoroscopy device prior to initial use. The check–off document shall, as it pertains to the particular room or device, include items necessary for safe and effective use of the equipment as determined by the school or affiliated clinical site. Documentation of procedures performed shall include the name of the procedure, the date the procedure was performed, the facility name, including the physical location, where performed, and the name and certificate or permit number of the person observing and verifying performance.

(h) After December 31, 2014, subsections (a) through (d) shall no longer apply. On and after January 1, 2015, subsections (e) through (g) apply.

*Copies of this document are available at https://www.arrt.org. Click on "Examinations" then "Content Specs" and then select "Fluoroscopy."

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Sections 107045, 114870(d), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of subsections (a), (b), (c) and (d), new subsections (e)–(h) and repealer and new NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Article 4. Limited Permit X–Ray Technician Schools

§ 30424. Limited Permit X–Ray Technician Schools Teaching the Chest, Extremities, Leg–Podiatric, Skull, or Torso–Skeletal Categories.

(a) Approved limited permit X–ray technician schools teaching the chest, extremities, leg–podiatric, skull, or torso–skeletal permit categories shall require that each student who graduates from the school complete, for each limited permit category, the following educational program, within 24 months of beginning the course of study. However, the program may not be less than six months:

(1) One hundred ninety (190) hours of education, which shall include the following:

Subject	*Hours of Instruction*
(A) Radiation protection and safety	50
(B) Radiological physics	20
(C) Principles of Radiographic Exposure	30
(D) Equipment operation, Quality Assurance and Control	10
(E) Image processing	10
(F) Medical terminology	5
(G) Medical ethics	5
(H) Patient Care	10
(I) Image Evaluation	5
(J) Anatomy and physiology	20
(K) Digital radiologic technology as specified in section 30410.2	20
(L) Pediatric and Geriatric Radiography	5

(2) For each category, the following hours of specific instruction in anatomy and physiology, and positioning:

Category	*Hours of Instruction Anatomy and Physiology*	*Hours of Instruction in Positioning*
(A) Chest	5	5
(B) Extremities	15	15
(C) Leg–podiatric	5	5
(D) Skull	10	20
(E) Torso–skeletal	15	15

(3) Twenty hours of radiation protection laboratory during which each student shall conduct experiments that demonstrate:

(A) Methods of reducing dose per exposure to patient.

(B) Methods of reducing dose to personnel.

(C) Methods of reducing dose to general population.

(4) Ten (10) hours of general radiographic laboratory during which each student shall conduct experiments that demonstrate:

(A) Effects of kilovoltage, milliamperage, filtration, distance, and heel effect on radiographic contrast and detail.

(B) Control of scatter.

(5) Eight hours of quality assurance laboratory during which each student shall conduct experiments to illustrate the following:

(A) For chemical image processing, use of step wedge, densitometer and sensitometer; and

(B) For digital imaging processing, appropriate menu selection, body part placement, pre– and post–processing, and image receptor care including erasing and cleaning of receptors;

(6) Supervised clinical education for each category during which each student shall perform or assist in the performance of the following number of radiographic procedures:

Category	*Number of Procedures*
(A) Chest	50
(B) Extremities	100 (50 procedures for upper and 50 procedures for lower extremities)
(C) Leg–podiatric	50
(D) Skull	40
(E) Torso–skeletal	200

(b) Procedures performed only for chiropractic purposes may account for no more than 25 percent of the required number of procedures specified in subsection (a)(6).

NOTE: Authority cited: Sections 114870(a), 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 106975, 107045, 114850, 114870(c) and (d) and 114880, Health and Safety Code.

HISTORY

1. Editorial correction of subsection (b)(2)(E) (Register 2000. No. 1).
2. Amendment of section heading, section and NOTE filed 10–29–2001; operative 11–28–2001 (Register 2001, No. 44).
3. Amendment of subsections (a)(1) and (a)(1)(A), new subsection (a)(1)(K) and amendment of NOTE filed 2–14–2008; operative 3–15–2008 (Register 2008, No. 7).
4. Amendment of section heading and section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30425. Limited Permit X–Ray Technician Schools Teaching the Dental Laboratory Category.

(a) Approved limited permit X–ray technician schools teaching the Dental Laboratory category shall require that each student who graduates from the school complete the following educational program within 24 months of beginning the program:

(1) One hundred and twenty (120) hours of formal classroom education, extending over a period of no less than six months, which shall include the following:

Subject	*Hours of Instruction*
(A) Radiation protection and safety	30
(B) Radiological physics	15
(C) X–ray technical factors	15
(D) Equipment operation and care	10
(E) Darkroom, dental and medical film processing	10
(F) Professional ethics and hygienic procedures	4
(G) Cephalometrics	16
(H) Terminology	5
(I) Film critique	5
(J) Computers and image formation	10

(2) Forty–five (45) hours of specialized instruction in:

Subject	*Hours of Instruction*
(A) Intra–oral anatomy and physiology, and positioning	20
(B) Extra–oral anatomy and physiology, and positioning	20
(C) Anatomy of the hand and wrist, and positioning for dental bone age determination	5

(3) Twenty–five (25) hours of laboratory during which each student shall perform experiments using phantoms that demonstrate:

(A) Methods of reducing dose per exposure to the patient and operator.

(B) Effects of kilovoltage, milliamperage, filtration and distance on radiographic contrast and detail.

(C) Quality control.

(4) Supervised clinical education during which each student shall perform or assist in the performance of the following number of radiographic procedures:

Procedures	*Minimum Number*
(A) Peri–apical survey (consisting of at least 14 films)	100
(B) Bitewing survey (consisting of at least four films)	50
(C) Occlusal, mandible and maxilla	50
(D) Cephalometrics	100
(E) Panographic	100
(F) Temporo–mandibular joints	20
(G) Dental bone age studies	20

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 106975, 107045, 114850, 114870(c), 114870(d), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of section heading, section and NOTE filed 10–29–2001; operative 11–28–2001 (Register 2001, No. 44).
2. Amendment of subsection (a), repealer of subsection (a)(4)(E), subsection relettering and amendment of NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30426. Photofluorographic Chest X–Ray Technician Courses of Study. [Repealed]

NOTE: Authority cited: Section 114870(a), Health and Safety Code. Reference: Sections 114870(c), 114870(d) and 107045, Health and Safety Code.

HISTORY

1. Repealer of section and amendment of NOTE filed 11–24–98; operative 12–24–98 (Register 98, No. 48).

§ 30427. Limited Permit X–Ray Technician Schools Teaching the Dermatology X–Ray Therapy Category. [Repealed]

NOTE: Authority cited: Sections 100275 and 114870(a), Health and Safety Code. Reference: Sections 106975, 107045, 114850, 114870(c), 114870(d) and 114880, Health and Safety Code.

HISTORY

1. Amendment of section heading, section and NOTE filed 10–29–2001; operative 11–28–2001 (Register 2001, No. 44).
2. Repealer filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30427.2. Limited Permit X–Ray Technician Schools Teaching the X–Ray Bone Densitometry Category.

Approved limited permit X–ray technician schools teaching the X–ray bone densitometry category shall require that each student who graduates from the school complete the following educational program within two months of beginning the program. However, the program may not be less than three days:

(a) Eighteen (18) hours of formal classroom education consisting of the following:

Subject	*Hours of Instruction*
(1) Radiation physics, biology, and protection	3
(2) Bone biology, bone disease and therapy, and densitometry parameters	3
(3) X–ray bone densitometry equipment	4
(4) Computers and image formation	3
(5) Anatomy and positioning	4
(6) Ethics and patient handling	1

(b) Two hours of laboratory training during which each student shall perform quality assurance tests and experiments using phantoms and evaluate images.

(c) Supervised clinical education during which each student shall perform the following number of radiographic procedures:

Procedure	*Number*
(1) Posterior/Anterior spine	5
(2) Hip	5
(3) Forearms	5
(4) Other (e.g. whole body, hip, spine, extremity, vertebral fracture assessment)	5

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 106975, 107045, 114850, 114870(c), 114870(d), 114880, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 9–15–97 as an emergency; operative 9–15–97 (Register 97, No. 38). A Certificate of Compliance must be transmitted to OAL by 1–13–98 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 9–15–97 order, including amendment of section heading and section, transmitted to OAL 1–8–98 and filed 2–24–98 (Register 98, No. 9).
3. Amendment of section heading, section and NOTE filed 10–29–2001; operative 11–28–2001 (Register 2001, No. 44).
4. Amendment of first paragraph and subsection (c), repealer of subsection (c)(3), new subsections (c)(3)–(4) and amendment of NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30428. Approval of On–the–Job Training. [Repealed]

NOTE: Authority cited: Section 114870(a), Health and Safety Code. Reference: Section 114875, Health and Safety Code.

HISTORY

1. Amendment of subsections (c) and (e) and NOTE filed 11–24–98; operative 12–24–98 (Register 98, No. 48).
2. Repealer filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).
3. Repealer of article 5 (section 30428) and section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Article 5. Notification

§ 30435. Notification Requirements.

Within 30 days after any of the following, an official of an approved school shall, in writing, inform the Department of:

(a) Change in the school's location or telephone number.

(b) Change in course offerings, only if the changes result in the school curricula no longer meeting the requirements contained in sections 30421, 30422, 30423, 30424, 30425, or 30427.2, as applicable.

(c) Change of program director or clinical coordinator.

(d) Change of affiliation agreements, only if the content of the agreement after changes no longer meets the requirements contained in section 30415.

(e) If a school is accredited by the Joint Review Committee on Education in Radiologic Technology, change in accreditation status.

(f) Discontinuance of use of an affiliated clinical site.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 114870, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Renumbering of former article 6 (section 30435) to article 5 and amendment of section and NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Article 6. Disciplinary Action

§ 30436. Standards for Suspension or Revocation of Approval.

(a) Approval of any school pursuant to section 30412 may be revoked, suspended, limited or conditioned for any of the following reasons:

(1) Violation of any provision of the Radiologic Technology Act, as defined in Health and Safety Code section 27, or any regulation promulgated pursuant thereto; or

(2) Failure to maintain a five–year average credentialing examination pass rate, as defined in section 30400, of at least 75 percent.

(3) Engaging in deliberate misconduct, as defined in subsection (b).

(4) Deliberately submits to the Department information that the person submitting the information knows to be incomplete or inaccurate in some respect material to the Department.

(5) Failure to pay fees.

(6) Procuring a school approval by fraud, or misrepresentation, or because of mistake.

(7) Failure to report changes pursuant to section 30435.

(b) For the purposes of subsection (a)(3), deliberate misconduct by a person means an intentional act or omission that the person knows:

(1) Would have caused, if not detected, a user, as defined in section 30100, or applicant under this subchapter to be in violation of any rule, regulation, or order; or any term, condition, or limitation of any registration or license issued by the Department pursuant to subchapter 4.0 or certificate or permit issued by the Department under this subchapter; or

(2) Constitutes a violation of a requirement, procedure, instruction, contract, purchase order, or policy of a user or applicant.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 107045, 114840, 114870(b), 114870(c), 114870(d), 114875, 114880, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Repealer and new section heading, section and NOTE filed 10–29–2001; operative 11–28–2001 (Register 2001, No. 44).
2. Renumbering of former article 7 (section 30436) to article 6 and amendment of section and NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Article 7. Additional School Requirements and Recordkeeping

§ 30437. Additional School Requirements and Recordkeeping.

(a) A school approved pursuant to section 30412 shall:

(1) Issue to each student who graduates from or who successfully completes the required educational program, a certificate or diploma, which includes:

(A) The student's name;

(B) The name, or the limited permit category listed in section 30442, of the educational program completed by the student;

(C) The date(s) of attendance;

(D) The school's approval number as indicated on the Department– issued approval document; and

(E) The signature of the school's chief executive officer, dean or department administrator;

(2) Within 30 days of discontinuance of the school notify the Department of how all records kept pursuant to subsection (b) will be preserved and surrender the school approval certificate to the Department; and

(3) Within 30 days of discontinuance of instruction in any limited permit category, notify the Department of the discontinuance.

(b) Each school approved pursuant to section 30412 shall retain for at least five years and make available for inspection by the Department:

(1) Records of attendance;

(2) Competency determinations made pursuant to section 30417;

(3) Except for radiologic technology certification schools, proof of performance of laboratory procedures;

(4) Certificates or diplomas issued; and

(5) Program transcripts.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 107000, 107045, 114850, 114870(c), 114870(d), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New article 8 (section 30437) and section filed 10–29–2001; operative 11–28–2001 (Register 2001, No. 44).
2. Renumbering of former article 8 (section 30437) to article 7 and amendment of section and NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Group 3. Certificates for Radiologic Technologists and Permits for Limited Permit X–Ray Technicians

Article 1. Certification of Radiologic Technologists

§ 30440. Eligibility for and Issuance of Radiologic Technology Certificates.

(a) To be eligible for a radiologic technology certificate an applicant shall:

(1) Submit to the Department an acceptable application containing:

(A) The legal name, date of birth, social security number (pursuant to the authority found in sections 131050, 131051, 131200 and 114870 of the Health and Safety Code and as required by section 17520 of the Family Code, providing the social security number is mandatory. The social security number will be used for purposes of identification), mailing address, and telephone number of the applicant. The legal name shall be as shown on the government–issued identification document that will be used to verify the applicant's identity for taking any required examination;

(B) Whether the applicant is applying for a certificate in diagnostic or therapeutic radiologic technology;

(C) Either of the following:

1. A copy of the radiologic technology certification school graduation diploma or certificate, as appropriate, issued to the applicant; or
2. Documentation that the applicant has passed the applicable certification examination of the American Registry of Radiologic Technologists; and

(D) The fee required in section 30408;

(2) For the diagnostic radiologic technology certificate, except for applicants who meet subsection (a)(1)(C)2, pass Department–approved examinations in diagnostic radiologic technology; and

(3) For the therapeutic radiologic technology certificate, except for applicants who meet subsection (a)(1)(C)2, pass Department–approved examinations in therapeutic radiologic technology.

(b) The Department may deny a radiologic technology certificate on the basis of any of the reasons set forth in section 107070 of the Health and Safety Code which pertain to denial of certificates and permits, notwithstanding the fact that the individual has otherwise satisfied the requirements of this section.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 107005, 114870(b), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New Group 3 (Articles 1 and 2, Sections 30440–30447) filed 8–21–85; effective thirtieth day thereafter (Register 85, No. 34). For prior history, see Registers 78, No. 10; 72, No. 32; 72, No. 26; and 71, No. 16.
2. Amendment of article heading and section heading, repealer and new section and amendment of NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30441. Acceptable Applications. [Repealed]

NOTE: Authority cited: Section 25668(a), Health and Safety Code. Reference: Section 25675, Health and Safety Code.

HISTORY

1. Change without regulatory effect amending subsection (a) filed 11–1–91 pursuant to section 100, title 1, California Code of Regulations (Register 92, No. 5).
2. Repealer filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Article 2. Permits for Limited Permit X–Ray Technicians

§ 30442. Limited Permit Categories.

The categories for limited permits are:

(a) Chest radiography.

(b) Dental laboratory radiography.

(c) Extremities radiography.

(d) Leg–podiatric radiography.

(e) Skull radiography.

(f) Torso–skeletal radiography.

(g) X–ray bone densitometry.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 114870(c), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New subsection (k) and amendment of NOTE filed 9–15–97 as an emergency; operative 9–15–97 (Register 97, No. 38). A Certificate of Compliance must be transmitted to OAL by 1–13–98 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 9–15–97 order, including amendment of subsection (k), transmitted to OAL 1–8–98 and filed 2–24–98 (Register 98, No. 9).
3. Repealer of subsection (h) and subsection relettering filed 11–24–98; operative 12–24–98 (Register 98, No. 48).
4. Amendment of section heading, repealer of subsections (c), (e) and (f), subsection relettering and amendment of NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30443. Limited Permit Scopes.

Subject to the restrictions specified in section 30447, the scope of each limited permit is as follows:

(a) Chest radiography permit: radiography of the heart and lungs.

(b) Dental laboratory radiography permit: radiography of the intra–oral cavity, skull, and hand and wrist, for dental purposes.

(c) Extremities radiography permit: radiography of the upper extremities, including shoulder girdle, and lower extremities, excluding pelvis.

(d) Leg–podiatric radiography permit: radiography of the knee, tibia and fibula, and ankle and foot.

(e) Skull radiography permit: radiography of the bone and soft tissues of the skull and upper neck.

(f) Torso–skeletal radiography permit: radiography of the shoulder girdle, rib cage and sternum, vertebral column, pelvis and hip joints.

(g) X–ray bone densitometry permit: radiography of the total skeleton or part thereof, using X–ray bone densitometry.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 114870(c), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New subsection (k) and amendment of NOTE filed 9–15–97 as an emergency; operative 9–15–97 (Register 97, No. 38). A Certificate of Compliance must be transmitted to OAL by 1–13–98 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 9–15–97 order, including amendment of subsection (k), transmitted to OAL 1–8–98 and filed 2–24–98 (Register 98, No. 9).
3. Repealer of subsection (h) and subsection relettering filed 11–24–98; operative 12–24–98 (Register 98, No. 48).
4. Amendment of section heading and first paragraph, repealer of subsections (c), (e) and (f), subsection relettering and amendment of NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30444. Eligibility for and Issuance of Limited Permits.

(a) To be eligible for any of the limited permit categories listed in section 30442 an applicant shall:

(1) Submit to the Department an acceptable application containing:

(A) The legal name, date of birth, social security number (pursuant to the authority found in sections 131050, 131051, 131200 and 114870 of the Health and Safety Code and as required by section 17520 of the Family Code, providing the social security number is mandatory. The social security number will be used for purposes of identification), mailing address, and telephone number of the applicant. The legal name shall be as shown on the government–issued identification document that will be used to verify the applicant's identity for taking any required examination;

(B) Identification of the permit category for which the applicant is applying;

(C) A copy of the limited permit X–ray technician school graduation diploma or certificate in the limited permit category applied for; and

(D) The fee required pursuant to section 30408; and

(2) Pass Department–approved examinations in:

(A) Radiation protection and safety; and

(B) For each permit category applied for, radiologic technology.

(b) The Department may deny a limited permit on the basis of any the reasons set forth in section 107070 of the Health and Safety Code which pertain to denial of certificates and permits, notwithstanding the fact that the individual has otherwise satisfied the requirements of this section.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 106995, 114870(c), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of section heading, repealer and new section and amendment of NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30445. Acceptable Applications. [Repealed]

NOTE: Authority cited: Sections 114870, 131050, 131051 and 131200, Health and Safety Code. Reference: Section 106995, Health and Safety Code.

HISTORY

1. Repealer and new subsection (a), new subsections (a)(1)–(3), amendment of subsection (c)(1), new subsection (d) and amendment of NOTE filed 2–14–2008; operative 3–15–2008 (Register 2008, No. 7).
2. Repealer filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30445.1. Acceptable Applications: X–ray Bone Densitometry. [Repealed]

NOTE: Authority cited: Section 114870(a), Health and Safety Code. Reference: Section 114870(c), Health and Safety Code.

HISTORY

1. New section filed 9–15–97 as an emergency; operative 9–15–97 (Register 97, No. 38). A Certificate of Compliance must be transmitted to OAL by 1–13–98 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 9–15–97 order, including amendment of section heading and section, transmitted to OAL 1–8–98 and filed 2–24–98 (Register 98, No. 9).
3. Repealer filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30446. Title.

No person other than an individual to whom the Department has issued a limited permit described in section 30442 shall use the title "X–ray Technician" or "XT."

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 106990, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Repealer and new section and amendment of NOTE filed 6–26–97; operative 7–26–97 (Register 97, No. 26).
2. Amendment of NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30447. Restrictions.

(a) Limited permits issued pursuant to section 30444 exclude authorization to:

(1) Operate fluoroscopy equipment during exposure of a patient to X–rays.

(2) Operate portable or mobile X–ray equipment.

(3) Perform procedures involving computerized tomography.

(4) Perform mammography procedures.

(5) Perform vascular procedures.

(6) Perform procedures involving digital radiography.

(b) Exclusions listed in subsections (a)(2) and (a)(6) shall not apply to individuals who possess a current and valid limited permit in X–ray Bone Densitometry, issued pursuant to section 30444.

(c) The exclusions listed in subsection (a)(6) shall not apply to individuals who possess a current and valid limited permit in Dental Laboratory Radiography, issued pursuant to section 30444.

(d) The exclusion listed in subsection (a)(6) shall not apply to individuals who have been issued authorization to perform digital radiography pursuant to section 30410.

NOTE: Authority cited: Sections 114870(a), 131050, 131051 and 131200, Health and Safety Code. Reference: Sections 106965, 106975, 114845, 114850, 114870(c) and 114880, Health and Safety Code.

HISTORY

1. Amendment of section and NOTE filed 10–29–2001; operative 11–28–2001 (Register 2001, No. 44).
2. New subsections (d)–(d)(2) and amendment of NOTE filed 2–14–2008; operative 3–15–2008 (Register 2008, No. 7).
3. Amendment of subsections (a)(6) and (d), repealer of subsections (d)(1)–(2) and amendment of NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Group 4. Use of Fluoroscopy Equipment by Radiologic Technologists

Article 1. Radiologic Technologist Fluoroscopy Permits

§ 30450. Radiologic Technologist Fluoroscopy Permit Requirement.

(a) Except as provided in subsection (b), a radiologic technologist fluoroscopy permit issued by the Department shall be required of any radiologic technologist who exposes a patient to X–rays in a fluoroscopy mode, or who does one or more of the following during fluoroscopy of a patient:

(1) Positions the patient;
(2) Positions the fluoroscopy equipment; or
(3) Selects exposure factors.

(b) A radiologic technologist fluoroscopy permit is not required of a certified therapeutic radiologic technologist performing fluoroscopy for therapeutic treatment planning purposes. This exception may not be construed to allow a certified therapeutic radiologic technologist to use fluoroscopy for diagnostic purposes.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Section 106995, 114870(c), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New Group 4 (Article 1, Sections 30450–30452) filed 8–21–85; effective thirtieth day thereafter (Register 85, No. 34). For prior history, see Register 78, No. 10.
2. Amendment of section heading and section and repealer and new NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30451. Eligibility for and Issuance of Radiologic Technologist Fluoroscopy Permits.

(a) To be eligible for a radiologic technologist fluoroscopy permit an applicant shall:

(1) Be a certified diagnostic radiologic technologist;

(2) Submit to the Department an acceptable application containing:

(A) The legal name, date of birth, social security number (pursuant to the authority found in sections 131050, 131051, 131200 and 114870 of the Health and Safety Code and as required by section 17520 of the Family Code, providing the social security number is mandatory. The social security number will be used for purposes of identification), mailing address, and telephone number of the applicant. The legal name shall be as shown on the government–issued identification document that will be used to verify the applicant's identity for taking any required examination;

(B) The certificate number indicated on the applicant's diagnostic radiologic technology certificate;

(C) The fee required in section 30408; and

(D) Either a copy of the radiologic technology fluoroscopy permit school graduation diploma or certificate issued to the applicant, or documentation that the applicant:

1. Graduated from a diagnostic radiologic technology program accredited by the Joint Review Committee on Education in Radiologic Technology and passed the American Registry of Radiologic Technologists (ARRT) radiography examination; or

2. Is both certified by ARRT in radiography and is a current ARRT registrant; and

(3) Pass Department–approved examinations in fluoroscopy radiation protection and safety, and use of fluoroscopy and ancillary equipment.

(b) The Department may deny a radiologic technologist fluoroscopy permit on the basis of any the reasons set forth in section 107070 of the Health and Safety Code which pertain to denial of certificates and permits, notwithstanding the fact that the individual has otherwise satisfied the requirements of this section.

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Sections 114870(c), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of section heading and repealer and new section and NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30452. Acceptable Applications. [Repealed]

NOTE: Authority cited: Section 25668(a), Health and Safety Code. Reference: Section 25675, Health and Safety Code.

HISTORY

1. Repealer filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Group 4.5. Use of Mammography Equipment by Radiologic Technologists

Article 1. Mammographic Radiologic Technology Certificates

§ 30455.1. Eligibility for and Issuance of a Mammographic Radiologic Technology Certificate.

(a) To be eligible for a mammographic radiologic technology certificate an applicant shall:

(1) Be a certified diagnostic radiologic technologist;

(2) Submit to the Department an acceptable application consisting of:

(A) The legal name, date of birth, social security number (pursuant to the authority found in sections 131050, 131051, 131200 and 114870 of the Health and Safety Code and as required by section 17520 of the Family Code, providing the social security number is mandatory. The social security number will be used for purposes of identification), mailing address, and telephone number of the applicant. The legal name shall be as shown on the government–issued identification document that will be used to verify the applicant's identity for taking any required examination;

(B) The certificate number indicated on the applicant's diagnostic radiologic technology certificate;

(C) The application fee specified in section 30408; and

(D) One of the following:

1. Documentation of having completed 40 hours of continuing education in mammography courses; or

2. Documentation of having passed the American Registry of Radiologic Technologists mammography certification examination; and

(3) Except for applicants meeting subsection (a)(2)(D)2, pass a Department examination in mammographic radiologic technology including radiation protection and mammography quality assurance.

(b) The Department may deny a mammographic radiologic technology certificate on the basis of any the reasons set forth in section 107070 of the Health and Safety Code which pertain to denial of certificates and permits, notwithstanding the fact that the individual has otherwise satisfied the requirements of this section.

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Sections 107010, 114840, 114845, 114870, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New group 4.5, article 1, and section filed 11–1–93 as an emergency; operative 11–1–93 (Register 93, No. 45). A Certificate of Compliance must be transmitted to OAL by 3–1–94 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 11–1–93 order transmitted to OAL 2–24–94; disapproved by OAL 4–7–94 (Register 94, No. 27).
3. New group 4.5, article 1 and section refiled with amendments 7–6–94 as an emergency; operative 7–6–94 (Register 94, No. 27). A Certificate of Compliance must be transmitted to OAL by 11–3–94 or emergency language will be repealed by operation of law on the following day.
4. Certificate of Compliance as to 7–6–94 order transmitted to OAL 6–30–94 and filed 7–20–94 (Register 94, No. 29).
5. Amendment of subsections (a)(1), (a)(2), (b) and (b)(2), repealer of subsection (b)(3) and amendment of subsection (c) and NOTE filed 7–26–96 as an emergency; operative 7–26–96 (Register 96, No. 30). A Certificate of Compliance must be transmitted to OAL by 11–25–96 or emergency language will be repealed by operation of law on the following day.
6. Editorial correction of subsection (b) (Register 96, No. 49).
7. Certificate of Compliance as to 7–26–96 order transmitted to OAL 11–1–96 and filed 12–2–96 (Register 96, No. 49).
8. Amendment of subsection (b) and repealer of subsection (c) filed 7–29–98; operative 8–28–98 (Register 98, No. 31).
9. Amendment of article and section headings, repealer and new section and amendment of NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Group 4.6. Use of Fluoroscopy Equipment by Physician Assistants

Article 1. Authorization for Physician Assistants to Use Fluoroscopy Equipment

§ 30456. General Provisions.

(a) Provisions found in Group 1 of this subchapter apply to this article unless otherwise specified in this article.

(b) Sections 30456.1 and 30456.10 shall not be construed to restrict an individual who holds, pursuant to section 30451, a current and valid radiologic technologist fluoroscopy (RTF) permit from performing a procedure otherwise authorized by the RTF permit.

(c) Section 30456.4 does not apply to individuals who possess a current and valid RTF permit issued pursuant to section 30451.

NOTE: Authority cited: Sections 114872 and 131200, Health and Safety Code. Reference: Sections 106995, 114872, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New group 4.6 (articles 1–4, sections 30456–30456.12), article 1 (sections 30456–30456.1) and section filed 8–12–2013; operative 10–1–2013 (Register 2013, No. 33).

§ 30456.1. Authorization for Physician Assistants to Use Fluoroscopy Equipment.

(a) Any individual holding a current and valid physician assistant (PA) license issued under the Physician Assistant Practice Act (PAP Act) (Business and Professions Code, section 3500 et seq.) may use fluoroscopy on people only if, and only for so long as, the individual:

(1) Holds a current and valid:

(A) Physician Assistant fluoroscopy permit issued pursuant to section 30456.2; or

(B) Radiologic Technologist fluoroscopy permit issued pursuant to section 30451;

(2) Is performing only those fluoroscopy procedures:

(A) That the PA's supervising physician has previously determined the PA can competently perform and for which written guidelines have been established pursuant to the PAP Act and its accompanying regulations;

(B) That are identified on the PA's Delegation of Services Agreement (DSA) in accordance with applicable provisions of the PAP Act and its accompanying regulations;

(C) That have been delegated by, and that are performed under the supervision of, the PA's supervising physician who is identified on the PA's DSA and who holds, pursuant to section 30466, a current and valid radiology supervisor and operator certificate or a fluoroscopy supervisor and operator permit. A PA may use fluoroscopy X–ray equipment while assisting a licensed podiatrist only if the PA is in compliance with the PAP Act and its accompanying regulations and the licensed podiatrist holds, pursuant to section 30466, a current and valid fluoroscopy supervisor and operator permit; and

(3) Keeps on file at each practice site, and makes available to the Department upon request, copies of:

(A) Each DSA under which the PA provides services, with the DSA to include documentation of competency determination as well as the written guidelines specified in subsection (a)(2)(A) for each procedure listed on the DSA; and

(B) For each supervising physician identified on the PA's DSA, a copy of the physician and surgeon's current and valid radiology supervisor and operator certificate or fluoroscopy supervisor and operator permit. If the PA performs fluoroscopy while assisting a licensed podiatrist as specified in subsection (a)(2)(C), a copy of the podiatrist's fluoroscopy supervisor and operator permit shall also be maintained and made available upon Department request.

NOTE: Authority cited: Sections 114872 and 131200, Health and Safety Code. Reference: Sections 106995, 114872, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 8–12–2013; operative 10–1–2013 (Register 2013, No. 33).
2. Editorial correction of subsection (a)(1)(A) (Register 2013, No. 37).

Article 2. Application Process and Administration of Physician Assistant Fluoroscopy Permits

§ 30456.2. Eligibility for and Renewal of a Physician Assistant Fluoroscopy Permit.

(a) To be eligible for a Physician Assistant (PA) fluoroscopy permit, an applicant shall:

(1) Submit all of the following to the Department:

(A) The legal name, date of birth, mailing address, and telephone number of the applicant;

(B) The applicant's social security number. (Pursuant to the authority found in sections 114872, 131055 and 131200 of the Health and Safety Code and as required by section 17520 of the Family Code, providing the social security number is mandatory. The social security number will be used for purposes of identification);

(C) A copy of the applicant's PA license, as issued by the Department of Consumer Affairs, Physician Assistant Committee;

(D) Documentation that the applicant has completed the coursework and clinical training specified in section 30456.4 through a provider specified in section 30456.4(d). This documentation shall include the name of the provider and its Department–issued identification number, and the signature of the school's official attesting that the student satisfactorily completed both the coursework and clinical training, with the date that coursework and clinical training was completed; and

(E) The application fee specified in section 30456.8; and

(2) Pass a Department–approved examination in fluoroscopy radiation protection and safety, and the use of fluoroscopy and ancillary equipment.

(b) Notwithstanding section 30403.5, to renew a PA fluoroscopy permit issued pursuant to this section, the holder shall:

(1) At least 30 calendar days prior to the permit's expiration date, submit to the Department the applicant's name, mailing address, telephone number, fluoroscopy permit number, and PA license number and expiration date;

(2) Every two years, submit to the Department the following information regarding approved continuing education credit as required by section 30456.6:

(A) The identity of the group(s) listed in section 30456.6(b) that accepted the instruction;

(B) The provider of the instruction and the provider's contact information;

(C) A description of the instruction; and

(D) The date(s) of the instruction; and

(3) Pay the renewal fee as specified in section 30456.8.

(c) Subsection (b) does not apply to PAs authorized to use fluoroscopy equipment under this Article by holding the radiologic technology fluoroscopy (RTF) permit as specified in section 30456.1(a)(1)(B). For purposes of renewing the RTF permit, the PA shall comply with section 30403.5.

(d) The Department may deny a PA fluoroscopy permit, or deny permit renewal, on the basis of any the reasons set forth in section 107070 of the Health and Safety Code which pertain to denial of certificates and permits, notwithstanding the fact that the individual has otherwise satisfied the requirements of this section.

NOTE: Authority cited: Sections 114872 and 131200, Health and Safety Code. Reference: Sections 106995, 114872, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New article 2 (sections 30456.2–30456.8) and section filed 8–12–2013; operative 10–1–2013 (Register 2013, No. 33).

§ 30456.4. Fluoroscopy Coursework, Clinical Training, and Providers.

(a) For purposes of section 30456.2(a)(1)(D), the fluoroscopy coursework and clinical training specified in subsection (b) shall be completed through a provider specified in subsection (d).

(b) Fluoroscopy coursework and clinical training shall include:

(1) Coursework comprising no less than 40 hours of instruction that fully covers the subject matter in the didactic content section of the "Fluoroscopy Educational Framework for the Physician Assistant" published by the American Society of Radiologic Technologists and dated December 2009, which is hereby incorporated by reference; and

(2) Supervised clinical training of at least 40 hours in duration during which fluoroscopic procedures are performed. Procedures may be performed only if a holder of a current and valid radiology supervisor and operator certificate issued pursuant to section 30466, a fluoroscopy supervisor and operator permit issued pursuant to section 30466, or a radiologic technologist fluoroscopy permit issued pursuant to section 30451 is physically present to observe, verify, and correct as needed the performance of the individual operating the fluoroscopy equipment during the procedures. Performance, for purposes of this subsection, means, and is limited to, the individual's competence to effectively and safely use fluoroscopy equipment; and

(c) Documentation of clinical training as specified in subsection (b)(2) shall include an orientation check–off of each fluoroscopic room or portable fluoroscopy device prior to initial use. The document "Fluoroscopic Device Orientation Check–off" as found in the publication identified in subsection (a)(1) shall be used. Documentation of procedures performed shall include the name of the procedure, the date and time of day the procedure was performed, the facility, including location, where performed, and the name and certificate or permit number of the person observing and verifying performance.

(d) The coursework and clinical training specified in subsection (b) shall be obtained through a Department–approved:

(1) Diagnostic radiologic technology school; or

(2) Radiologic technologist fluoroscopy permit school.

NOTE: Authority cited: Sections 114872 and 131200, Health and Safety Code. Reference: Sections 114872, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New sections filed 8–12–2013; operative 10–1–2013 (Register 2013, No. 33).

§ 30456.6. Requirements for Continuing Education in Fluoroscopy for Physician Assistants.

(a) Notwithstanding section 30403, physician assistants permitted pursuant to section 30456.2 shall, in the two years immediately preceding the expiration date of the permit, earn no less than ten approved continuing education credits as defined in subsection (b), with at least four of the credits addressing radiation safety for the clinical uses of fluoroscopy.

(b) Notwithstanding section 30400(a)(4), for purposes of subsection (a), "approved continuing education credits" means one hour increments of instruction received in subjects related to the application of X–ray to the human body, which have been accepted for purposes of licensing, credentialing, assigning professional status, or certification, by any of the following entities:

(1) American Registry of Radiologic Technologists;

(2) California Physician Assistant Committee;

(3) Medical Board of California;

(4) Osteopathic Medical Board of California;

(5) California Board of Chiropractic Examiners; or

(6) Board of Podiatric Medicine.

NOTE: Authority cited: Sections 114872 and 131200, Health and Safety Code. Reference: Sections 106995, 114872, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New sections filed 8–12–2013; operative 10–1–2013 (Register 2013, No. 33).
2. Amendment of subsection (b) filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30456.8. Fees.

(a) Notwithstanding section 30408:

(1) The initial application fee, payable to the Department, for a physician assistant (PA) fluoroscopy permit shall be $115.00;

(2) The examination fee, or reexamination fee if retaking an examination due to failure to pass the examination, shall be as specified by, and paid to, the entities or organizations designated by the Department to administer Department–approved examinations;

(3) For purposes of section 30456.2(b), the annual renewal fee, payable to the Department, shall be $61.00. The renewal fee shall be collected biennially and such fee shall be twice the annual renewal fee;

(4) The fee for a duplicate permit shall be $1.28, payable to the Department;

(5) Subject to subsection (a)(6), the penalty fee for renewal of an expired permit shall be $6.40 and shall be in addition to the fee for renewal and payable to the Department; and

(6) Failure to pay the annual fee for renewal on or before the expiration date of the permit shall automatically suspend the permit. If the annual renewal fee is not paid within six months following such date, the permit shall be revoked. A permit revoked for nonpayment of the renewal fee may be reinstated within five years from the time of revocation upon payment of the penalty fee specified in subsection (a)(5) plus twice the annual renewal fee specified in subsection (a)(3). If the application for reinstatement is not made within five years from the date of suspension of the permit, the permit shall be canceled and shall not be subject to reinstatement.

(b) Fees required by this section are:

(1) Subject to adjustment pursuant to section 100425 of the Health and Safety Code; and

(2) Nonrefundable.

NOTE: Authority cited: Sections 114872 and 131200, Health and Safety Code. Reference: Sections 100305, 100425, 106995, 107080, 107085, 114872, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New sections filed 8–12–2013; operative 10–1–2013 (Register 2013, No. 33).
2. Amendment of subsections (a)(1) and (a)(3)–(5) filed 6–15–2015; operative 6–15–2015. Submitted to OAL for filing and printing only pursuant to Health and Safety Code section 100425 (Register 2015, No. 25).

Article 3. Unauthorized Activities and Validity

§ 30456.10. Physician Assistant Fluoroscopy Permits: Unauthorized Activities and Validity.

(a) A physician assistant (PA) fluoroscopy permit issued pursuant to section 30456.2 does not authorize the holder of the permit to:

(1) Act as a certified supervisor or operator as defined in section 114850(i) of the Health and Safety Code;

(2) Perform any procedure utilizing ionizing radiation except as authorized pursuant to section 30456.1;

(3) Perform mammography as defined in section 114850(*l*) of the Health and Safety Code; and

(4) Perform radiography as defined in this subchapter.

(b) A PA fluoroscopy permit is valid up to and including the expiration date stated on the permit, provided that the permit holder's PA license issued under the Physician Assistant Practice Act (Business and Professions Code, section 3500 et seq.) is current and valid. If the holder's PA license expires prior to the expiration date on the PA fluoroscopy permit, the PA fluoroscopy permit shall be invalid and the permit holder may not

perform fluoroscopy procedures pending renewal or reinstatement of the holder's PA license.

NOTE: Authority cited: Sections 114872 and 131200, Health and Safety Code. Reference: Sections 106995, 114872, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New article 3 (section 30456.10) and section filed 8–12–2013; operative 10–1–2013 (Register 2013, No. 33).

Article 4. Grounds for Suspension, Revocation, Amendment, or Restriction of Physician Assistant Fluoroscopy Permits

§ 30456.12. Grounds for Suspension, Revocation, Amendment, or Restriction of Physician Assistant Fluoroscopy Permits.

(a) Physician assistant fluoroscopy permits may be revoked, suspended, amended, or restricted for any of the following reasons:

(1) Those reasons as specified in sections 107070 and 107085 of the Health and Safety Code.

(2) Violation of any provision of the Radiologic Technology Act (Health and Safety Code, section 27), any regulation promulgated pursuant to that Act, or any order of the Department.

(3) Violation of any provision of the Radiation Control Law (Health and Safety Code, section 114960 et seq.), any regulation promulgated pursuant to that Law, or any order of the Department.

(4) Loss of licensure as a physician assistant (PA), or suspension or restriction of a PA license by the California Physician Assistant Committee.

NOTE: Authority cited: Sections 114872 and 131200, Health and Safety Code. Reference: Sections 114872, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New article 4 (section 30456.12) and section filed 8–12–2013; operative 10–1–2013 (Register 2013, No. 33).

Group 5. Certification of Licentiates

Article 1. Licentiate Certificates and Permits

§ 30460. Licentiate Certificate and Scope of Certificate.

(a) The certificate category for licentiates of the healing arts is: Radiology supervisor and operator.

(b) A radiology supervisor and operator certificate authorizes the holder, within the limitation of the holder's California healing arts license, to:

(1) Actuate or energize X–ray equipment registered pursuant to Article 1 of Group 1.5 of subchapter 4.0 (commencing at section 30108); and

(2) Supervise the use of registered X–ray equipment by a CRT, an XT, or any student in an approved school when the student is operating X–ray equipment.

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Sections 107111, 114870(e), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New Group 5 (Article 1, Sections 30460–30468) filed 8–21–85; effective thirtieth day thereafter (Register 85, No. 34). For prior history, see Registers 78, No. 10; 72, No. 26 and 71, No. 41.
2. Amendment of section heading and section and repealer and new NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30461. Licentiate Permits and Scope of Permits.

The permit categories for licentiates of the healing arts are:

(1) Fluoroscopy supervisor and operator;

(2) Radiography supervisor and operator;

(3) Dermatology supervisor and operator; and

(4) X–ray bone densitometry supervisor and operator.

(b) A fluoroscopy supervisor and operator permit authorizes the holder, within the limitations of the holder's California healing arts license, to:

(1) Actuate or energize fluoroscopy X–ray equipment registered pursuant to Article 1 of Group 1.5 of subchapter 4.0 (commencing at section 30108); and

(2) Supervise the use of registered fluoroscopy X–ray equipment by:

(A) Certified diagnostic radiologic technologists who possess a current and valid radiologic technologist fluoroscopy permit; or

(B) Students in an approved school when the student is operating fluoroscopy X–ray equipment.

(c) A radiography supervisor and operator permit authorizes the holder, within the limitation of the holder's California healing arts license, to:

(1) Actuate or energize radiography X–ray equipment registered pursuant to Article 1 of Group 1.5 of subchapter 4.0 (commencing at section 30108); and

(2) Supervise the use of registered radiography X–ray equipment by:

(A) Certified diagnostic radiologic technologists;

(B) XT's within the scope of the XT's limited permit category as defined in section 30443 and as restricted by section 30447; or

(C) Students in an approved school when the student is operating radiography X–ray equipment.

(d) A dermatology supervisor and operator permit authorizes the holder, within the limitation of the holder's California healing arts license, to:

(1) Actuate or energize therapeutic X–ray equipment registered pursuant to Article 1 of Group 1.5 of subchapter 4.0 (commencing at section 30108) limited to the treatment of diseases and tumors of the skin; and

(2) Supervise the use of registered therapeutic X–ray equipment limited to the treatment of diseases and tumors of the skin by:

(A) Certified therapeutic radiologic technologists;

(B) XT's who hold a limited permit in the dermatology X–ray therapy category as defined in section 30443 and as restricted by section 30447; or

(C) Students in an approved school when the student is operating therapeutic X–ray equipment limited to the treatment of diseases and tumors of the skin.

(e) An X–ray bone densitometry supervisor and operator permit authorizes a licensed physician and surgeon, as limited by section 30467, to:

(1) Actuate or energize an X–ray bone densitometer (XBD) that meets the criteria specified in section 30467(a)(1) through (a)(3) and is registered pursuant to Article 1 of Group 1.5 of subchapter 4.0 (commencing at section 30108) and for which the holder has completed the training requirement specified in section 30466(a)(5)(C); and

(2) Supervise the use of a registered XBD that meets the criteria specified in section 30467(a)(1) through (a)(3) and for which the holder has completed the training requirement specified in section 30466(a)(5)(C) by:

(A) Certified diagnostic radiologic technologists;

(B) XT's who hold a limited permit in the X–ray bone densitometry permit category as defined in section 30443 and as restricted by section 30447; or

(C) Students in an approved school when the student is operating a registered XBD.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 114870(e), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of section heading and section and repealer and new NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30462. Requirements for a Radiology Certificate.

(a) A radiology supervisor and operator certificate issued by the Department shall be required of and issued only to a licentiate of the healing arts who practices as a radiologist or a radiation oncologist if the licentiate does one or more of the following:

(1) Actuates or energizes X–ray equipment.

(2) Directly controls radiation exposure to the patient during X–ray procedures.

(3) Supervises one or more persons who hold a certificate issued pursuant to sections 30440 or 30455.1 or a permit issued pursuant to sections 30444 or 30451.

(4) Supervises students in an approved school when the student is operating X–ray equipment.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 107111, 114870(e), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of section heading and section and repealer and new NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30463. Requirements for Fluoroscopy Permits.

(a) A fluoroscopy supervisor and operator permit issued by the Department shall be required of any licentiate of the healing arts who does one or more of the following:

(1) Actuates or energizes fluoroscopy equipment.

(2) Directly controls radiation exposure to the patient during fluoroscopy procedures.

(3) Supervises one or more persons who hold radiologic technologist fluoroscopy permits issued pursuant to section 30451.

(4) Supervises students in an approved school when the student is operating fluoroscopy equipment.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 114870(e), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of section heading and section and repealer and new NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30464. Requirements for Radiography Permits.

(a) A radiography supervisor and operator permit issued by the Department shall be required of any licentiate of the healing arts who does one or more of the following:

(1) Actuates or energizes radiography X–ray equipment.

(2) Supervises one or more certified diagnostic radiologic technologists.

(3) Supervises one or more XTs.

(4) Supervises students in an approved school when the student is operating radiography X–ray equipment.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 114870(e), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of section heading and section and repealer and new NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30465. Requirements for Dermatology Permits.

(a) A dermatology supervisor and operator permit issued by the Department shall be required of any licentiate of the healing arts who practices dermatology, and who uses X–ray therapy equipment for the treatment of diseases and tumors of the skin or does one or more of the following:

(1) Supervises one or more certified therapeutic radiologic technologists during the treatment of diseases and tumors of the skin.

(2) Supervises one or more limited permit X–ray technicians holding the permit category of dermatology X–ray therapy.

(3) Supervises students in an approved school when the student is operating therapeutic X–ray equipment limited to the treatment of diseases and tumors of the skin.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 114870(e), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of section heading and section and repealer and new NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30466. Eligibility for and Issuance of Licentiate Certificates or Permits.

(a) To be eligible for a licentiate certificate or any licentiate permit an applicant shall:

(1) Submit an acceptable application containing the following:

(A) The legal name, date of birth, social security number (pursuant to the authority found in sections 131050, 131051, 131200 and 114870 of the Health and Safety Code and as required by section 17520 of the Family Code, providing the social security number is mandatory. The social security number will be used for purposes of identification), mailing address, and telephone number of the applicant. The legal name shall be as shown on the government–issued identification document that will be used to verify the applicant's identity for taking any required examination;

(B) Identification of the certificate or permit category for which the individual is applying;

(C) Evidence that the applicant holds a current and valid California healing arts license as a physician and surgeon, osteopathic physician and surgeon, podiatrist, or a chiropractor; and

(D) Except for applications for the permit specified in subsection (a)(5), an application fee and, if the applicant is required to pass an examination, an examination fee as specified in section 30408;

(2) For the fluoroscopy supervisor and operator permit, pass a Department approved examination in fluoroscopy radiation protection and safety, and use and supervision of use of fluoroscopy and ancillary equipment. Passage of the examination is not required of applicants certified by the American Chiropractic Board of Radiology (ACBR) provided the applicant submits documentary evidence of certification by ACBR;

(3) For the radiography supervisor and operator permit, pass a Department approved examination in radiography radiation protection and safety, and use and supervision of use of radiography and ancillary equipment. Passage of the examination is not required of applicants certified by the American Chiropractic Board of Radiology (ACBR) provided the applicant submits documentary evidence of certification by ACBR;

(4) For the dermatology supervisor and operator permit, pass a Department approved examination in dermatology radiation protection and safety, and application and supervision of application of X–rays for treating diseases and tumors of the skin;

(5) For the X–ray bone densitometry supervisor and operator permit, submit:

(A) The manufacturer, make and model number of the X–ray bone densitometer (XBD) for which training was received;

(B) A copy of the certificate of completion issued to the applicant by the bone densitometer manufacturer's representative, or one of the following approved schools, that provided instruction in the use of the XBD indicating completion of the instruction specified in paragraph (5)(C):

1. Diagnostic radiologic technology school; or

2. Limited permit X–ray technician school teaching the X–ray bone densitometry permit category; and

(C) A copy of the curriculum covered by the manufacturer's representative or approved school. The curriculum shall include, at a minimum, instruction in all of the following areas:

1. Procedures for operation of the bone densitometer by the physician and surgeon, and for the supervision of the operation of the bone densitometer by other persons, including procedures for quality assurance of the XBD;

2. Radiation protection of the operator, the patient, and third parties in proximity to the bone densitometer;

3. Provisions of Article 5 (commencing at section 106955) of Chapter 4 of Part 1 and of Chapter 6 (commencing at section 114840) of Part 9 of Division 104 of the Health and Safety Code;

4. Provisions of Group 1 (commencing at section 30100), Group 1.5 (commencing at section 30108), and Article 1 (commencing at section 30250), Article 2 (commencing at section 30254), Article 3 (commencing at Section 30265), and Article 4 (commencing at section 30305) of Group 3 of Subchapter 4.0 of this chapter; and

5. Provisions of this subchapter (commencing at section 30400); and

(6) For the radiology supervisor and operator certificate, upon penalty of perjury, attest that the applicant practices as a radiologist or radiation oncologist and provide documentary evidence of meeting one of the following:

(A) The applicant is certified by either the American Board of Radiology (ABR) or American Osteopathic Board of Radiology (AOBR);

(B) The applicant has passed ABR's:

1. Diagnostic radiology initial qualifying physics examination and the diagnostic radiology initial qualifying clinical examination;

2. Diagnostic radiology core exam; or

3. Radiation oncology initial qualifying physics examination, initial qualifying cancer biology examination, and the initial qualifying clinical examination; or

(C) The applicant has passed AOBR's:

1. Part I (Physics of Medical Imaging, Biological Effects and Safety) and Part II (Diagnostic Imaging) examinations in diagnostic radiology; or

2. Part I (Radiobiology), Part II (Physics), and Part III (Clinical) examinations in radiation oncology.

(b) The Department may deny any certificate or permit on the basis of any of the reasons set forth in section 107070 of the Health and Safety Code which pertain to denial of certificates and permits, notwithstanding the fact that the individual has otherwise satisfied the requirements of this section.

NOTE: Authority cited: Sections 114870(a) and 131200, Health and Safety Code. Reference: Sections 107111, 114870(e), 114870(f), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Amendment of section heading and section and repealer and new NOTE filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30467. X–ray Bone Densitometry Supervisor and Operator Permit Requirements and Scope of Permit.

(a) Except as provided in subsection (c), any licensed physician and surgeon or osteopathic physician and surgeon who uses or supervises the use of an X–ray bone densitometer (XBD) shall possess an X–ray bone densitometry supervisor and operator permit. The permit shall be valid only for the particular bone densitometer the physician and surgeon was trained to use, and for any other XBD that meets all of the following criteria only if the physician and surgeon has completed training, as specified in section 30466(c)(5)(C), for the use of that particular XBD. The authorized activity, as specified in section 30461(e), covered by the permit shall be limited to the use of an XBD that:

(1) Does not require user intervention for calibration;

(2) Does not provide an image for diagnosis; and

(3) Is used only to estimate bone density of the heel, wrist, or finger of the patient.

(b) The physician and surgeon shall, upon request, provide evidence of training pursuant to section 30466(c)(5)(C) for any XBD used or supervised by the physician and surgeon.

(c) An X–ray bone densitometry supervisor and operator permit is not required of any licensed physician and surgeon who holds a current and valid radiology supervisor and operator certificate or radiography supervisor and operator permit.

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Sections 114870(f), 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Repealer and new section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30468. Licentiate Certificate or Permit Validity.

Certificates or permits issued pursuant to section 30466 are valid up to and including the date of expiration stated on the certificate or permit provided that the holder's California healing arts license is current and valid. If the holder's healing arts license expires or becomes invalid prior to the expiration date on the issued certificate or permit, the certificate or permit shall be invalid pending renewal or reinstatement of the holder's healing arts license.

NOTE: Authority cited: Sections 114870 and 131200, Health and Safety Code. Reference: Sections 114870, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. Repealer and new section filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

Subchapter 4.6. Requirements for Land Disposal of Radioactive Waste

Article 1. Applicable Federal Regulations

§ 30470. Low–Level Radioactive Waste Disposal.

The regulations governing low–level radioactive waste in the U.S. Government Code of Federal Regulations (CFR), Title 10, Code of Federal Regulations Part 61, as published in the Federal Register on June 22, 1993 (58 Fed. Reg. 33886) are hereby adopted by reference with the following exceptions:

(a) The Department of Health Services shall be substituted in all cases where Commission, Office of Nuclear Material Safety and Safeguards or U.S. Nuclear Regulatory Commission are cited and the Department of Industrial Relations shall be substituted in all cases where the U.S. Department of Labor is cited.

(b) The following sections are deleted: 61.4, 61.5, 61.8, 61.23(i), 61.23(j).

NOTE: Authority cited: Sections 100275, 115010, 115230 and 115235, Health and Safety Code. Reference: Section 115010, Health and Safety Code.

HISTORY

1. New Group 7 (Articles 1–8, Sections 30470–30499, not consecutive) filed 4–5–84 as an emergency; effective upon filing (Register 84, No. 14). No Certificate of Compliance required to be filed with OAL pursuant to Health and Safety Code Section 25812.
2. Editorial correction of HISTORY NOTE No. 1 and reprinting of Group 7 (Articles 1–8, Sections 30470–30499, not consecutive) which was inadvertently deleted in Register 85, No. 34. The text of Group 7 as filed with the Secretary of State on 4–5–84 remains in effect uninterrupted (Register 85, No. 45).
3. Amendment of first paragraph and NOTE filed 3–16–99; operative 4–15–99 (Register 99, No. 12).
4. Renumbering of former group 7 to new subchapter 4.6 filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30471. Transfer for Disposal, Manifests and Record Keeping.

The regulations governing the transfer of radioactive materials and manifests in Title 10, Code of Federal Regulations, Parts 20.2006, 61.12(n), 61.80(f) and (*l*), as published in the March 27, 1995 Federal Register (60 Fed. Reg. 15649) are hereby incorporated by reference.

NOTE: Authority cited: Sections 100275, 115010, 115230 and 115235, Health and Safety Code. Reference: Section 115010, Health and Safety Code.

HISTORY

1. Amendment of section heading, section and NOTE filed 6–17–99; operative 7–17–99 (Register 99, No. 25).

Article 2. General

§ 30473. Definitions.

(a) "Debt" means the obligations of the licensee or the named owner thereof which are fixed as to amount and which give the obligee rights as to assets of the licensee or any portion thereof which are superior to the rights of the licensee.

(b) "Equity" means the total book value of tangible and intangible assets which exceeds the amount of debt.

(c) "Letter of Acceptance" means a confirmation by the applicant that it agrees to be the license designee and commits itself to perform in accordance with statements, representations and procedures contained in its application.

(d) "Reasonable cost" means a cost which is reasonable if, in its nature or amount, does not exceed that which would be incurred by a prudent person under the circumstances prevailing at the time the decision was made to incur the cost.

NOTE: Authority cited: Sections 208 and 25812(b), Health and Safety Code. Reference: Section 25812(b), Health and Safety Code.

Article 3. Proprietary Documents

§ 30475. Proprietary Documents.

All documents submitted pursuant to the instructions in this group which are proprietary, private or confidential shall be so identified by the applying license designee or licensee as appropriate.

NOTE: Authority cited: Sections 208 and 25812(b), Health and Safety Code. Reference: Section 25812(b), Health and Safety Code.

Article 4. Selection of License Designee

§ 30477. Application for Selection as License Designee.

(a) Application for designation shall be made to the Department and shall be accompanied by a filing fee of ten thousand dollars.

(b) The application for designation shall contain all of the following:

(1) The information described in Title 10, Code of Federal Regulations, Part 61.11 and 61.12, as published in the December 28, 1982 Federal Register (Vol. 27, No. 248), except 61.11(c)(1), (2) and (3) and 61.12(a), (h) and (i).

(2) A description of any limitation in the site design which would restrict the receipt for disposal of low–level waste due to radiation levels, waste form, waste class or waste packaging.

(3) A description of the natural and demographic characteristics which will be emphasized in selection of the disposal site, including geologic, hydrologic, meteorologic, climatologic and biotic features of the disposal site and vicinity.

(4) A plan for community involvement in the site selection and development process, including brief descriptions of the applicant's experience with waste disposal or other developments requiring community involvement.

(5) The financial information called for in Title 10, Code of Federal Regulations, Parts 61.15, 61.61, 61.62, 61.63, as published in the December 28, 1982 Federal Register (Vol. 27, No. 248); a description of the sources of financing, the terms of financing; the filing of a financial pro forma; and revenue documentation.

(6) An estimate in 1984 dollars of the charges to be levied on waste received for disposal. The estimate shall assume the following:

(A) A preoperational period of five years, commencing in August 1984.

(B) An operating period of 20 years.

(C) A closure period of five years.

(D) Administrative controls extending for 100 years following the operating period.

(E) A site capacity of 250,000 cubic meters.

(F) A waste mix as described for Region 4 in Table D.9 "Untreated" Waste Volumes Projected to be Generated to the Year 2000 per Region (m^3), U.S. Nuclear Regulatory Commission, Draft Environmental Impact Statement on 10 CFR Part 61 NUREG–0782, Volume 3, September 1981.

NOTE: Authority cited: Sections 208, 25812.5(c) and 25812.5(e), Health and Safety Code. Reference: Sections 25812.5(c) and (e), Health and Safety Code.

§ 30479. Standards for Selecting the License Designee.

(a) The applicants shall be ranked in accordance with the degree to which their application demonstrates their ability to:

(1) Meet the financial standards and qualifications by reason of training, experience and character to carry out the disposal operations;

(2) Provide the best concept for site development and operation as required by Title 10, Code of Federal Regulations, Part 61.23, as published in the December 28, 1982 Federal Register (Vol. 27, No. 248) except that information which would pertain only to a specific site;

(3) Present an effective program to deal with concerns of the public regarding establishment of a low–level radioactive waste disposal site; and

(4) Establish, based on estimates, a reasonable schedule of charges for disposal of low–level radioactive waste.

NOTE: Authority cited: Sections 208 and 25812.5(c), Health and Safety Code. Reference: Section 25812.5(c), Health and Safety Code.

§ 30481. Acceptance by License Designee.

(a) The applicant ranked highest pursuant to Section 30479 shall, within five days of notification of its ranking, either:

(1) File a letter of acceptance, post a performance bond of one million dollars in favor of the Department and pay the annual license fee; or

(2) File a letter withdrawing their application.

(b) In the event that the highest ranked applicant withdraws its application, the next highest ranked applicant shall follow the processes set forth in Section 30481(a).

NOTE: Authority cited: Sections 208 and 25812.5(c), Health and Safety Code. Reference: Section 25812.5(c), Health and Safety Code.

Article 5. Forfeiture of Performance Bond

§ 30483. Standards for Forfeiture of the Performance Bond.

(a) The performance bond posted pursuant to Section 30481 shall be forfeited upon:

(1) Declaration of insolvency or voluntary reorganization under the bankruptcy laws, or

(2) Failure to maintain the promised schedule and such failure is not the result of an act of God or Departmentally caused delay and the license designee cannot provide assurance that this delay will be remedied without jeopardizing the overall project schedule.

(3) Failure to comply with requirements of this group, or

(4) Failure to pay the performance bond premium 30 days prior to its expiration.

(b) Upon the issuance of the operating license the licensee shall be relieved of its obligation to maintain the performance bond.

NOTE: Authority cited: Sections 208 and 25812.5(f), Health and Safety Code. Reference: Section 25812.5(f), Health and Safety Code.

Article 6. Fees

§ 30485. License Fee.

The license designee or the licensee shall pay an annual license fee of two–hundred fifty thousand dollars.

NOTE: Authority cited: Sections 208 and 25812(d), Health and Safety Code. Reference: Section 25812(d), Health and Safety Code.

Article 7. Financial Assurances

§ 30487. Additional Licensee Requirements and Financial Assurances.

(a) The licensee shall retain a certified public accounting firm approved by the Department for the purpose of making reports and audits of the operation of the low–level radioactive waste disposal site.

(b) An unqualified audit statement shall be prepared annually with respect to all matters which bear upon the license designee's or the licensee's ability to operate pursuant to the Letter of Acceptance or license. The unqualified annual audited statement shall be submitted to the Department no later than three months after the end of the license designee's or licensee's fiscal year in each year following the filing of the Letter of Acceptance, or issuance of the license.

(c) No security interest in the site shall be executed by the licensee without the consent of the Department which would give a creditor any right to stop the operation of the site.

NOTE: Authority cited: Sections 208 and 25812(b), Health and Safety Code. Reference: Section 25812(b), Health and Safety Code.

§ 30489. Funding for Disposal Site Closure and Stabilization.

(a) Funding for the approved plan for closure and stabilization shall be obtained from a closure surcharge of ten percent of the disposal charges levied by the licensee on disposers of low–level radioactive waste.

(b) The surcharge shall be deposited, within thirty days following collection, with a trustee approved by the Department, in a fund which shall be known as the Low–Level Radioactive Waste Disposal Site Closure Trust Fund. All balances in the fund shall be invested by the trustee in accordance with the investment standards set forth in Government Code, Section 16408.2.

(c) The amount of the financial assurance mechanism, Title 10, Code of Federal Regulations, Part 61.62, as published in the December 28, 1982 Federal Register (Vol. 27, No. 248), shall change as necessary to take into account both the increased costs of closure and the available balance in the Low–Level Radioactive Waste Disposal Site Closure Trust Fund. Changes in costs caused by inflation shall be calculated using an inflation factor derived from the annual Implicit Price Deflator for Gross National Product as published by the U.S. Department of Commerce in its Survey of Current Business. The inflation factor is calculated by dividing the latest published annual Deflator by the Deflator for the previous year.

(d) Payment for site closure and stabilization shall be made from the Low–Level Radioactive Waste Disposal Site Closure Trust Fund. Upon filing a petition to close, a licensee or any other person authorized to perform closure shall request payment for closure expenditures by submitting itemized bills to the trustee. The trustee is authorized to pay those bills which the trustee finds to be in accord with the approved plan and shall make reports of the expenditures to the Department quarterly in the first 12 months of closure and annually thereafter.

NOTE: Authority cited: Sections 208 and 25812(b), Health and Safety Code. Reference: Section 25812(b), Health and Safety Code.

§ 30491. Liability Insurance.

The licensee shall carry nuclear liability insurance of no less than ten million dollars for both sudden and accidental or slow and gradual contamination to people or property off site.

NOTE: Authority cited: Sections 208 and 25812(b), Health and Safety Code. Reference: Section 25812(b), Health and Safety Code.

Article 8. Rate Review and Approval Process

§ 30493. Establishment and Approval of Rates.

(a) The licensee shall establish a schedule of rates for waste disposal subject to approval by the Department.

(b) The rates for disposing of waste shall remain in effect for no less than two years from the effective date of the rates and shall be subject to review by the Department biennially.

(c) Any proposal to establish or change disposal rates shall be made to the Department by the licensee or a waste generator.

NOTE: Authority cited: Sections 208 and 25812.7, Health and Safety Code. Reference: Section 25812.7, Health and Safety Code.

§ 30495. Calculation of the Rate Schedule.

(a) The rate schedule shall be determined by dividing the total rate base, as calculated pursuant to Section 30495(c), by the sum of the estimated or actual amounts of all classes of waste received.

(b) Twenty–two months following establishment of the rate schedule, the licensee shall furnish the Department with the actual monthly disposal volumes by class compared with those assumed for that year.

(c) The rate base shall be calculated by analyzing the following components:

(1) Amortization on a straight–line basis, over a 20 year operating period, of costs incurred prior to the start of site operations. Costs shall include:

(A) Site acquisition costs, including but not limited to acquiring the land for the low–level radioactive disposal site and deeding the land to the State;

(B) Licensing costs, including but not limited to the costs associated with initial site selection, and the development of any plans, reports, designs, manuals and schedules necessitated by this group;

(C) Site development costs, including but not limited to grading, development of roads, installation of fencing and lighting, or installation of a system of wells and air monitors;

(D) Administrative costs, incurred during the time between approval of the Letter of Acceptance and licensure that have not been included in prior items.

(2) Depreciation on a twenty year straight–line basis of all buildings and equipment used in the operation of the disposal site and not including those costs specified in Section 30495(c)(1).

(3) Site operating costs consisting of those necessary and reasonable costs incurred during the daily operations of the disposal site.

(A) Costs applicable to services, facilities, equipment or supplies furnished to the licensee by organizations related to the licensee by common ownership or control are includable as site operating costs for the purpose of rate determination at the actual cost to the related organization.

(B) Fines or penalties are not includable as site operating costs in the rate base.

(4) The actual interest costs for any necessary short–term or long–term debt provided that the borrowed funds were devoted to the disposal site.

(5) A return factor specified by the licensee.

NOTE: Authority cited: Sections 208 and 25812.7, Health and Safety Code. Reference: Section 25812.7, Health and Safety Code.

§ 30497. Rate Review Documentation.

(a) For the purpose of verifying the rate base upon which rates have been proposed or established, including any rate base changes affecting the calculating of proposed rates, the licensee shall supply the following reports:

(1) Semiannual reports of all costs specified in Section 30495(c) incurred prior to the issuance of the license.

(2) An annual financial report which includes data used or proposed to be used by the licensee in the calculation of the rate base and/or rates for disposal of waste. This report shall be due within three (3) months of the licensee's fiscal year.

(3) The books and records supporting the reports referred to in this section shall be maintained in a form capable of and subject to review and audit by the Department.

(4) All contracts made by the licensee which require payments by the licensee of five percent or more of the latest annual reported gross revenue shall require that an independent audit report be made available to the Department.

NOTE: Authority cited: Sections 208 and 25812.7, Health and Safety Code. Reference: Section 25812.7, Health and Safety Code.

§ 30499. Adjustment of Rate Schedule.

If the actual volumes differ by five percent or more from the estimated total for the twenty–two month period, the rates shall be adjusted on the biennial review date to reflect the over– or under–estimation.

NOTE: Authority cited: Sections 208 and 25812.7, Health and Safety Code. Reference: Section 25812.7, Health and Safety Code.

Subchapter 4.7. Nuclear Medicine Technology

Article 1. Definitions

§ 30500. Certified Technologist, Nuclear Medicine.

"Certified technologist, nuclear medicine" means a person who holds a current certificate issued pursuant to Section 30532.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Government Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24). For history of former Section 30500, See Register 84, No. 43.
2. Renumbering of former subchapter 4.6 to new subchapter 4.7 filed 10–11–2013; operative 10–11–2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 41).

§ 30501. Direct Supervision.

"Direct supervision" means that the supervisor is physically present in the same room with the certified technologist, nuclear medicine, special permit holder or student of nuclear medicine technology at the time the nuclear medicine technology procedure is being performed.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code.

HISTORY

1. Renumbering of former Section 30501 to Section 30690 and new Section 30501 filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30502. General Supervision.

(a) "General Supervision" means that the supervisor is responsible for, and has control of, all of the following:

(1) Quality, technical and medical aspects of all nuclear medicine technology procedures.

(2) Radiation health and safety of patients, ancillary personnel and other persons.

(3) Ascertaining that certified technologists, nuclear medicine, maintain their competency by participation in management–sponsored or formal continuing education or training offered by professional organizations or societies, or by institutions of higher learning.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24). For prior history, see Register 84, No. 43.
2. Amendment of subsection (a)(3) filed 8–3–94; operative 9–2–94 (Register 94, No. 31).

§ 30503. In Vitro Test.

"In vitro test" means a nuclear medicine technology procedure in which the radioactive material is not administered to a human being.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Sections 25625 and 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30504. In Vivo Test.

"In vivo test" means a nuclear medicine technology procedure in which the radioactive material is administered to a human being.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Sections 25625 and 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30505. Licensed Clinical Bioanalyst.

"Licensed clinical bioanalyst" means a person who holds a current license issued pursuant to Section 1260 of the California Business and Professions Code to practice clinical laboratory bioanalysis.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code; and Section 1260, Business and Professions Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30506. Nuclear Medicine Physician.

"Nuclear medicine physician" means a physician and surgeon who is authorized by a specific radioactive material license issued pursuant to Section 30195 of this title to use radioactive material for diagnosis and treatment of disease in human beings.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30507. Nuclear Medicine Technology Procedures.

(a) "Nuclear medicine technology procedure" means procedures utilizing radioactive material for the diagnosis and treatment of disease in human beings, and include, but are not limited to, one or more of the following:

(1) Administration of radioactive material to human beings for diagnostic purposes.

(2) Withdrawal of blood samples for an in vitro test.

(3) Oral administration of radioactive material to human beings for therapeutic purposes.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Sections 25625 and 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30508. Special Permit.

"Special permit" means a permit issued pursuant to Section 30541.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30509. Student of Nuclear Medicine Technology.

"Student of nuclear medicine technology" means a person who has started and is in good standing in a course of instruction which, if successfully completed, would permit the person to receive a certificate in nuclear medicine technology issued pursuant to Section 30532.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30510. Supervisor.

"Supervisor" means a nuclear medicine physician, or, when performing in vitro tests, a physician and surgeon or a licensed clinical bioanalyst.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Sections 25625 and 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24). For prior history, see Register 68, No. 20.

Article 2. Certification of Nuclear Medicine Technologists

§ 30520. Competency Criteria.

(a) To meet the competency criteria for basic education in nuclear medicine technology, an applicant shall have successfully completed college level instruction in at least the following:

(1) Human anatomy and physiology.
(2) Physics.
(3) Mathematics
(4) Medical terminology.
(5) Oral and written communications.
(6) General chemistry.
(7) Medical ethics.
(8) Methods of patient care.
(9) Radiation safety and protection.
(10) Nuclear medicine physics.
(11) Radiation physics.
(12) Nuclear instrumentation.
(13) Statistics.
(14) Radionuclide chemistry.
(15) Radiopharmacology.
(16) Department organization and function.
(17) Radiation biology.
(18) Nuclear medicine in vivo and in vitro tests.
(19) Radionuclide therapy.
(20) Computer applications.

(b) To meet the competency criteria for laboratory instruction in nuclear medicine technology, an applicant shall have successfully completed college level instruction and training in at least the following:

(1) Collimators—sensitivity versus resolution.
(2) Survey instruments—composition, function, calibration and use.
(3) Gamma ray spectrometry—composition, function and use.
(4) Nuclear generators and dose calibration.
(5) Preparation of radioactive material for nuclear medicine technology procedures.
(6) Radioactive material waste handling techniques.

(c) To meet the competency criteria for clinical experience in nuclear medicine technology, an applicant shall have successfully performed at least all of the following:

(1) Fifty in vitro tests.
(2) Participation in ten oral administrations of radioactive material to human beings for therapeutic purposes.
(3) Ten of each of the following nuclear medicine technology procedures.
(A) Brain imaging and cisternography.
(B) Bone imaging.
(C) Thyroid imaging.
(D) Cardiac imaging.
(E) Pulmonary imaging.
(F) Gastrointestinal imaging.
(G) Genitourinary imaging.
(H) Great vessel imaging.
(I) Tumor and abscess imaging.
(4) Ten of each of the following in vivo tests:
(A) Thyroid uptake.
(B) Blood volume.
(C) Schilling test (B–12).
(5) Ten administrations of radioactive material to human beings for the purpose of performing nuclear medicine technology procedures after having received instruction in all of the following:
(A) Pertinent anatomy and physiology of all possible venipuncture sites.
(B) Choice of instruments, intravenous solutions, and equipment.
(C) Proper puncture techniques.
(D) Techniques of intravenous line establishment.
(E) Hazards and complications of venipuncture.
(F) Post–puncture care.
(G) Composition and purpose of antianaphylaxis tray.
(H) First aid and instruction in basic cardiopulmonary resuscitation.
(I) Care of specimen.
(6) Ten withdrawals of blood samples for in vitro tests.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24). For prior history, see Register 68, No. 20.

§ 30521. Supervision Requirements.

(a) Certified technologists, nuclear medicine, special permit holders, and students of nuclear medicine technology shall be under:

(1) General supervision when performing nuclear medicine technology procedures.
(2) Direct supervision when performing oral administration of radioactive material to human beings for therapeutic purposes.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

Article 3. Administration

§ 30530. Acceptable Applications.

(a) The Department considers an application for a certificate in nuclear medicine technology acceptable if all of the following conditions have been met:

(1) Application is made on a Nuclear Medicine Technology Certificate Application form DHS 8435 (7/87) furnished by the Department.
(2) Fee is paid pursuant to Section 30535.
(3) Documentation provided with the application establishes that the applicant's basic education, laboratory instruction and clinical experience meet at least the competency criteria set forth in Section 30520.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24). For prior history, see Register 68, No. 23.

§ 30531. Application Process and Deadlines.

(a) Submission of an application, documents, information, or fees supporting the application for any certificate or special permit issued under this subchapter shall be deemed to occur on the date the application, documents, information, or fees are received by the Department.

(1) An application is considered complete when all documents, information, or fees required to be submitted on or with the application have been received by the Department, and the applicant has passed any required examination.

(2) Written notification by the Department to applicants shall be deemed to occur on the date the notification is postmarked.

(b) The Department shall notify the applicant, within 30 calendar days of submission of the application for any certificate or special permit issued under this subchapter, of one of the following:

(1) That the application is complete and the Department's decision regarding the application.

(2) That the application is not accepted for filing and what specific documents, information, or fees the applicant shall submit within 30 calendar days in order for the Department to consider the application acceptable.

(3) That the application is acceptable and what examination the applicant shall pass in order to complete the application.

(c) The Department shall notify the applicant, within 60 calendar days of the date of any examination required by subsection (b)(3) of the results of the examination.

(d) The Department shall deem an application for a certificate or special permit issued under this subchapter to have been withdrawn by the applicant who fails to:

(1) Within 30 calendar days of notification, pursuant to subsection (b), respond to the Department's request to submit specific documentation, information, or fees; or

(2) Within 180 calendar days of notification pursuant to subsection (b), pass any required examination.

(e) Any applicant deemed by the Department to have withdrawn an application pursuant to subsection (d) may reapply by submitting a new application.

(f) The Department's time periods for processing an application, from the date the initial application is received by the Department to the date the application is complete and the final decision is made regarding a certificate or special permit issued under this subchapter are as follows:

(1) The median time for processing an application is 90 calendar days.

(2) The minimum time for processing an application is one day.

(3) The maximum time for processing an application is 240 calendar days.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 15376, Government Code; and Section 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30532. Issuance of Certificates.

(a) To obtain a certificate in nuclear medicine technology an applicant shall have on file with the Department an acceptable application as described in Section 30530, and

(1) Pass an examination in nuclear medicine technology administered by the Department, or

(2) Submit documentary evidence of having passed an examination equivalent to that administered by the Department and offered by one of the following:

(A) Nuclear Medicine Technology Certification Board.

(B) American Registry of Radiologic Technologists.

(C) American Society of Clinical Pathologists.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30533. Scopes of Certificates.

(a) Certificates shall be issued for one or more of the following:

(1) Diagnostic in vivo and in vitro tests involving measurement of uptake, dilution, or excretion, including venipuncture, but not involving imaging.

(2) Diagnostic nuclear medicine technology procedures involving imaging, including venipuncture.

(3) Use of generators and reagent kits for preparation of radioactive material.

(4) Internal radioactive material therapy.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).
2. Amendment of subsections (a)(1)–(2) and repealer of subsection (a)(5) filed 8–3–94; operative 9–2–94 (Register 94, No. 31).

§ 30534. Title.

No person other than individuals to whom the Department has issued a certificate in nuclear medicine technology shall use the title "Certified Technologist, Nuclear Medicine" or "CTNM."

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Sections 25626, 25629 and 25631, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30535. Fees.

(a) Each individual applying for a certificate in nuclear medicine technology shall pay an application fee of $180.00.

(b) Each individual applying for a special permit in nuclear medicine technology shall pay an application fee of $215.00.

(c) Each individual repeating a failed examination shall pay a fee of $88.00 per examination.

(d) The fee for replacement of a certificate in nuclear medicine technology shall be $14.00.

(e) Each individual applying for renewal of a certificate in nuclear medicine technology shall pay a renewal application fee of $206.00.

(f) Any individual who fails to pay the renewal application fee by the expiration date of the certificate shall immediately cease performance of duties requiring a certificate in nuclear medicine technology until such time as the fee and a late fee of 25 percent of the annual renewal application fee has been paid.

(g) Fees required by this section shall be nonrefundable.

NOTE: Authority cited: Sections 107160 and 131200, Health and Safety Code. Reference: Sections 107160, 131050, 131051 and 131052, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).
2. Amendment of section and NOTE filed 6–22–2005 as an emergency; operative 6–22–2005 (Register 2005, No. 25). A Certificate of Compliance must be transmitted to OAL by 10–20–2005 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 6–22–2005 order transmitted to OAL 9–20–2005 and filed 10–18–2005 (Register 2005, No. 42).
4. Amendment of subsections (a)–(e) and amendment of NOTE filed 6–15–2015; operative 6–15–2015. Submitted to OAL for filing and printing only pursuant to Health and Safety Code section 100425 (Register 2015, No. 25).

§ 30536. Renewal Procedures.

(a) Certificates issued pursuant to Section 30532 shall expire five years from the date of issuance.

(b) Applications for renewal of each certificate shall be:

(1) Made on a Nuclear Medicine Technology Certificate Renewal form DHS 8437 (4/88) furnished by the Department.

(2) Accompanied by fee paid pursuant to Section 30535.

(3) Filed with the Department at least 60 days prior to the expiration date of each certificate.

(c) The Department considers an application for renewal of a certificate in nuclear medicine technology complete if the following conditions have been met.

(1) Documentation submitted with the application establishes that the applicant has participated in management–sponsored or formal continuing education or training offered by one or more of the following:

(A) Professional organizations or societies.

(B) Institutions of higher learning.

(2) The applicant's education and training includes at least five clock hours since the last certificate renewal or initial application in each of the scopes specified in Section 30533 for which the certificate was issued.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30537. Notification Requirements.

(a) Every person who holds a current certificate issued pursuant to Section 30532 shall report to the Department any change of name or mailing address within 30 days of the change.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

Article 4. Exemptions and Enforcement

§ 30540. Students of Nuclear Medicine Technology.

The provisions of Section 30532 shall not apply to students of nuclear medicine technology when such students are performing nuclear medicine technology procedures under supervision as outlined in Section 30521 and are under direct guidance of an instructor who holds a current certificate issued pursuant to Section 30532.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Sections 25626 and 25631, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24). For prior history, see Register 84, No. 43.

§ 30541. Special Permits.

(a) To obtain a special permit in nuclear medicine technology, an applicant shall have on file with the Department a complete special permit application.

(b) The Department considers an application for a special permit complete if all the following conditions have been met:

(1) Application is made on a Nuclear Medicine Technology Special Permit Application form DHS 8436 (7/87) furnished by the Department.

(2) Fee is paid pursuant to Section 30535.

(3) The application is accompanied by a statement from the employer, verified by the Department, that the people in the locality in which the special permit is sought would be denied nuclear medicine technology services because of unavailability of certified technologists, nuclear medicine.

(c) Special permits shall be issued for a period of time not to exceed two years and are not renewable.

(d) Special permits shall not be transferable to another facility.

(e) Minimum qualifications for an applicant for a special permit shall be any of the following:

(1) Bachelor's degree in physical or biological sciences or equivalent, issued by an institution of higher learning.

(2) Sixty semester units in physical or biological sciences or equivalent, obtained in an institution of higher learning.

(3) Proof of state or national registration or certification in radiologic technology, medical technology, nursing, or respiratory technology.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25626, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30542. Display.

Any nuclear medicine technologist who holds a current certificate issued pursuant to Section 30532 shall prominently display such certificate or photocopy thereof at each facility where the technologist is performing nuclear medicine technology procedures.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Sections 25626 and 25631, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30543. Inspection.

The owner, occupant, or person in charge of any private or public facility specified as a condition of a license, certificate, or special permit issued pursuant to this Subchapter shall permit any officer, employee, or designated agent of the Department to enter such property at all reasonable times for the purpose of inspecting those areas of the property where authorized nuclear medicine technology procedures are performed and determining whether or not there is compliance with or a violation of provisions specified in Sections 25625 to 25631, inclusive, of the Health and Safety Code, or of this subchapter.

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 25631, Health and Safety Code.

HISTORY

1. New section filed 6–6–88; operative 7–6–88 (Register 88, No. 24).

§ 30550. Fuel Tank Emissions. [Repealed]

HISTORY

1. New section filed 11–9–64; effective thirtieth day thereafter (Register 64, No. 22).
2. Repealer filed 5–24–68; effective thirtieth day thereafter (Register 68, No. 20).

§ 30560. Carburetor Hot Soak Emissions. [Repealed]

HISTORY

1. New section filed 11–9–64; effective thirtieth day thereafter (Register 64, No. 22).
2. Repealer filed 5–24–68; effective thirtieth day thereafter (Register 68, No. 20).

§ 30570. Exhaust Odor and Irritation. [Repealed]

NOTE: Authority cited: Section 208, Health and Safety Code. Reference: Section 11349.7, Government Code.

HISTORY

1. New section filed 7–1–66; effective thirtieth day thereafter (Register 66, No. 20).
2. Repealer filed 10–24–84; effective thirtieth day thereafter (Register 84, No. 43).

[The next page is 241.]

CODE OF FEDERAL REGULATIONS

Title 10. Energy

Chapter 1. Nuclear Regulatory Commission

Part 20. Standards for Protection Against Radiation

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Editor's Note

The following regulations on "Standards for Protection Against Radiation" are from the January 1, 2008, version of the *Code of Federal Regulations (CFR),* Title 10, Chapter 1, Part 20.

The 2008 version of *CFR* regulations is the version referenced by the California Department of Health Services in their radiation regulations appearing in Title 17 of the *California Code of Regulations (CCR).*

Section 30253, subsection (a) of Title 17 of the *California Code of Regulations* reads as follows:

> **§ 30253. Standards for Protection Against Radiation.**
>
> (a) The regulations governing standards for protection against radiation in title 10, Code of Federal Regulations, part 20, (10 CFR 20) sections 20.1001 through 20.2402 and Appendices A through G (January 1, 2008) are hereby incorporated by reference with the following exceptions: . . . .

BARCLAYS CALIFORNIA CODE OF REGULATIONS

Register 2012, No. 36 CALIFORNIA REGULATORY CODE SUPPLEMENT September 7, 2012

DIGEST OF NEW REGULATIONS

CALIFORNIA REGULATORY CODE SUPPLEMENT DIGEST

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SUMMARIES OF NEW REGULATIONS

For subscribers to the amendment service for:
Title 17. Public Health
Division 1. Department of Health Services
Chapter 5. Sanitation
Subchapter 4. Radiation
Subchapter 4.5. Radiologic Technology
Subchapter 4.6. Nuclear Medicine Technology
Code of Federal Regulations
Title 10. Energy
Chapter 1. Nuclear Regulatory Commission
Part 20. Standards for Protection Against Radiation

Includes all amendments to regulations approved by the Office of Administrative Law and filed with the Secretary of State for the period 9/3/2012 through 9/7/2012.

Title 17

Public Health, Department of

Quality assurance requirements adopted for radiographic film

Summary: The Department of Public Health has adopted regulations implementing changes in statutory law affecting personnel and facilities using radiation–producing equipment for medical and dental purposes. This action establishes quality assurance standards for the use of X–ray machines that use film and the handling and storage of radiographic films. The Department has stated that quality assurance standards for digital radiography had not yet been established by either the medical or health physics communities at the time these regulations were developed.

Regulatory Action: Changes affect title 17, sections 30305.1, 30308.1 and 30311.1

Filed: 9/4/2012. **Effective:** 10/4/2012. **OAL File No.:** 12–0724–03

Agency Contact: Linda Cortez (916) 440–7807