State of Utah

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF RADIATION CONTROL

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August 10, 2001

U.S. Nuclear Regulatory Commission
Kathleen N. Schneider, Acting Deputy Director
Office of State and Tribal Programs
Washington, D.C. 20555-0001

Dear Mrs. Schneider:

Upon review of the NRC State Regulation Status for Utah, dated April 27, 2001(tracking ticket number 1-68), it was noted that the NRC summary for the final state regulation effective dates was incomplete. When the proposed regulations were adopted and published as final regulations, a copy of the final published rules and a highlighted copy of the changed rules, as requested in STP Procedure SA-2001, were sent to the NRC. Since your summary is incomplete, we are sending you copies of the highlighted changes and latest final rules so the State Regulation Status summary can be updated. You may also access the final rules electronically through our website http://www.deq.state.ut.us/eqrad/ rules/htm.

The missing effective dates for the State Regulation Status NRC Chronology Identifications are as follows:

NRC Chronology ID	**DRC Rule**	**Effective date**
Safety Requirements for Radiologic Equipment- Part 34 (55 FR 843, 1/10/94)	R313-36	1/04/94
Notification of Incidents- Parts 20, 30, 31, 34, 39, 40, 70 (56 FR 64980, 10/15/94)	R313-15	10/18/93
	R313-19	10/18/94
	R313-22	7/16/93
	R313-36	1/4/94
	R313-38	10/18/94
Quality Management Program and Misadministration-Part 35 (56 FR 34104, 1/27/95)	R313-32	7/6/94

STP-006 Template
RIDS DIST: SP08

NRC Chronology Identification	DRC Rule	Effective date
Definition of Land Disposal and Waste Site QA Program-Part 61 (58 FR 33886, 7/22/96)	R313-25	5/31/96
Frequency of Medical Examinations for Use of Respiratory Protection Equipment-Part 20 (60 FR 7900, 3/13/98)	R313-15	3/20/98
Low-Level Waste Shipment Manifest Information and Reporting-Parts 20, 61 (60 FR 15649 & 25983, 3/1/98)	R313-15 R313-25	3/20/98 1/23/98
Performance Requirements for Radiography Equipment-Part 34 (60 FR 28323, 6/30/98)	R313-36	12/12/97
Radiation Protection Requirements: Amended Definitions and Criteria-Parts 19, 20 (60 FR 36038, 8/14/98)	R313-15 R313-18	3/20/98 1/23/98
Medical Administration of Radiation and Radioactive Materials-Parts 20, 35 (60 FR 48623, 10/20/98)	R313-15, -32	8/11/98
Termination or Transfer of Licensed Activities: Recordkeeping Requirements-Parts 20, 30, 40, 61, 70 (61 FR 24669, 6/17/99)	R313-12 R313-15 R313-22 R313-25	3/20/98 3/20/98 7/18/97 1/23/98
Resolution of Dual Regulation of Airborne Effluents of Radioactive Materials; Clean Air Act-Part 20 (61 FR 65120, 1/9/00)	R313-15	3/20/98

NRC Chronology Identification	DRC Rule	Effective date
Recognition of Agreement State Licenses in Areas Under Exclusive Federal Jurisdiction Within an Agreement State-Part 150 (62 FR 1662, 2/27/00)	R313-19	6/11/99
Criteria for the Release of Individuals Administered Radioactive Material-Parts 20, 35 (62 FR 4120, 5/29/00)	R313-15 R313-32	3/20/98 1/23/98
Deliberate Misconduct by Unlicensed Persons-Parts 30, 40, 61, 70, 71, 150 (63 FR 1890 & 13773, 2/12/01)	R313-19	1/26/01
Licenses for Industrial Radiography and Radiation Safety Requirements for Industrial Radiographic Operations-Part 34 (63 FR 37059, 7/9/01)	R313-36	5/11/01

If you have any questions regarding our request for updating the effective dates for the final State rules on the NRC State Regulation Status summary, you may contact Susan Giddings at (801) 536-4250. Thank you for your assistance.

Sincerely,

William J. Sinclair, Director
Division of Radiation Control

STATE REGULATION STATUS

State: Utah
[Two proposed amendments (3/13/01) reviewed are identified by a ★ at the beginning of the equivalent NRC regulation.]

Tracking Ticket Number: 1-68
Date: April 27, 2001

NRC Chronology Identification	FR Notice (State Due Date)	RATS ID	Proposed (P) / Final (F)[1] Rule / ML #[4]	NRC Review / Y, N[2] / Date / ML #[4]	Final State Regulation[1] (Effective Date) See letter for OR C Rule equivalent
Standards for Protection Against Radiation-Part 20	56 FR 23360; 56 FR 61352; 57 FR 38588; 57 FR 57877; 58 FR 67657; 59 FR 41641; 60 FR 20183; (1/1/94)	1991-3	F F	Y 11/17/97 N 2/10/98	1/10/97 1/23/98
Safety Requirements for Radiographic Equipment-Part 34	55 FR 843; (1/10/94)	1991-1			1/4/94
ASNT Certification of Radiographers-Part 34	56 FR 11504; (none)	1991-2			Not required[3]
Notification of Incidents-Parts 20, 30, 31, 34, 39, 40, 70	56 FR 64980; (10/15/94)	1991-4			10/18/93 1/4/94 10/18/94 7/6/93 10/18/94
Quality Management Program and Misadministrations-Part 35	56 FR 34104; (1/27/95)	1992-1	P	N 1/26/98	7/6/94
Eliminating the Recordkeeping Requirements for Departures from Manufacturer's Instructions-Parts 30, 35	57 FR 45566; (none)	1992-2			Not required[3]
Licensing and Radiation Safety Requirements for Irradiators-Part 36	58 FR 7715; (7/1/96)	1993-2	F	N 6/14/00	3/10/00
Definition of Land Disposal and Waste Site QA Program-Part 61	58 FR 33886; (7/22/96)	1993-3	P	N 9/23/96	5/31/96
Decommissioning Recordkeeping and License Termination: Documentation Additions [Restricted areas and spill sites]-Parts 30, 40	58 FR 39628; (10/25/96)	1993-1	F	N 1/8/97	11/15/96
Self-Guarantee as an Additional Financial Mechanism-Parts 30, 40, 70	58 FR 68726; 59 FR 1618 (none)	1994-1			Not required[3]
Uranium Mill Tailings Regulations: Conforming NRC Requirements to EPA Standards-Part 40	59 FR 28220; (7/1/97)	1994-2			N/A
Timeliness in Decommissioning Material Facilities-Parts 30, 40, 70	59 FR 36026; (8/15/97)	1994-3	F	N 2/10/98	7/18/97
Preparation, Transfer for Commercial Distribution, and Use of Byproduct Material for Medical Use-Parts 30, 32, 35	59 FR 61767; 59 FR 65243 60 FR 322; (1/1/98)	1995-1	F	N 2/10/98	7/18/97
Frequency of Medical Examinations for Use of Respiratory Protection Equipment-Part 20	60 FR 7900; (3/13/98)	1995-2	P	N 1/26/98	3/20/98
Low-Level Waste Shipment Manifest Information and Reporting-Parts 20, 61	60 FR 15649; 60 FR 25983 (3/1/98)	1995-3	P	N 1/26/98	3/20/98 11/23/98

NRC Chronology Identification	FR Notice (State Due Date)	RATS ID	Proposed (P) / Final (F)[1] Rule / ML #[4]	NRC Review / Y, N[2] / Date / ML #[4]	Final State Regulation[1] (Effective Date)
Performance Requirements for Radiography Equipment-Part 34	60 FR 28323; (6/30/98)	1995-4			12/12/97
Radiation Protection Requirements: Amended Definitions and Criteria-Parts 19, 20	60 FR 36038; (8/14/98)	1995-5	P	N 1/26/98	3/20/98 11/23/98
Clarification of Decommissioning Funding Requirements-Parts 30, 40, 70	60 FR 38235; (11/24/98)	1995-6	F	N 2/10/98	7/18/97
Medical Administration of Radiation and Radioactive Materials-Parts 20, 35	60 FR 48623; (10/20/98)	1995-7	P	N 1/26/98	8/11/98
10 CFR Part 71: Compatibility with the International Atomic Energy Agency-Part 71	60 FR 50248; 61 FR 28723 (4/1/99)	1996-1	F	4/16/98	3/12/99
One Time Extension of Certain Byproduct, Source and Special Nuclear Materials Licenses-Parts 30, 40, 70	61 FR 1109; (none)	1996-2	F	N 2/10/98	Not required[3]
Termination or Transfer of Licensed Activities: Recordkeeping Requirements-Parts 20, 30, 40, 61, 70	61 FR 24669; (6/17/99)	1996-3	F Part 30 P	N 2/10/98 N 1/26/98	3/20/98 3/20/98 7/18/97 11/23/98
Resolution of Dual Regulation of Airborne Effluents of Radioactive Materials; Clean Air Act-Part 20	61 FR 65120; (1/9/00)	1997-1	P	N 1/26/98	3/20/98
Fissile Material Shipments and Exemptions-Part 71	62 FR 5907; (none)	1997-4			Not required[3]
Recognition of Agreement State Licenses in Areas Under Exclusive Federal Jurisdiction Within an Agreement State-Part 150	62 FR 1662; (2/27/00)	1997-2			6/11/99
Criteria for the Release of Individuals Administered Radioactive Material-Parts 20, 35	62 FR 4120; (5/29/00)	1997-3	P	N 1/26/09	3/20/98 11/23/98
Licenses for Industrial Radiography and Radiation Safety Requirements for Industrial Radiography Operations-Parts 30, 34, 71, 150	62 FR 28948; (6/27/00)	1997-5	F	N 4/1/98	5/15/97
Radiological Criteria for License Termination-Parts 20, 30, 40, 70	62 FR 39058; (8/20/00)	1997-6	F	N 6/14/00	3/10/00
Exempt Distribution of a Radioactive Drug Containing One Microcurie of Carbon-14 Urea-Part 30	62 FR 63634; (1/02/01)	1997-7	F	N 4/16/99	3/12/99
Deliberate Misconduct by Unlicensed Persons-Parts 30, 40, 61, 70, 71, 150	63 FR 1890; 63 FR 13773 (2/12/01)	1998-1	P ML003770824	N 1/12/01 ML010160461	1/26/01
Self-Guarantee of Decommissioning Funding by Nonprofit and Non-Bond-Issuing Licensees- Parts 30, 40, 70	63 FR 29535; (none)	1998-2			Not required[3]
License Term for Medical Use Licenses-Part 35	63 FR 31604; (none)	1998-3			Not required[3]

NRC Chronology Identification	FR Notice (State Due Date)	RATS ID	Proposed (P) / Final (F)[1] Rule / ML #[4]	NRC Review / Y, N[2] / Date / ML #[4]	Final State Regulation[1] (Effective Date)
★Licenses for Industrial Radiography and Radiation Safety Requirements for Industrial Radiographic Operations-Part 34	63 FR 37059; (7/9/01)	1998-4	P ML010870073	N 4/27/01 ML011170330	5/11/01
Minor Corrections, Clarifying Changes, and a Minor Policy Change-Parts 20, 35, 36	63 FR 39477; 63 FR 45393 (10/26/01)	1998-5			
Transfer for Disposal and Manifests: Minor Technical Conforming Amendment-Part 20	63 FR 50127; (11/20/01)	1998-6			
Radiological Criteria for License Termination of Uranium Recovery Facilities-Part 40	64 FR 17506; (6/11/02)	1999-1			
Requirements for Those Who Possess Certain Industrial Devices Containing Byproduct Material to Provide Requested Information-Part 31	64 FR 42269; (none)	1999-2			Not required[3]
Respiratory Protection and Controls to Restrict Internal Exposure-Part 20	64 FR 54543; 64 FR 55525 (2/2/03)	1999-3			
Energy Compensation Sources for Well Logging and Other Regulatory Clarifications-Part 39	65 FR 20337; (5/17/03)	2000-1			
★New Dosimetry Technology-Parts 34, 36, 39	65 FR 63749; (1/8/04)	2000-2	P Part 34 ML010870073	N 4/27/01 ML011170330	

1. Or other generic Legally Binding Requirements.

2. (Y/N) Y means "Yes," there are comments in the review letter that the State needs to address. N means "No," there are no comments in the review letter.

3. Not required means these regulations are not required for purposes of compatibility.

4. ADAMS ML Number

[*Utah Administrative Code* List of Titles]|[Search Rules Publica

Rule R313-12. General Provisions.

As in effect on July 1, 2001

Table of Contents

R313-12-1. Authority.

The rules set forth herein are adopted pursuant to the provisions of Subsections 19-3-104(3) and

R313-12-2. Purpose and Scope.

It is the purpose of these rules to state such requirements as shall be applied in the use of radiati materials to ensure the maximum protection of the public health and safety to all persons at, or in storage, or disposal. These rules are intended to be consistent with the proper use of radiation m Except as otherwise specifically provided, these rules apply to all persons who receive, possess, source of radiation, provided, however, that nothing in these rules shall apply to any person to the regulation by the U.S. Nuclear Regulatory Commission. See also Section R313-12-55.

R313-12-3. Definitions.

As used in these rules, these terms shall have the definitions set forth below. Additional definition found in that rule.

"A_1" means the maximum activity of special form radioactive material permitted in a Type A packa

"A_2" means the maximum activity of radioactive material, other than special form radioactive mate

contaminated object material permitted in a Type A package. These values are either listed in 10 incorporated by reference in Section R313-19-100 or may be derived in accordance with the proc Appendix A, which is incorporated by reference in Section R313-19- 100.

"Absorbed dose" means the energy imparted by ionizing radiation per unit mass of irradiated mat the gray (Gy) and the rad.

"Accelerator produced material" means a material made radioactive by a particle accelerator.

"Act" means Utah Radiation Control Act, Title 19, Chapter 3.

"Activity" means the rate of disintegration or transformation or decay of radioactive material. The and the curie (Ci).

"Adult" means an individual 18 or more years of age.

"Address of use" means the building that is identified on the license and where radioactive materi

"Agreement State" means a state with which the United States Nuclear Regulatory Commission h under Section 274 b. of the Atomic Energy Act of 1954, as amended (73 Stat. 689).

"Airborne radioactive material" means a radioactive material dispersed in the air in the form of du or gases.

"Airborne radioactivity area" means: a room, enclosure, or area in which airborne radioactive mat

(a) In excess of the derived air concentrations (DACs), specified in Rule R313-15, or

(b) To such a degree that an individual present in the area without respiratory protective equipme individual is present in a week, an intake of 0.6 percent of the annual limit on intake (ALI), or 12 D

"As low as reasonably achievable" (ALARA) means making every reasonable effort to maintain e dose limits as is practical, consistent with the purpose for which the licensed or registered activity state of technology, the economics of improvements in relation to state of technology, the econor benefits to the public health and safety, and other societal and socioeconomic considerations, an energy and licensed or registered sources of radiation in the public interest.

"Area of use" means a portion of an address of use that has been set aside for the purpose of re material.

"Background radiation" means radiation from cosmic sources; naturally occurring radioactive mat decay product of source or special nuclear material, and including global fallout as it exists in the explosive devices or from past nuclear accidents such as Chernobyl that contribute to backgroun control of the licensee. "Background radiation" does not include sources of radiation from radioac Department under the Radiation Control Act or Rules.

"Becquerel" (Bq) means the SI unit of activity. One becquerel is equal to one disintegration or trar

"Bioassay" means the determination of kinds, quantities or concentrations, and in some cases, th the human body, whether by direct measurement, in vivo counting, or by analysis and evaluation the human body. For purposes of these rules, "radiobioassay" is an equivalent term.

"Board" means the Radiation Control Board created under Section 19-1-106.

"Byproduct material" means:

(a) a radioactive material, with the exception of special nuclear material, yielded in or made radio: incident to the process of producing or utilizing special nuclear material; and

(b) the tailings or wastes produced by the extraction or concentration of uranium or thorium from : source material content, including discrete surface wastes resulting from uranium or thorium solu ore bodies depleted by these solution extraction operations do not constitute "byproduct material'

"Calendar quarter" means not less than 12 consecutive weeks nor more than 14 consecutive wee year shall begin in January, and subsequent calendar quarters shall be arranged so that no day i quarter and no day in any one year is omitted from inclusion within a calendar quarter. The metho registrant for determining calendar quarters shall only be changed at the beginning of a year.

"Calibration" means the determination of:

(a) the response or reading of an instrument relative to a series of known radiation values over th

(b) the strength of a source of radiation relative to a standard.

"CFR" means Code of Federal Regulations.

"Chelating agent" means a chemical ligand that can form coordination compounds in which the lig coordination position. The agents include beta diketones, certain proteins, amine polycarboxylic a acid, and polycarboxylic acids.

"Collective dose" means the sum of the individual doses received in a given period of time by a s specified source of radiation.

"Committed dose equivalent" ($H_{T,50}$), means the dose equivalent to organs or tissues of referenc 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 or tissues that are irradiated and the committed dose equivalent to each of these organs or tissue

"Controlled area" means an area, outside of a restricted area but inside the site boundary, acces licensee or registrant for any reason.

"Critical group" means the group of individuals reasonably expected to receive the greatest expos applicable set of circumstances.

"Curie" means a unit of measurement of activity. One curie (Ci) is that quantity of radioactive mat 10^{10} disintegrations or transformations per second (dps or tps).

"Decommission" means to remove a facility or site safely from service and reduce residual radioa

(a) release of property for unrestricted use and termination of the license; or

(b) release of the property under restricted conditions and termination of the license.

"Deep dose equivalent" (H_d), which applies to external whole body exposure, means the dose eq centimeter (1000 mg/cm^2).

"Department" means the Utah State Department of Environmental Quality.

"Depleted uranium" means the source material uranium in which the isotope uranium-235 is less uranium present. Depleted uranium does not include special nuclear material.

"Distinguishable from background" means that the detectable concentration of a radionuclide is s background concentration of that radionuclide in the vicinity of the site or, in the case of structure measurement technology, survey, and statistical techniques.

"Dose" is a generic term that means absorbed dose, dose equivalent, effective dose equivalent, c effective dose equivalent, or total effective dose equivalent. For purposes of these rules, "radiatio

"Dose equivalent" (H_T), means the product of the absorbed dose in tissue, quality factor, and othe location of interest. The units of dose equivalent are the sievert (Sv) and rem.

"Dose limits" means the permissible upper bounds of radiation doses established in accordance v rules, "limits" is an equivalent term.

"Effective dose equivalent" (H_E), means the sum of the products of the dose equivalent to each o factor (w_T,) applicable to each of the body organs or tissues that are irradiated.

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

"Entrance or access point" means an opening through which an individual or extremity of an indiv areas or to licensed or registered radioactive materials. This includes entry or exit portals of suffic irrespective of their intended use.

"Executive Secretary" means the executive secretary of the board.

"Explosive material" means a chemical compound, mixture, or device which produces a substanti heat spontaneously or by contact with sparks or flame.

"EXPOSURE" when capitalized, means the quotient of dQ by dm where "dQ" is the absolute valu sign produced in air when all the electrons, both negatrons and positrons, liberated by photons in of "dm" are completely stopped in air. The special unit of EXPOSURE is the roentgen (R). See Se and dose for the SI equivalent. For purposes of these rules, this term is used as a noun.

"Exposure" when not capitalized as the above term, means being exposed to ionizing radiation or of these rules, this term is used as a verb.

"EXPOSURE rate" means the EXPOSURE per unit of time, such as roentgen per minute and mill

"External dose" means that portion of the dose equivalent received from a source of radiation out

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

"Eye dose equivalent" means the external dose equivalent to the lens of the eye at a tissue depth

"Facility" means the location within one building, vehicle, or under one roof and under the same a

(a) at which the use, processing or storage of radioactive material is or was authorized; or

(b) at which one or more radiation-producing machines or radioactivity-inducing machines are ins

"Former United States Atomic Energy Commission (AEC) or United States Nuclear Regulatory C means nuclear reactors, nuclear fuel reprocessing plants, uranium enrichment plants, or critical r or NRC licenses have been terminated.

"Generally applicable environmental radiation standards" means standards issued by the U.S. En the authority of the Atomic Energy Act of 1954, as amended, that impose limits on radiation expo quantities of radioactive material, in the general environment outside the boundaries of locations possessing or using radioactive material.

"Gray" (Gy) means the SI unit of absorbed dose. One gray is equal to an absorbed dose of one jc

"Hazardous waste" means those wastes designated as hazardous by the U.S. Environmental Prc 261.

"Healing arts" means the disciplines of medicine, dentistry, osteopathy, chiropractic, and podiatry

"High radiation area" means an area, accessible to individuals, in which radiation levels could res equivalent in excess of one mSv (0.1 rem), in one hour at 30 centimeters from a source of radiati penetrates. For purposes of these rules, rooms or areas in which diagnostic x-ray systems are us considered high radiation areas.

"Human use" means the intentional internal or external administration of radiation or radioactive r

"Individual" means a human being.

"Individual monitoring" means the assessment of:

(a) dose equivalent, by the use of individual monitoring devices or, by the use of survey data; or

(b) committed effective dose equivalent by bioassay or by determination of the time weighted air has been exposed, that is, DAC-hours.

"Individual monitoring devices" means devices designated to be worn by a single individual for th purposes of these rules, individual monitoring equipment and personnel monitoring equipment ar individual monitoring devices are film badges, thermoluminescent dosimeters (TLD's), pocket ioni sampling devices.

"Inspection" means an official examination or observation including, but not limited to, tests, surv compliance with rules, orders, requirements and conditions applicable to radiation sources.

"Interlock" means a device arranged or connected requiring the occurrence of an event or conditi

or continue to occur.

"Internal dose" means that portion of the dose equivalent received from radioactive material take

"License" means a license issued by the Executive Secretary in accordance with the rules adopte

"Licensee" means a person who is licensed by the Department in accordance with these rules an

"Licensed or registered material" means radioactive material, received, possessed, used or trans or specific license issued by the Executive Secretary.

"Licensing state" means a state which has been provisionally or finally designated as such by the Program Directors, Inc., which reviews state regulations to establish equivalency with the Sugges whether a State has an effective program for control of natural occurring or accelerator produced Conference will designate as Licensing States those states with regulations for control of radiatio for, the regulatory control of NARM.

"Limits". See "Dose limits".

"Lost or missing source of radiation" means licensed or registered sources of radiation whose loc includes, but is not limited to, radioactive material that has been shipped but has not reached its cannot be readily traced in the transportation system.

"Major processor" means a user processing, handling, or manufacturing radioactive material exce sources or material, or exceeding four times Type B quantities as sealed sources, but does not in universities, industrial radiographers, or small industrial programs. Type A and B quantities are de

"Member of the public" means an individual except when that individual is receiving an occupatio

"Minor" means an individual less than 18 years of age.

"Monitoring" means the measurement of radiation, radioactive material concentrations, surface a material, and the use of the results of these measurements to evaluate potential exposures and c radiation monitoring and radiation protection monitoring are equivalent terms.

"NARM" means a naturally occurring or accelerator-produced radioactive material. It does not inc nuclear material.

"NORM" means a naturally occurring radioactive material.

"Natural radioactivity" means radioactivity of naturally occurring nuclides.

"Nuclear Regulatory Commission" (NRC) means the U.S. Nuclear Regulatory Commission or its

"Occupational dose" means the dose received by an individual in the course of employment in w the licensee or registrant involve exposure to sources of radiation, whether or not the sources of licensee, registrant, or other person. Occupational dose does not include doses received from ba administration the individual has received, from exposure to individuals administered radioactive with Section R313-32-75, from voluntary participation in medical research programs, or as a mem

"Package" means the packaging together with its radioactive contents as presented for transport.

"Particle accelerator" means a machine capable of accelerating electrons, protons, deuterons, or and of discharging the resultant particulate or other radiation into a medium at energies usually in

"Permit" means a permit issued by the Executive Secretary in accordance with the rules adopted

"Permitee" means a person who is permitted by the Department in accordance with these rules a

"Person" means an individual, corporation, partnership, firm, association, trust, estate, public or p political subdivision of this state, or another state or political subdivision or agency thereof, and a or agency of the foregoing.

"Personnel monitoring equipment," see individual monitoring devices.

"Pharmacist" means an individual licensed by this state to practice pharmacy. See Sections 58-1

"Physician" means an individual licensed by this state to practice medicine and surgery in all its b through 58-67-803.

"Practitioner" means an individual licensed by this state in the practice of a healing art. Examples osteopath, and chiropractor.

"Protective apron" means an apron made of radiation-attenuating materials used to reduce expos

"Public dose" means the dose received by a member of the public from sources of radiation from Public dose does not include occupational dose or doses received from background radiation, fro individual has received, from exposure to individuals administered radioactive material and releas R313-32-75, or from voluntary participation in medical research programs.

"Pyrophoric material" means any liquid that ignites spontaneously in dry or moist air at or below 1 Celsius) or any solid material, other than one classed as an explosive, which under normal condit friction, retained heat from manufacturing or processing, or which can be ignited and, when ignite as to create a serious transportation, handling, or disposal hazard. Included are spontaneously c materials.

"Quality factor" (Q) means the modifying factor, listed in Tables 1 and 2 of Section R313-12-20 th from absorbed dose.

"Rad" means the special unit of absorbed dose. One rad is equal to an absorbed dose of 100 erg

"Radiation" means alpha particles, beta particles, gamma rays, x-rays, neutrons, high speed elec particles capable of producing ions. For purposes of these rules, ionizing radiation is an equivaler rules, does not include non-ionizing radiation, like radiowaves or microwaves, visible, infrared, or

"Radiation area" means an area, accessible to individuals, in which radiation levels could result ir equivalent in excess of 0.05 mSv (0.005 rem), in one hour at 30 centimeters from the source of r radiation penetrates.

"Radiation machine" means a device capable of producing radiation except those devices with ra radiation.

"Radiation safety officer" means an individual who has the knowledge and responsibility to apply and has been assigned such responsibility by the licensee or registrant.

"Radiation source". See "Source of radiation."

"Radioactive material" means a solid, liquid, or gas which emits radiation spontaneously.

"Radioactivity" means the transformation of unstable atomic nuclei by the emission of radiation.

"Radiobioassay". See "Bioassay".

"Registrant" means any person who is registered with respect to radioactive materials or radiation Secretary or is legally obligated to register with the Executive Secretary pursuant to these rules a

"Registration" means registration with the Department in accordance with the rules adopted by th

"Regulations of the U.S. Department of Transportation" means 49 CFR 100 through 189.

"Rem" means the special unit of any of the quantities expressed as dose equivalent. The dose ec absorbed dose in rad multiplied by the quality factor. One rem equals 0.01 sievert (Sv).

"Research and development" means:

(a) theoretical analysis, exploration, or experimentation; or

(b) the extension of investigative findings and theories of a scientific or technical nature into pract demonstration purposes, including the experimental production and testing of models, devices, e Research and development does not include the internal or external administration of radiation o

"Residual radioactivity" means radioactivity in structures, materials, soils, groundwater, and other under the licensee's control. This includes radioactivity from all licensed and unlicensed sources background radiation. It also includes radioactive materials remaining at the site as a result of rou radioactive material at the site and previous burials at the site, even if those burials were made in R313-15.

"Restricted area" means an area, access to which is limited by the licensee or registrant for the p undue risks from exposure to sources of radiation. A "Restricted area" does not include areas us rooms in a residential building may be set apart as a restricted area.

"Roentgen" (R) means the special unit of EXPOSURE. One roentgen equals 2.58×10^{-4} coulomb

"Sealed source" means radioactive material that is permanently bonded or fixed in a capsule or n dispersal of the radioactive material under the most severe conditions which are likely to be enco

"Shallow dose equivalent" (H_s) which applies to the external exposure of the skin or an extremity, depth of 0.007 centimeter (seven mg per cm^2), averaged over an area of one square centimeter.

"SI" means an abbreviation of the International System of Units.

"Sievert" (Sv) means the SI unit of any of the quantities expressed as dose equivalent. The dose absorbed dose in gray multiplied by the quality factor. One Sv equals 100 rem.

"Site boundary" means that line beyond which the land or property is not owned, leased, or other registrant.

"Source container" means a device in which sealed sources are transported or stored.

"Source material" means:

(a) uranium or thorium, or any combination thereof, in any physical or chemical form, or

(b) ores that contain by weight one-twentieth of one percent (0.05 percent), or more of, uranium, and thorium. Source material does not include special nuclear material.

"Source material milling" means any activity that results in the production of byproduct material as

"Source of radiation" means any radioactive material, or a device or equipment emitting or capabl

"Special form radioactive material" means radioactive material which satisfies the following condit

(a) it is either a single solid piece or is contained in a sealed capsule that can be opened only by

(b) the piece or capsule has at least one dimension not less than five millimeters (0.197 inch); an

(c) it satisfies the test requirements specified by the U.S. Nuclear Regulatory Commission in 10 C encapsulation designed in accordance with the U.S. Nuclear Regulatory Commission requiremen constructed prior to July 1, 1985, may continue to be used. A special form encapsulation designe of Section 71.4 in effect on March 31, 1996, (see 10 CFR 71 revised January 1, 1983), and const continue to be used. Any other special form encapsulation must meet the specifications of this de

"Special nuclear material" means:

(a) plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and other Regulatory Commission, pursuant to the provisions of section 51 of the Atomic Energy Act of 195 special nuclear material, but does not include source material; or

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

"Special nuclear material in quantities not sufficient to form a critical mass" means uranium enrich not exceeding 350 grams of contained U-235; uranium-233 in quantities not exceeding 200 gram 200 grams or a combination of them in accordance with the following formula: For each kind of sp ratio between the quantity of that special nuclear material and the quantity specified above for the The sum of such ratios for all of the kinds of special nuclear material in combination shall not exc quantities in combination would not exceed the limitation and are within the formula:

((175(Grams contained U-235)/350) + (50(Grams U-233/200) + (50(Grams Pu)/200)) is equal to c

"Survey" means an evaluation of the radiological conditions and potential hazards incident to the disposal, or presence of sources of radiation. When appropriate, such evaluation includes, but is examinations and measurements of levels of radiation or concentrations of radioactive material p

"Test" means the process of verifying compliance with an applicable rule.

"These rules" means "Utah Radiation Control Rules".

"Total effective dose equivalent" (TEDE) means the sum of the deep dose equivalent for external dose equivalent for internal exposures.

"Total organ dose equivalent" (TODE) means the sum of the deep dose equivalent and the comm receiving the highest dose as described in Subsection R313-15-1107(1)(f).

"U.S. Department of Energy" means the Department of Energy established by Public Law 95-91, U.S.C. 7101 et seq., to the extent that the Department exercises functions formerly vested in the Chairman, members, officers and components and transferred to the U.S. Energy Research and Administrator thereof pursuant to sections 104(b), (c), and (d) of Public Law 93- 438, October 11, January 19, 1975 known as the Energy Reorganization Act of 1974, and retransferred to the Sec 301(a) of Public Law 95-91, August 14, 1977, 91 Stat. 565 at 577-578, 42 U.S.C. 7151, effective Department of Energy Organization Act.

"Unrefined and unprocessed ore" means ore in its natural form prior to processing, like grinding, r

"Unrestricted area" means an area, to which access is neither limited nor controlled by the licens rules, "uncontrolled area" is an equivalent term.

"Waste" means those low-level radioactive wastes that are acceptable for disposal in a land disp definition, low-level waste has the same meaning as in the Low-Level Radioactive Waste Policy A 99-240, effective January 15, 1986; that is, radioactive waste:

(a) not classified as high-level radioactive waste, spent nuclear fuel, or byproduct material as defi Energy Act (uranium or thorium tailings and waste) and

(b) classified by the U.S. Nuclear Regulatory Commission as low-level radioactive waste consiste with (a) above.

"Waste collector licensees" means persons licensed to receive and store radioactive wastes prior dispose of radioactive waste.

"Week" means seven consecutive days starting on Sunday.

"Whole body" means, for purposes of external exposure, head, trunk including male gonads, arm knees.

"Worker" means an individual engaged in work under a license or registration issued by the Exec licensee or registrant, but does not include the licensee or registrant.

"Working level" (WL), means any combination of short-lived radon daughters in one liter of air tha 1.3×10^5 MeV of potential alpha particle energy. The short-lived radon daughters are, for radon-2 bismuth-214, and polonium-214; and for radon 220: polonium-216, lead-212, bismuth-212, and p

"Working level month" (WLM), means an exposure to one working level for 170 hours. 2,000 worl months per year is approximately equal to 170 hours per month.

"Year" means the period of time beginning in January used to determine compliance with the pro

registrant may change the starting date of the year used to determine compliance by the licensee to make the change is made not later than December 31 of the previous year. If a licensee or reg or registrant shall assure that no day is omitted or duplicated in consecutive years.

R313-12-20. Units of Exposure and Dose.

(1) As used in these rules, the unit of EXPOSURE is the coulomb per kilogram (C per kg). One rc per kilogram of air.

(2) As used in these rules, the units of dose are:

(a) Gray (Gy) is the SI unit of absorbed dose. One gray is equal to an absorbed dose of one joule rad.

(b) Rad is the special unit of absorbed dose. One rad is equal to an absorbed dose of 100 erg pe rad equals 0.01 Gy.

(c) Rem is the special unit of any of the quantities expressed as dose equivalent. The dose equiv dose in rad multiplied by the quality factor. One rem equals 0.01 Sv.

(d) Sievert (Sv) is the SI unit of any of the quantities expressed as dose equivalent. The dose eqt absorbed dose in gray multiplied by the quality factor. One Sv equals 100 rem.

(3) As used in these rules, the quality factors for converting absorbed dose to dose equivalent are

TABLE 1

Quality Factors and Absorbed Dose Equivalencies

Type of Radiation	Quality Factor (Q)	Absorbed Dose Equal to a Unit Dose Equivalent
X, gamma, or beta radiation and high-speed electrons	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

For the column in Table 1 labeled "Absorbed Dose Equal to a Unit Dose Equivalent" to one rem or the absorbed dose in gray is equal to one Sv.

(4) If it is more convenient to measure the neutron fluence rate than to determine the neutron dos rem per hour, as provided in Subsection R313-12-20(3), 0.01 Sv of neutron radiation of unknown rules, be assumed to result from a total fluence of 25 million neutrons per square centimeter incid information exists to estimate the approximate energy distribution of the neutrons, the licensee or per unit dose equivalent or the appropriate Q value from Table 2 to convert a measured tissue do sievert or rem.

TABLE 2

Mean Quality Factors, Q, and Fluence Per Unit Dose

Equivalent for Monoenergetic Neutrons

	Neutron Energy Mev	Quality Factor Q	Fluence per Unit Dose Equivalent neutrons cm^{-2} rem^{-1}	Fluence per Unit Dose Equivalent neutrons cm^{-2} Sv^{-1}
thermal	2.5×10^{-8}	2	980×10^6	980×10^8
	1×10^{-7}	2	980×10^6	980×10^8
	1×10^{-6}	2	810×10^6	810×10^8
	1×10^{-5}	2	810×10^6	810×10^8
	1×10^{-4}	2	840×10^6	840×10^8
	1×10^{-3}	2	980×10^6	980×10^8
	1×10^{-2}	2.5	1010×10^6	1010×10^8
	1×10^{-1}	7.5	170×10^6	170×10^8
	5×10^{-1}	11	39×10^6	39×10^8
	1	11	27×10^6	27×10^8
	2.5	9	29×10^6	29×10^8
	5	8	23×10^6	23×10^8
	7	7	24×10^6	24×10^8
	10	6.5	24×10^6	24×10^8
	14	7.5	17×10^6	17×10^8
	20	8	16×10^6	16×10^8
	40	7	14×10^6	14×10^8
	60	5.5	16×10^6	16×10^8
	1×10^2	4	20×10^6	20×10^8
	2×10^2	3.5	19×10^6	19×10^8
	3×10^2	3.5	16×10^6	16×10^8
	4×10^2	3.5	14×10^6	14×10^8

For the column in Table 2 labeled "Quality Factor", the values of Q are at the po maximum in a 30 cm diameter cylinder tissue-equivalent phantom.

For the columns in Table 2 labeled "Fluence per Unit Dose Equivalent", the values incident normally on a 30 cm diameter cylinder tissue equivalent phantom.

R313-12-40. Units of Radioactivity.

For purposes of these rules, activity is expressed in the SI unit of becquerel (Bq), or in the specia disintegrations or transformations per unit of time.

(1) One becquerel (Bq) equals one disintegration or transformation per second.

(2) One curie (Ci) equals 3.7×10^{10} disintegrations or transformations per second, which equals $\times 10^{12}$ disintegrations or transformations per minute.

R313-12-51. Records.

(1) A licensee or registrant shall maintain records showing the receipt, transfer, and disposal of al

(2) Prior to license termination, each licensee authorized to possess radioactive material with a h unsealed form, may forward the following records to the Executive Secretary:

(a) records of disposal of licensed material made under Sections R313-15-1002 (including burials R313-15-1003, R313-15-1004, and R313-15-1005; and

(b) records required by Subsection R313-15-1103(2)(d).

NOTE: 10 CFR 20.304 permitted burial of small quantities of licensed materials in soil before Jan Nuclear Regulatory Commission authorization. See 20.304 contained in the 10 CFR, parts 0 to 1$ 1981.

(3) If licensed activities are transferred or assigned in accordance with Subsection R313-19-34(2) radioactive material, with a half-life greater than 120 days, in an unsealed form, shall transfer the and the new licensee will be responsible for maintaining these records until the license is termina

(a) records of disposal of licensed material made under Sections R313-15-1002 (including burials R313-15-1003, R313-15-1004, and R313-15-1005; and

(b) records required by Subsection R313-15-1103(2)(d).

(4) Prior to license termination, each licensee may forward the records required by Subsection R3 Secretary.

(5) Additional records requirements are specified elsewhere in these rules.

R313-12-52. Inspections.

(1) A licensee or registrant shall afford representatives of the Executive Secretary, at reasonable radiation and the premises and facilities wherein those sources of radiation are used or stored.

(2) A licensee or registrant shall make available to representatives of the Executive Secretary for records maintained pursuant to these rules.

R313-12-53. Tests.

(1) A licensee or registrant shall perform upon instructions from a representative of the Board or t the representative to perform reasonable tests as the representative deems appropriate or neces of:

(a) sources of radiation;

(b) facilities wherein sources of radiation are used or stored;

(c) radiation detection and monitoring instruments; and

(d) other equipment and devices used in connection with utilization or storage of licensed or regis

R313-12-54. Additional Requirements.

The Board may, by rule, or order, impose upon a licensee or registrant requirements in addition t deems appropriate or necessary to minimize any danger to public health and safety or the enviro

R313-12-55. Exemptions.

(1) The Board may, upon application or upon its own initiative, grant exemptions or exceptions frc determines are authorized by law and will not result in undue hazard to public health and safety o

(2) U.S. Department of Energy contractors or subcontractors and U.S. Nuclear Regulatory Comm operating within this state are exempt from these rules to the extent that the contractor or subcon possesses, uses, transfers, or acquires sources of radiation. The following contractor categories a

(a) prime contractors performing work for the U.S. Department of Energy at U.S. Government-ow transportation of sources of radiation to or from the sites and the performance of contract service transportation;

(b) prime contractors of the U.S. Department of Energy performing research in, or development, r transportation of, atomic weapons or components thereof;

(c) prime contractors of the U.S. Department of Energy using or operating nuclear reactors or oth Government-owned vehicle or vessel; and

(d) any other prime contractor or subcontractor of the U.S. Department of Energy or of the U.S. N the state and the U.S. Nuclear Regulatory Commission jointly determine (i) that the exemption of is authorized by law; and (ii) that under the terms of the contract or subcontract, there is adequate can be accomplished without undue risk to the public health and safety.

R313-12-70. Impounding.

Sources of radiation shall be subject to impounding pursuant to Section 19-3-111. Persons who h are subject to fees established in accordance with the Legislative Appropriations Act for the actua oversight activities performed by representatives of the Executive Secretary.

R313-12-100. Prohibited Uses.

(1) A hand-held fluoroscopic screen using x-ray equipment shall not be used unless it has been li and Devices or accepted for certification by the U.S. Food and Drug Administration, Center for De

(2) A shoe-fitting fluoroscopic device shall not be used.

R313-12-110. Communications.

All communications and reports concerning these rules, and applications filed thereunder, should Radiation Control, P.O. Box 144850, 168 North 1950 West, Salt Lake City, Utah 84114-4850.

KEY

definitions, units, inspections, exemptions

Date of Enactment or Last Substantive Amendment

June 8, 2001

Notice of Continuation

March 26, 1997

Authorizing, Implemented, or Interpreted Law

19-3-104; 19-3-108;

Rule converted into HTML by the Division of Administrative Rules.

For questions regarding the *content* or *application* of rules under Title R313, please contact the p
Quality, Radiation Control). A list of agencies with links to their homepages is available at
http://www.state.ut.us/government/agencylist.html.

For questions about the *rulemaking process*, please contact the Division of Administrative Rules a
Note: The Division of Administrative Rules is ***not able*** to answer questions about the content or a

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Rule R313-15. Standards for Protection Agains

As in effect on July 1, 2001

Table of Contents

R313-15-1. Purpose, Authority and Scope.

(1) Rule R313-15 establishes standards for protection against ionizing radiation resulting from act issued by the Executive Secretary. These rules are issued pursuant to Sections 19-3-104(3) and

(2) The requirements of Rule R313-15 are designed to control the receipt, possession, use, trans by any licensee or registrant so the total dose to an individual, including doses resulting from all s background radiation, does not exceed the standards for protection against radiation prescribed i Rule R313-15 shall be construed as limiting actions that may be necessary to protect health and

(3) Except as specifically provided in other sections of these rules, Rule R313-15 applies to persc Executive Secretary to receive, possess, use, transfer, or dispose of sources of radiation. The lim doses due to background radiation, to exposure of patients to radiation for the purpose of medica individuals administered radioactive material and released in accordance with Section R313-32-7 participation in medical research programs.

R313-15-2. Definitions.

"Annual limit on intake" (ALI) means the derived limit for the amount of radioactive material taken inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a yea in a committed effective dose equivalent of 0.05 Sv (5 rem) or a committed dose equivalent of 0.5

tissue. ALI values for intake by ingestion and by inhalation of selected radionuclides are given in of 10 CFR 20.1001 to 20.2402, 1997 ed., which is incorporated by reference.

"Class" means a classification scheme for inhaled material according to its rate of clearance from Materials are classified as D, W, or Y, which applies to a range of clearance half-times: for Class W, Weeks, from ten to 100 days , and for Class Y, Years, of greater than 100 days. For purposes "inhalation class" are equivalent terms.

"Constraint (dose constraint)" in accordance with 10 CFR 20.1003, means a value above which s

"Declared pregnant woman" means a woman who has voluntarily informed her employer, in writir date of conception.

"Derived air concentration" (DAC) means the concentration of a given radionuclide in air which, if working year of 2,000 hours under conditions of light work, results in an intake of one ALI. For pu light work is an inhalation rate of 1.2 cubic meters of air per hour for 2,000 hours in a year. DAC v Appendix B of 10 CFR 20.1001 to 20.2402, 1997 ed., which is incorporated by reference.

"Derived air concentration-hour" (DAC-hour) means the product of the concentration of radioactiv or multiple of the derived air concentration for each radionuclide, and the time of exposure to that registrant may take 2,000 DAC-hours to represent one ALI, equivalent to a committed effective d

"Dosimetry processor" means an individual or an organization that processes and evaluates indiv determine the radiation dose delivered to the monitoring devices.

"Inhalation class", refer to "Class".

"Labeled package" means a package labeled with a Radioactive White I, Yellow II, or Yellow III la Transportation regulations 49 CFR 172.403 and 49 CFR 172.436 through 440, 1997 ed. Labeling materials is required by the U.S. Department of Transportation if the amount and type of radioacti excepted quantity or article as defined and limited by U.S. Department of Transportation regulatic CFR 173.421 through 424, 1997 ed.

"Lung class", refer to "Class".

"Nonstochastic effect" means a health effect, the severity of which varies with the dose and for wl Radiation-induced cataract formation is an example of a nonstochastic effect. For purposes of the equivalent term.

"Planned special exposure" means an infrequent exposure to radiation, separate from and in add limits.

"Quarter" means a period of time equal to one-fourth of the year observed by the licensee, appro providing that the beginning of the first quarter in a year coincides with the starting date of the ye duplicated in consecutive quarters.

"Reference Man" means a hypothetical aggregation of human physical and physiological charact consensus. These characteristics may be used by researchers and public health employees to st relate biological insult to a common base. A description of the Reference Man is contained in the Radiological Protection report, ICRP Publication 23, "Report of the Task Group on Reference Ma

"Respiratory protective equipment" means an apparatus, such as a respirator, used to reduce an radioactive materials.

"Sanitary sewerage" means a system of public sewers for carrying off waste water and refuse, bu septic tanks, and leach fields owned or operated by the licensee or registrant.

"Stochastic effect" means a health effect that occurs randomly and for which the probability of the severity, is assumed to be a linear function of dose without threshold. Hereditary effects and canc effects. For purposes of these rules, "probabilistic effect" is an equivalent term.

"Very high radiation area" means an area, accessible to individuals, in which radiation levels coul absorbed dose in excess of five Gy (500 rad) in one hour at one meter from a source of radiation penetrates. At very high doses received at high dose rates, units of absorbed dose, gray and rad, dose equivalent, sievert and rem.

"Weighting factor" w_T for an organ or tissue (T) means the proportion of the risk of stochastic effe organ or tissue to the total risk of stochastic effects when the whole body is irradiated uniformly. F equivalent, the values of w_T are:

TABLE

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	0.30(1)
Whole Body	1.00(2)

(1) 0.30 results from 0.06 for each of five "remainder" organs, excluding the skin an the highest doses.
(2) For the purpose of weighting the external whole body dose, for adding it to the i factor, $w_T = 1.0$, has been specified. The use of other weighting factors for external on a case-by-case basis until such time as specific guidance is issued.

R313-15-3. Implementation.

(1) Any existing license or registration condition that is more restrictive than Rule R313-15 remain or renewal of the license or registration.

(2) If a license or registration condition exempts a licensee or registrant from a provision of Rule F 1, 1994, it also exempts the licensee or registrant from the corresponding provision of Rule R313-

(3) If a license or registration condition cites provisions of Rule R313-15 in effect prior to January provisions of Rule R313-15, the license or registration condition remains in force until there is an registration that modifies or removes this condition.

R313-15-101. Radiation Protection Programs.

(1) Each licensee or registrant shall develop, document, and implement a radiation protection pro with the provisions of Rule R313-15. See Section R313-15-1102 for recordkeeping requirements

(2) The licensee or registrant shall use, to the extent practical, procedures and engineering contr protection principles to achieve occupational doses and public doses that are as low as is reason

(3) The licensee or registrant shall, at intervals not to exceed 12 months, review the radiation prot implementation.

(4) To implement the ALARA requirements of Subsection R313-15-101(2), and notwithstanding th R313-15-301, a constraint on air emissions of radioactive material to the environment, excluding r be established by licensees or registrants such that the individual member of the public likely to re expected to receive a total effective dose equivalent in excess of 0.1 mSv (0.01 rem) per year fro registrant subject to this requirement exceeds this dose constraint, the licensee or registrant shall Section R313-15-1203 and promptly take appropriate corrective action to ensure against recurrer

R313-15-201. Occupational Dose Limits for Adults.

(1) The licensee or registrant shall control the occupational dose to individual adults, except for pl Section R313-15-206, to the following dose limits:

(a) An annual limit, which is the more limiting of:

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

(ii) The sum of the deep dose equivalent and the committed dose equivalent to any individual org eye being equal to 0.50 Sv (50 rem).

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

(i) An eye dose equivalent of 0.15 Sv (15 rem), and

(ii) A shallow dose equivalent of 0.50 Sv (50 rem) to the skin or to any extremity.

(2) Doses received in excess of the annual limits, including doses received during accidents, eme exposures, shall be subtracted from the limits for planned special exposures that the individual m during the individual's lifetime. See Subsections R313-15-206(5)(a) and R313-15-206(5)(b).

(3) The assigned deep dose equivalent and shallow dose equivalent shall be for the portion of the determined as follows:

(a) The deep dose equivalent, eye dose equivalent and shallow dose equivalent may be assesse measurements for the purpose of demonstrating compliance with the occupational dose limits, if i in the region of highest potential exposure, or the results of individual monitoring are unavailable;

(b) When a protective apron is worn while working with medical fluoroscopic equipment and moni Subsection R313-15-502(1)(d), the effective dose equivalent for external radiation shall be deterr

(i) When only one individual monitoring device is used and it is located at the neck outside the pr exceeds 25 percent of the limit specified in Subsection R313-15-201(1), the reported deep dose e be the effective dose equivalent for external radiation; or

(ii) When individual monitoring devices are worn, both under the protective apron at the waist and neck, the effective dose equivalent for external radiation shall be assigned the value of the sum o the individual monitoring device located at the waist under the protective apron multiplied by 1.5 a for the individual monitoring device located at the neck outside the protective apron multiplied by

(4) Derived air concentration (DAC) and annual limit on intake (ALI) values are specified in Table 20.2402, 1997 ed., which is incorporated by reference, and may be used to determine the individ compliance with the occupational dose limits. See Section R313-15-1107.

(5) Notwithstanding the annual dose limits, the licensee shall limit the soluble uranium intake by a in consideration of chemical toxicity. See footnote 3, of Appendix B of 10 CFR 20.1001 to 20-240 reference.

(6) The licensee or registrant shall reduce the dose that an individual may be allowed to receive i occupational dose received while employed by any other person. See Subsection R313-15- 205(

R313-15-202. Compliance with Requirements for Summation of External and I

(1) If the licensee or registrant is required to monitor pursuant to both Subsections R313-15-502(registrant shall demonstrate compliance with the dose limits by summing external and internal do required to monitor only pursuant to Subsection R313-15-502(1) or only pursuant to Subsection F required to demonstrate compliance with the dose limits. The licensee or registrant may demonst for summation of external and internal doses pursuant to Subsections R313-15-202(2), R313-15- equivalents for the lens of the eye, the skin, and the extremities are not included in the summatio

(2) Intake by Inhalation. If the only intake of radionuclides is by inhalation, the total effective dose sum of the deep dose equivalent divided by the total effective dose equivalent limit, and one of th

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

(b) The total number of derived air concentration-hours (DAC-hours) for all radionuclides divided

(c) The sum of the calculated committed effective dose equivalents to all significantly irradiated o bioassay data using appropriate biological models and expressed as a fraction of the annual limit organ or tissue is deemed to be significantly irradiated if, for that organ or tissue, the product of t committed dose equivalent, $H_{T,50}$, per unit intake is greater than ten percent of the maximum wei per unit intake for any organ or tissue.

(3) Intake by Oral Ingestion. If the occupationally exposed individual receives an intake of radionu percent of the applicable oral ALI, the licensee or registrant shall account for this intake and inclu the limits.

(4) Intake through Wounds or Absorption through Skin. The licensee or registrant shall evaluate a intakes through wounds or skin absorption. The intake through intact skin has been included in th does not need to be evaluated or accounted for pursuant to Subsection R313-15-202(4).

R313-15-203. Determination of External Dose from Airborne Radioactive Mater

(1) Licensees or registrants shall, when determining the dose from airborne radioactive material, i

equivalent, eye dose equivalent, and shallow dose equivalent from external exposure to the radio Appendix B of 10 CFR 20.1001 to 20.2402, 1997 ed., which is incorporated by reference.

(2) Airborne radioactivity measurements and DAC values shall not be used as the primary means when the airborne radioactive material includes radionuclides other than noble gases or if the clo relatively uniform. The determination of the deep dose equivalent to an individual shall be based or individual monitoring devices.

R313-15-204. Determination of Internal Exposure.

(1) For purposes of assessing dose used to determine compliance with occupational dose equiva shall, when required pursuant to Section R313-15-502, take suitable and timely measurements o

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

(b) Quantities of radionuclides in the body; or

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

(d) Combinations of these measurements.

(2) Unless respiratory protective equipment is used, as provided in Section R313-15-703, or the a bioassays, the licensee or registrant shall assume that an individual inhales radioactive material a the individual is present.

(3) When specific information on the physical and biochemical properties of the radionuclides tak material in an individual is known, the licensee or registrant may:

(a) Use that information to calculate the committed effective dose equivalent, and, if used, the lic information in the individual's record; and

(b) Upon prior approval of the Executive Secretary, adjust the DAC or ALI values to reflect the ac characteristics of airborne radioactive material, for example, aerosol size distribution or density; a

(c) Separately assess the contribution of fractional intakes of Class D, W, or Y compounds of a gi effective dose equivalent. See Appendix B of 10 CFR 20.1001 to 20.2402, 1997 ed., which is inc

(4) If the licensee or registrant chooses to assess intakes of Class Y material using the measuren R313-15-204(1)(b) or R313-15-204(1)(c), the licensee or registrant may delay the recording and r up to seven months, unless otherwise required by Section R313-15-1202 or Section R313-15-12(registrant to make additional measurements basic to the assessments.

(5) If the identity and concentration of each radionuclide in a mixture are known, the fraction of th in calculating DAC-hours shall be either:

(a) The sum of the ratios of the concentration to the appropriate DAC value, that is, D, W, or Y, fr 20.2402, 1997 ed., which is incorporated by reference, for each radionuclide in the mixture; or

(b) The ratio of the total concentration for all radionuclides in the mixture to the most restrictive D/ mixture.

(6) If the identity of each radionuclide in a mixture is known, but the concentration of one or more known, the DAC for the mixture shall be the most restrictive DAC of any radionuclide in the mixtu

(7) When a mixture of radionuclides in air exists, a licensee or registrant may disregard certain ra

(a) The licensee or registrant uses the total activity of the mixture in demonstrating compliance wi R313-15-201 and in complying with the monitoring requirements in Subsection R313-15-502(2), a

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

(c) The sum of these percentages for all of the radionuclides disregarded in the mixture does not

(8) When determining the committed effective dose equivalent, the following information may be

(a) In order to calculate the committed effective dose equivalent, the licensee or registrant may a an exposure of 2,000 DAC-hours, results in a committed effective dose equivalent of 0.05 Sv (5 r ALIs or DACs based on the committed effective dose equivalent.

(b) For an ALI and the associated DAC determined by the nonstochastic organ dose limit of 0.50 that would result in a committed effective dose equivalent of 0.05 Sv (5 rem), that is, the stochast of Appendix B of 10 CFR 20.1001 to 20.2402, 1997 ed., which is incorporated by reference. The simplifying assumption, use the stochastic ALI to determine committed effective dose equivalent. uses the stochastic ALI, the licensee or registrant shall also demonstrate that the limit in Subsecti

R313-15-205. Determination of Prior Occupational Dose.

(1) For each individual likely to receive, in a year, an occupational dose requiring monitoring purs licensee or registrant shall:

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

(b) Attempt to obtain the records of cumulative occupational radiation dose. A licensee or registra cumulative radiation dose, an up-to-date form DRC-05 or equivalent, signed by the individual and of the most recent employer for work involving radiation exposure, or the individual's current emp the licensee or registrant.

(2) Prior to permitting an individual to participate in a planned special exposure, the licensee or re

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

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

(3) In complying with the requirements of Subsection R313-15-205(1), a licensee or registrant ma

(a) Accept, as a record of the occupational dose that the individual received during the current ye individual, or from the individual's most recent employer for work involving radiation exposure, tha of any occupational dose that the individual received during the current year; and

(b) Obtain reports of the individual's dose equivalents from the most recent employer for work inv individual's current employer, if the individual is not employed by the licensee or registrant, by tel

electronic media or letter. The licensee or registrant shall request a written verification of the dose transmitted report cannot be established.

(4) The licensee or registrant shall record the exposure history, as required by Subsection R313-' clear and legible record, of all the information required on that form.

(a) The form or record shall show each period in which the individual received occupational expos and shall be signed by the individual who received the exposure. For each period for which the lic licensee or registrant shall use the dose shown in the report in preparing form DRC-05 or equival or registrant does not obtain a report, the licensee or registrant shall place a notation on form DR of time for which data are not available.

(b) For the purpose of complying with this requirement, licensees or registrants are not required t equivalents and internal committed dose equivalents or intakes of radionuclides assessed pursua before January 1, 1994. Further, occupational exposure histories obtained and recorded on form 1994, would not have included effective dose equivalent, but may be used in the absence of spec radionuclides by the individual.

(5) If the licensee or registrant is unable to obtain a complete record of an individual's current and dose, the licensee or registrant shall assume:

(a) In establishing administrative controls under Subsection R313-15-201(6) for the current year, individual is reduced by 12.5 mSv (1.25 rem) for each quarter for which records were unavailable activities that could have resulted in occupational radiation exposure; and

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

(6) The licensee or registrant shall retain the records on form DRC-05 or equivalent until the Exec pertinent license or registration requiring this record. The licensee or registrant shall retain record equivalent for three years after the record is made.

R313-15-206. Planned Special Exposures.

A licensee or registrant may authorize an adult worker to receive doses in addition to and accoun received under the limits specified in Section R313-15-201 provided that each of the following co

(1) The licensee or registrant authorizes a planned special exposure only in an exceptional situati the higher exposure are unavailable or impractical.

(2) The licensee or registrant, and employer if the employer is not the licensee or registrant, spec exposure, in writing, before the exposure occurs.

(3) Before a planned special exposure, the licensee or registrant ensures that each individual inv

(a) Informed of the purpose of the planned operation; and

(b) Informed of the estimated doses and associated potential risks and specific radiation levels or in performing the task; and

(c) Instructed in the measures to be taken to keep the dose ALARA considering other risks that m

(4) Prior to permitting an individual to participate in a planned special exposure, the licensee or re required by Subsection R313-15-205(2) during the lifetime of the individual for each individual inv

(5) Subject to Subsection R313-15-201(2), the licensee or registrant shall not authorize a planned individual to receive a dose from all planned special exposures and all doses in excess of the limi

(a) The numerical values of any of the dose limits in Subsection R313-15-201(1) in any year; and

(b) Five times the annual dose limits in Subsection R313-15-201(1) during the individual's lifetime

(6) The licensee or registrant maintains records of the conduct of a planned special exposure in a and submits a written report in accordance with Section R313-15-1204.

(7) The licensee or registrant records the best estimate of the dose resulting from the planned sp and informs the individual, in writing, of the dose within 30 days from the date of the planned spe special exposures shall not be considered in controlling future occupational dose of the individual but shall be included in evaluations required by Subsections R313-15-206(4) and R313-15-206(5

R313-15-207. Occupational Dose Limits for Minors.

The annual occupational dose limits for minors are ten percent of the annual occupational dose li Section R313-15-201.

R313-15-208. Dose to an Embryo/Fetus.

(1) The licensee or registrant shall ensure that the dose to an embryo/fetus during the entire preg a declared pregnant woman, does not exceed five mSv (0.5 rem). See Section R313- 15-1107 fo

(2) The licensee or registrant shall make efforts to avoid substantial variation above a uniform mo pregnant woman so as to satisfy the limit in Subsection R313-15-208(1).

(3) The dose to an embryo/fetus shall be taken as the sum of:

(a) The dose to the embryo/fetus from radionuclides in the embryo/fetus and radionuclides in the

(b) The dose that is most representative of the dose to the embryo/fetus from external radiation, t region.

(i) If multiple measurements have not been made, assignment of the highest deep dose equivalen shall be the dose to the embryo/fetus, in accordance with Subsection R313-15-201(3); or

(ii) If multiple measurements have been made, assignment of the deep dose equivalent for the de individual monitoring device which is most representative of the dose to the embryo/fetus shall be Assignment of the highest deep dose equivalent for the declared pregnant woman to the embryo/ also the most representative deep dose equivalent for the region of the embryo/fetus.

(4) If by the time the woman declares pregnancy to the licensee or registrant, the dose to the emb rem) the licensee or registrant shall be deemed to be in compliance with Subsection R313-15-20 embryo/fetus does not exceed 0.50 mSv (0.05 rem) during the remainder of the pregnancy.

R313-15-301. Dose Limits for Individual Members of the Public.

(1) Each licensee or registrant shall conduct operations so that:

(a) Except as provided in Subsection R313-15-301(1)(c), the total effective dose equivalent to ind licensed or registered operation does not exceed one mSv (0.1 rem) in a year, exclusive of the dc radiation, from any medical administration the individual has received, from exposure to individua released in accordance with Section R313-32-75, from voluntary participation in medical researcl registrant's disposal of radioactive material into sanitary sewerage in accordance with Section R3

(b) The dose in any unrestricted area from external sources, exclusive of the dose contributions fi material and released in accordance with Section R313-32-75, does not exceed 0.02 mSv (0.002

(c) The total effective dose equivalent to individual members of the public from infrequent exposu does not exceed 5 mSv (0.5 rem) in a year.

(2) If the licensee or registrant permits members of the public to have access to controlled areas, continue to apply to those individuals.

(3) A licensee, registrant, or an applicant for a license or registration may apply for prior Executive to an annual dose limit for an individual member of the public of five mSv (0.5 rem). This applicati information:

(a) Demonstration of the need for and the expected duration of operations in excess of the limit ir

(b) The licensee's or registrant's program to assess and control dose within the five mSv (0.5 rem

(c) The procedures to be followed to maintain the dose ALARA.

(4) The Executive Secretary may impose additional restrictions on radiation levels in unrestricted radionuclides that a licensee or registrant may release in effluents in order to restrict the collective

R313-15-302. Compliance with Dose Limits for Individual Members of the Publ

(1) The licensee or registrant shall make or cause to be made surveys of radiation levels in unres radioactive materials in effluents released to unrestricted and controlled areas to demonstrate coi individual members of the public in Section R313-15-301.

(2) A licensee or registrant shall show compliance with the annual dose limit in Section R313-15-3

(a) Demonstrating by measurement or calculation that the total effective dose equivalent to the in dose from the licensed or registered operation does not exceed the annual dose limit; or

(b) Demonstrating that:

(i) The annual average concentrations of radioactive material released in gaseous and liquid efflu area do not exceed the values specified in Table II of Appendix B of 10 CFR 20.1001 to 20.2402, reference; and

(ii) If an individual were continuously present in an unrestricted area, the dose from external sourc rem) in an hour and 0.50 mSv (0.05 rem) in a year.

(3) Upon approval from the Executive Secretary, the licensee or registrant may adjust the effluent Table II of 10 CFR 20.1001 to 20.2402, 1997 ed., which is incorporated by reference, for membe actual physical and chemical characteristics of the effluents, such as, aerosol size distribution, so equilibrium, and chemical form.

R313-15-401. Radiological Criteria for License Termination - General Provision

(1) The criteria in Sections R313-15-401 through R313-15-406 apply to the decommissioning of f and R313-25, as well as other facilities subject to the Board's jurisdiction under the Act. For low-l R313-25), the criteria apply only to ancillary surface facilities that support radioactive waste dispo

(2) The criteria in Sections R313-15-401 through R313-15-406 do not apply to sites which:

(a) Have been decommissioned prior to the effective date of the rule in accordance with criteria a

(b) Have previously submitted and received Executive Secretary approval on a license terminatio

(c) Submit a sufficient license termination plan or decommissioning plan before the effective date Executive Secretary.

(3) After a site has been decommissioned and the license terminated in accordance with the crite R313-15-406, the Executive Secretary will require additional cleanup only if, based on new inform determines that the criteria in Sections R313-15-401 through R313-15-406 was not met and resid could result in significant threat to public health and safety.

(4) When calculating the total effective dose equivalent to the average member of the critical grou annual total effective dose equivalent dose expected within the first 1000 years after decommissi

R313-15-402. Radiological Criteria for Unrestricted Use.

A site will be considered acceptable for unrestricted use if the residual radioactivity that is distingu results in a total effective dose equivalent to an average member of the critical group that does n year, including no greater than 0.04 mSv (0.004 rem) committed effective dose equivalent or total member of the critical group from groundwater sources, and the residual radioactivity has been re reasonably achievable (ALARA). Determination of the levels which are ALARA must take into acc such as deaths from transportation accidents, expected to potentially result from decontaminatior

R313-15-403. Criteria for License Termination Under Restricted Conditions.

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

(1) The licensee can demonstrate that further reductions in residual radioactivity necessary to cor R313-15-402 would result in net public or environmental harm or were not being made because t restricted conditions are ALARA. Determination of the levels which are ALARA must take into acc such as traffic accidents, expected to potentially result from decontamination and waste disposal;

(2) The licensee has made provisions for legally enforceable institutional controls that provide rea effective dose equivalent from residual radioactivity distinguishable from background to the avera exceed 0.25 mSv (0.025 rem)per year; and

(3) The licensee has provided sufficient financial assurance to enable an independent third party,

site, to assume and carry out responsibilities for any necessary control and maintenance of the si mechanisms are:

(a) Funds placed into an account segregated from the licensee's assets outside the licensee's ad Subsection R313-22-35(6)(a);

(b) Surety method, insurance, or other guarantee method as described in Subsection R313-22- 3

(c) A statement of intent in the case of Federal, State, or local Government licensees, as describe

(d) When a governmental entity is assuming custody and ownership of a site, an arrangement tha governmental entity; and

(4) The licensee has submitted a decommissioning plan or license termination plan to the Execut intent to decommission in accordance with Subsection R313-22-36(4) and specifying that the lice restricting use of the site. The licensee shall document in the license termination plan or decomm individuals and institutions in the community who may be affected by the decommissioning has b appropriate, following analysis of that advice;

(a) Licensees proposing to decommission by restricting use of the site shall seek advice from suc following matters concerning the proposed decommissioning:

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

(A) Will provide reasonable assurance that the total effective dose equivalent from residual radioa to the average member of the critical group will not exceed 0.25 mSv (0.025 rem) total effective d

(B) Will be enforceable; and

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

(ii) Whether the licensee has provided sufficient financial assurance to enable an independent thi custodian of a site, to assume and carry out responsibilities for any necessary control and mainte

(b) In seeking advice on the issues identified in Subsection R313-15-403(4)(a), the licensee shall

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

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

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

(5) Residual radioactivity at the site has been reduced so that if the institutional controls were no l assurance that the total effective dose equivalent from residual radioactivity distinguishable from the critical group is as low as reasonably achievable and would not exceed either:

(a) one mSv (0.1 rem) per year; or

(b) five mSv (0.5 rem) per year provided the licensee:

(i) Demonstrates that further reductions in residual radioactivity necessary to comply with the one Subsection R313-15-403(5)(a) are not technically achievable, would be prohibitively expensive, o environmental harm;

(ii) Makes provisions for durable institutional controls; and

(iii) Provides sufficient financial assurance to enable a responsible government entity or independ custodian of a site, both to carry out periodic rechecks of the site no less frequently than every fiv controls remain in place as necessary to meet the criteria of Subsection R313-15-403(2) and to a any necessary control and maintenance of those controls. Acceptable financial assurance mecha R313-15-403(3).

R313-15-404. Alternate Criteria for License Termination.

(1) The Executive Secretary may terminate a license using alternative criteria greater than the do Subsections R313-15-403(2) and R313-15-403(4)(a)(i)(A), if the licensee:

(a) Provides assurance that public health and safety would continue to be protected, and that it is man-made sources combined, other than medical, would be more than the one mSv (0.1 rem) pe R313-15-301(1)(a), by submitting an analysis of possible sources of exposure; and

(b) Has employed, to the extent practical, restrictions on site use according to the provisions of S exposures at the site; and

(c) Reduces doses to ALARA levels, taking into consideration any detriments such as traffic accic decontamination and waste disposal; and

(d) Has submitted a decommissioning plan or license termination plan to the Executive Secretary decommission in accordance with Subsection R313-22-36(4), and specifying that the licensee pr alternate criteria. The licensee shall document in the decommissioning plan or license terminatior institutions in the community who may be affected by the decommissioning has been sought and 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 a

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

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

(2) The use of alternate criteria to terminate a license requires the approval of the Executive Secr recommendations from the Division's staff, comments provided by federal, state and local govern submitted pursuant to Section R313-15-405.

R313-15-405. Public Notification and Public Participation.

Upon the receipt of a license termination plan or decommissioning plan from the licensee, or a pr site pursuant to Sections R313-15-403 or R313-15-404, or whenever the Executive Secretary dee interest, the Executive Secretary shall:

(1) Notify and solicit comments from:

(a) Local and State governments in the vicinity of the site and any Indian Nation or other indigeno rights that could be affected by the decommissioning; and

(b) Federal, state and local governments for cases where the licensee proposes to release a site

(2) Publish a notice in a forum, such as local newspapers, letters to State or local organizations, c accessible to individuals in the vicinity of the site, and solicit comments from affected parties.

R313-15-406. Minimization of Contamination.

Applicants for licenses, other than renewals, shall describe in the application how facility design a minimize, to the extent practicable, contamination of the facility and the environment, facilitate ev to the extent practicable, the generation of waste.

R313-15-501. Surveys and Monitoring - General.

(1) Each licensee or registrant shall make, or cause to be made, surveys that:

(a) Are necessary for the licensee or registrant to comply with Rule R313-15; and

(b) Are necessary under the circumstances to evaluate:

(i) Radiation levels; and

(ii) Concentrations or quantities of radioactive material; and

(iii) The potential radiological hazards that could be present.

(2) The licensee or registrant shall ensure that instruments and equipment used for quantitative r dose rate and effluent monitoring, are calibrated at intervals not to exceed 12 months for the radi frequent interval is specified in another applicable part of these rules or a license condition.

(3) All personnel dosimeters, except for direct and indirect reading pocket ionization chambers an the dose to any extremity, that require processing to determine the radiation dose and that are us comply with Section R313-15-201, with other applicable provisions of these rules, or with conditio shall be processed and evaluated by a dosimetry processor:

(a) Holding current personnel dosimetry accreditation from the National Voluntary Laboratory Acc National Institute of Standards and Technology; and

(b) Approved in this accreditation process for the type of radiation or radiations included in the N approximates the type of radiation or radiations for which the individual wearing the dosimeter is r

(4) The licensee or registrant shall ensure that adequate precautions are taken to prevent a dece monitoring device.

R313-15-502. Conditions Requiring Individual Monitoring of External and Inter

Each licensee or registrant shall monitor exposures from sources of radiation at levels sufficient t occupational dose limits of Rule R313-15. As a minimum:

(1) Each licensee or registrant shall monitor occupational exposure to radiation and shall supply a monitoring devices by:

(a) Adults likely to receive, in one year from sources external to the body, a dose in excess of ten R313-15-201(1); and

(b) Minors and declared pregnant women likely to receive, in one year from sources external to th of any of the applicable limits in Sections R313-15-207 or R313-15-208; and

(c) Individuals entering a high or very high radiation area; and

(d) Individuals working with medical fluoroscopic equipment.

(i) An individual monitoring device used for the dose to an embryo/fetus of a declared pregnant w R313-15-208(1), shall be located under the protective apron at the waist.

(A) If an individual monitoring device worn by a declared pregnant woman has a monthly reportec mSv (50 mrem), the value to be used for determining the dose to the embryo/fetus, pursuant to S radiation from medical fluoroscopy, may be the value reported by the individual monitoring device protective apron which has been corrected for the potential overestimation of dose recorded by th overlying tissue of the pregnant individual. This correction shall be performed by a radiation safet safety committee, a qualified expert approved by the Board, or a representative of the Executive !

(ii) An individual monitoring device used for eye dose equivalent shall be located at the neck, or a outside the protective apron.

(iii) When only one individual monitoring device is used to determine the effective dose equivalen Subsection R313-15-201(3)(b), it shall be located at the neck outside the protective apron. When used, for the same purpose, it shall be located under the protective apron at the waist. Note: The required for a declared pregnant woman.

(2) Each licensee or registrant shall monitor, to determine compliance with Section R313-15-204, material by and assess the committed effective dose equivalent to:

(a) Adults likely to receive, in one year, an intake in excess of ten percent of the applicable ALI in B of 10 CFR 20.1001 to 20.2402, 1997 ed., which is incorporated by reference; and

(b) Minors and declared pregnant women likely to receive, in one year, a committed effective dos (0.05 rem).

R313-15-503. Location of Individual Monitoring Devices.

Each licensee or registrant shall ensure that individuals who are required to monitor occupational R313-15-502(1) wear individual monitoring devices as follows:

(1) An individual monitoring device used for monitoring the dose to the whole body shall be worn body likely to receive the highest exposure. When a protective apron is worn, the location of the i the neck (collar).

(2) An individual monitoring device used for monitoring the dose to an embryo/fetus of a declared

Subsection R313-15-208(1), shall be located at the waist under any protective apron being worn l

(3) An individual monitoring device used for monitoring the eye dose equivalent, to demonstrate c R313-15-201(1)(b)(i), shall be located at the neck (collar), outside any protective apron being wor unshielded location closer to the eye.

(4) An individual monitoring device used for monitoring the dose to the extremities, to demonstrat R313-15-201(1)(b)(ii), shall be worn on the extremity likely to receive the highest exposure. Each oriented to measure the highest dose to the extremity being monitored.

R313-15-601. Control of Access to High Radiation Areas.

(1) The licensee or registrant shall ensure that each entrance or access point to a high radiation a features:

(a) A control device that, upon entry into the area, causes the level of radiation to be reduced bel receive a deep dose equivalent of one mSv (0.1 rem) in one hour at 30 centimeters from the sour the radiation penetrates; or

(b) A control device that energizes a conspicuous visible or audible alarm signal so that the indivi the supervisor of the activity are made aware of the entry; or

(c) Entryways that are locked, except during periods when access to the areas is required, with p

(2) In place of the controls required by Subsection R313-15-601(1) for a high radiation area, the li continuous direct or electronic surveillance that is capable of preventing unauthorized entry.

(3) The licensee or registrant may apply to the Executive Secretary for approval of alternative me radiation areas.

(4) The licensee or registrant shall establish the controls required by Subsections R313-15-601(1 not prevent individuals from leaving a high radiation area.

(5) The licensee or registrant is not required to control each entrance or access point to a room o solely because of the presence of radioactive materials prepared for transport and packaged and the U.S. Department of Transportation provided that:

(a) The packages do not remain in the area longer than three days; and

(b) The dose rate at one meter from the external surface of any package does not exceed 0.1 mS

(6) The licensee or registrant is not required to control entrance or access to rooms or other area presence of patients containing radioactive material, provided that there are personnel in attenda precautions to prevent the exposure of individuals to radiation or radioactive material in excess of and to operate within the ALARA provisions of the licensee's or registrant's radiation protection pr

(7) The registrant is not required to control entrance or access to rooms or other areas containing producing a high radiation area as described in Section R313-15-601 if the registrant has met all control specified in other applicable sections of these rules, such as, Rule R313-36 for industrial r the healing arts, Rule R313-30 for therapeutic radiation machines, and Rule R313-35 for industria

R313-15-602. Control of Access to Very High Radiation Areas.

(1) In addition to the requirements in Section R313-15-601, the licensee or registrant shall institut is not able to gain unauthorized or inadvertent access to areas in which radiation levels could be more in one hour at one meter from a source of radiation or any surface through which the radiati not apply to rooms or areas in which diagnostic x-ray systems are the only source of radiation, or

(2) The registrant is not required to control entrance or access to rooms or other areas containing producing a very high radiation area as described in Subsection R313-15-602(1) if the registrant l access and control specified in other applicable sections of these rules, such as, Rule R313-36 fc for x rays in the healing arts, Rule R313-30 for therapeutic radiation machines, and Rule R313-3

R313-15-603. Control of Access to Very High Radiation Areas -- Irradiators.

(1) Section R313-15-603 applies to licensees or registrants with sources of radiation in non-self- R313-15-603 does not apply to sources of radiation that are used in teletherapy, in industrial radi irradiators in which the source of radiation is both stored and operated within the same shielding configuration of the irradiator, is always physically inaccessible to any individual and cannot creat that is accessible to any individual.

(2) Each area in which there may exist radiation levels in excess of five Gy (500 rad) in one hour that is used to irradiate materials shall meet the following requirements:

(a) Each entrance or access point shall be equipped with entry control devices which:

(i) Function automatically to prevent any individual from inadvertently entering a very high radiatio

(ii) Permit deliberate entry into the area only after a control device is actuated that causes the rad source of radiation, to be reduced below that at which it would be possible for an individual to rec one mSv (0.1 rem) in one hour; and

(iii) Prevent operation of the source of radiation if it would produce radiation levels in the area tha to an individual in excess of one mSv (0.1 rem) in one hour.

(b) Additional control devices shall be provided so that, upon failure of the entry control devices tc R313-15-603(2)(a):

(i) The radiation level within the area, from the source of radiation, is reduced below that at which receive a deep dose equivalent in excess of one mSv (0.1 rem) in one hour; and

(ii) Conspicuous visible and audible alarm signals are generated to make an individual attempting and at least one other authorized individual, who is physically present, familiar with the activity, ar assistance, aware of the failure of the entry control devices.

(c) The licensee or registrant shall provide control devices so that, upon failure or removal of phys sealed source's shielded storage container:

(i) The radiation level from the source of radiation is reduced below that at which it would be poss dose equivalent in excess of one mSv (0.1 rem) in one hour; and

(ii) Conspicuous visible and audible alarm signals are generated to make potentially affected indi

licensee or registrant or at least one other individual, who is familiar with the activity and preparec aware of the failure or removal of the physical barrier.

(d) When the shield for stored sealed sources is a liquid, the licensee or registrant shall provide n shield and to signal, automatically, loss of adequate shielding.

(e) Physical radiation barriers that comprise permanent structural components, such as walls, tha or removal in ordinary circumstances need not meet the requirements of Subsections R313-15-6(

(f) Each area shall be equipped with devices that will automatically generate conspicuous visible a personnel in the area before the source of radiation can be put into operation and in time for any identified control device, which shall be installed in the area and which can prevent the source of

(g) Each area shall be controlled by use of such administrative procedures and such devices as a cleared of personnel prior to each use of the source of radiation.

(h) Each area shall be checked by a radiation measurement to ensure that, prior to the first indivi the source of radiation, the radiation level from the source of radiation in the area is below that at individual to receive a deep dose equivalent in excess of one mSv (0.1 rem) in one hour.

(i) The entry control devices required in Subsection R313-15-603(2)(a) shall be tested for proper f for recordkeeping requirements.

(i) Testing shall be conducted prior to initial operation with the source of radiation on any day, unl uninterrupted from the previous day; and

(ii) Testing shall be conducted prior to resumption of operation of the source of radiation after any

(iii) The licensee or registrant shall submit and adhere to a schedule for periodic tests of the entry

(j) The licensee or registrant shall not conduct operations, other than those necessary to place th to effect repairs on controls, unless control devices are functioning properly.

(k) Entry and exit portals that are used in transporting materials to and from the irradiation area, a individuals, shall be controlled by such devices and administrative procedures as are necessary t inadvertent entry by any individual through these portals. Exit portals for irradiated materials shall presence of any loose radioactive material that is carried toward such an exit and automatically tc being carried out of the area.

(3) Licensees, registrants, or applicants for licenses or registrations for sources of radiation within R313-15-603(2) which will be used in a variety of positions or in locations, such as open fields or comply with certain requirements of Subsection R313-15-603(2), such as those for the automatic the Executive Secretary for approval of alternative safety measures. Alternative safety measures least equivalent to those specified in Subsection R313-15-603(2). At least one of the alternative n entry-preventing interlock control based on a measurement of the radiation that ensures the abse individual can gain access to the area where such sources of radiation are used.

(4) The entry control devices required by Subsections R313-15-603(2) and R313-15-603(3) shall individual will be prevented from leaving the area.

R313-15-701. Use of Process or Other Engineering Controls.

The licensee or registrant shall use, to the extent practical, process or other engineering controls, control the concentrations of radioactive material in air.

R313-15-702. Use of Other Controls.

When it is not practical to apply process or other engineering controls to control the concentration below those that define an airborne radioactivity area, the licensee or registrant shall, consistent with equivalent ALARA, increase monitoring and limit intakes by one or more of the following means:

(1) Control of access; or

(2) Limitation of exposure times; or

(3) Use of respiratory protection equipment; or

(4) Other controls.

R313-15-703. Use of Individual Respiratory Protection Equipment.

(1) If the licensee or registrant uses respiratory protection equipment to limit intakes pursuant to S

(a) Except as provided in Subsection R313-15-703(1)(b), the licensee or registrant shall use only tested and certified or had certification extended by the National Institute for Occupational Safety Health Administration.

(b) The licensee or registrant may use equipment that has not been tested or certified by the Nati and Health and the Mine Safety and Health Administration, has not had certification extended by Safety and Health and the Mine Safety and Health Administration, or for which there is no schedu the licensee or registrant has submitted to the Executive Secretary and the Executive Secretary h authorized use of that equipment, including a demonstration by testing, or a demonstration on the material and performance characteristics of the equipment are capable of providing the proposed conditions of use.

(c) The licensee or registrant shall implement and maintain a respiratory protection program that i

(i) Air sampling sufficient to identify the potential hazard, permit proper equipment selection, and

(ii) Surveys and bioassays, as appropriate, to evaluate actual intakes; and

(iii) Testing of respirators for operability immediately prior to each use; and

(iv) Written procedures regarding selection, fitting, issuance, maintenance, and testing of respirat immediately prior to each use; supervision and training of personnel; monitoring, including air san recordkeeping; and

(v) Determination by a physician prior to initial fitting of respirators, and either every 12 months th determined by a physician, that the individual user is medically fit to use the respiratory protectior

(d) The licensee or registrant shall issue a written policy statement on respirator usage covering:

(i) The use of process or other engineering controls, instead of respirators; and

(ii) The routine, nonroutine, and emergency use of respirators; and

(iii) The length of periods of respirator use and relief from respirator use.

(e) The licensee or registrant shall advise each respirator user that the user may leave the area a in the event of equipment malfunction, physical or psychological distress, procedural or communi operating conditions, or any other conditions that might require such relief.

(f) The licensee or registrant shall use respiratory protection equipment within the equipment mar type and mode of use and shall provide proper visual, communication, and other special capabilit when needed.

(2) When estimating exposure of individuals to airborne radioactive materials, the licensee or regi respiratory protection equipment used to limit intakes pursuant to Section R313-15-702, provided to those in Subsection R313-15-703(1), are satisfied:

(a) The licensee or registrant selects respiratory protection equipment that provides a protection f CFR 20.1001 to 20.2402, 1997 ed., which is incorporated by reference, greater than the multiple airborne radioactive materials in the working area are expected to exceed the values specified in CFR 20.1001 to 20.2402, 1997 ed., which is incorporated by reference. However, if the selection a protection factor greater than the multiple defined in the preceding sentence is inconsistent with R313-15-702 of keeping the total effective dose equivalent ALARA, the licensee or registrant may with a lower protection factor provided that such a selection would result in a total effective dose e concentration of radioactive material in the air that is inhaled when respirators are worn may be ir concentration in air, during each period of uninterrupted use, by the protection factor. If the expos initially estimated, the corrected value shall be used; if the exposure is later found to be less than may be used.

(b) The licensee or registrant shall obtain authorization from the Executive Secretary before assig excess of those specified in Appendix A of 10 CFR 20.1001 to 20.2402, 1997 ed., which is incorp Secretary may authorize a licensee or registrant to use higher protection factors on receipt of an a

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

(ii) Demonstrates that the respiratory protection equipment provides these higher protection facto

(3) In an emergency, the licensee or registrant shall use as emergency equipment only respirator specifically certified or had certification extended for emergency use by the National Institute for C Mine Safety and Health Administration.

(4) The licensee or registrant shall notify the Executive Secretary in writing at least 30 days before equipment is first used pursuant to either Subsections R313-15-703(1) or R313- 15-703(2).

R313-15-801. Security and Control of Licensed or Registered Sources of Radia

(1) The licensee or registrant shall secure licensed or registered radioactive material from unauth

(2) The licensee or registrant shall maintain constant surveillance, and use devices or administrat use of licensed or registered radioactive material that is in an unrestricted area and that is not in s

(3) The registrant shall secure registered radiation machines from unauthorized removal.

(4) The registrant shall use devices or administrative procedures to prevent unauthorized use of r

R313-15-901. Caution Signs.

(1) Standard Radiation Symbol. Unless otherwise authorized by the Executive Secretary, the sym 1997 ed., which is incorporated by reference, shall use the colors magenta, or purple, or black on prescribed is the three-bladed design as follows:

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

(b) The background is to be yellow.

(2) Exception to Color Requirements for Standard Radiation Symbol. Notwithstanding the require which is incorporated by reference, licensees or registrants are authorized to label sources, sourc containing sources of radiation that are subjected to high temperatures, with conspicuously etche and without a color requirement.

(3) Additional Information on Signs and Labels. In addition to the contents of signs and labels pre registrant shall provide, on or near the required signs and labels, additional information, as appro potential radiation exposures and to minimize the exposures.

R313-15-902. Posting Requirements.

(1) Posting of Radiation Areas. The licensee or registrant shall post each radiation area with a co radiation symbol and the words "CAUTION, RADIATION AREA."

(2) Posting of High Radiation Areas. The licensee or registrant shall post each high radiation area bearing the radiation symbol and the words "CAUTION, HIGH RADIATION AREA" or "DANGER,

(3) Posting of Very High Radiation Areas. The licensee or registrant shall post each very high rad signs bearing the radiation symbol and words "GRAVE DANGER, VERY HIGH RADIATION ARE

(4) Posting of Airborne Radioactivity Areas. The licensee or registrant shall post each airborne ra or signs bearing the radiation symbol and the words "CAUTION, AIRBORNE RADIOACTIVITY AI RADIOACTIVITY AREA."

(5) Posting of Areas or Rooms in which Licensed or Registered Material is Used or Stored. The li or room in which there is used or stored an amount of licensed or registered material exceeding t specified in Appendix C of 10 CFR 20.1001 to 20.2402, 1997 ed., which is incorporated by refere bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL" or "DANGEI

R313-15-903. Exceptions to Posting Requirements.

(1) A licensee or registrant is not required to post caution signs in areas or rooms containing sour eight hours, if each of the following conditions is met:

(a) The sources of radiation are constantly attended during these periods by an individual who tal prevent the exposure of individuals to sources of radiation in excess of the limits established in R

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

(2) Rooms or other areas in hospitals that are occupied by patients are not required to be posted R313-15-902 provided that the patient could be released from licensee control pursuant to Sectio

(3) A room or area is not required to be posted with a caution sign because of the presence of a s level at 30 centimeters from the surface of the sealed source container or housing does not exce

(4) A room or area is not required to be posted with a caution sign because of the presence of ra diagnosis in the healing arts.

R313-15-904. Labeling Containers and Radiation Machines.

(1) The licensee or registrant shall ensure that each container of licensed or registered material b bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL" or "DANGEI label shall also provide information, such as the radionuclides present, an estimate of the quantity activity is estimated, radiation levels, kinds of materials, and mass enrichment, to permit individua working in the vicinity of the containers, to take precautions to avoid or minimize exposures.

(2) Each licensee or registrant shall, prior to removal or disposal of empty uncontaminated contai deface the radioactive material label or otherwise clearly indicate that the container no longer con

(3) Each registrant shall ensure that each radiation machine is labeled in a conspicuous manner v is produced when it is energized.

R313-15-905. Exemptions to Labeling Requirements.

A licensee or registrant is not required to label:

(1) Containers holding licensed or registered material in quantities less than the quantities listed i 20.2402, 1997 ed., which is incorporated by reference; or

(2) Containers holding licensed or registered material in concentrations less than those specified 20.1001 to 20.2402, 1997 ed., which is incorporated by reference; or

(3) Containers attended by an individual who takes the precautions necessary to prevent the exp limits established by Rule R313-15; or

(4) Containers when they are in transport and packaged and labeled in accordance with the rules Transportation; or

(5) Containers that are accessible only to individuals authorized to handle or use them, or to work contents are identified to these individuals by a readily available written record. Examples of cont locations such as water-filled canals, storage vaults, or hot cells. The record shall be retained as l purpose indicated on the record; or

(6) Installed manufacturing or process equipment, such as piping and tanks.

R313-15-906. Procedures for Receiving and Opening Packages.

(1) Each licensee or registrant who expects to receive a package containing quantities of radioact quantity, as used in Section R313-19-100, which incorporates 10 CFR 71.4 by reference, shall m

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

(b) The notification of the arrival of the package at the carrier's terminal and to take possession o

(2) Each licensee or registrant shall:

(a) Monitor the external surfaces of a labeled package for radioactive contamination unless the p material in the form of gas or in special form as defined in Section R313-12-3; and

(b) Monitor the external surfaces of a labeled package for radiation levels unless the package cor that are less than or equal to the Type A quantity, as used in Section R313-19- 100, which incorp

(c) Monitor all packages known to contain radioactive material for radioactive contamination and r degradation of package integrity, such as packages that are crushed, wet, or damaged.

(3) The licensee or registrant shall perform the monitoring required by Subsection R313-15-906(2 package, but not later than three hours after the package is received at the licensee's or registrar licensee's or registrant's normal working hours or if there is evidence of degradation of package ir crushed, wet, or damaged. If a package is received after working hours, and has no evidence of c package shall be monitored no later than three hours from the beginning of the next working day.

(4) The licensee or registrant shall immediately notify the final delivery carrier and, by telephone a Executive Secretary when:

(a) Removable radioactive surface contamination exceeds the limits of Section R313-19-100 whic reference; or

(b) External radiation levels exceed the limits of Section R313-19-100 which incorporates 10 CFR

(5) Each licensee or registrant shall:

(a) Establish, maintain, and retain written procedures for safely opening packages in which radioa

(b) Ensure that the procedures are followed and that due consideration is given to special instruct opened.

(6) Licensees or registrants transferring special form sources in vehicles owned or operated by th work site are exempt from the contamination monitoring requirements of Subsection R313- 15-90 monitoring requirement in Subsection R313-15-906(2) for measuring radiation levels that ensures in its shield.

R313-15-1001. Waste Disposal - General Requirements.

(1) A licensee or registrant shall dispose of licensed or registered material only:

(a) By transfer to an authorized recipient as provided in Section R313-15-1006 or in Rules R313-; Department of Energy; or

(b) By decay in storage; or

(c) By release in effluents within the limits in Section R313-15-301; or

(d) As authorized pursuant to Sections R313-15-1002, R313-15-1003, R313-15-1004, or R313-15

(2) A person shall be specifically licensed or registered to receive waste containing licensed or re

(a) Treatment prior to disposal; or

(b) Treatment or disposal by incineration; or

(c) Decay in storage; or

(d) Disposal at a land disposal facility licensed pursuant to Rule R313-25; or

(e) Storage until transferred to a storage or disposal facility authorized to receive the waste.

R313-15-1002. Method for Obtaining Approval of Proposed Disposal Procedur

A licensee or registrant or applicant for a license or registration may apply to the Executive Secre procedures, not otherwise authorized in these rules, to dispose of licensed or registered material registrant's operations. Each application shall include:

(1) A description of the waste containing licensed or registered material to be disposed of, includi that have an impact on risk evaluation, and the proposed manner and conditions of waste dispos

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

(3) The nature and location of other potentially affected facilities; and

(4) Analyses and procedures to ensure that doses are maintained ALARA and within the dose lim

R313-15-1003. Disposal by Release into Sanitary Sewerage.

(1) A licensee or registrant may discharge licensed or registered material into sanitary sewerage i satisfied:

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

(b) The quantity of licensed or registered radioactive material that the licensee or registrant releas by the average monthly volume of water released into the sewer by the licensee or registrant doe Table III of Appendix B of 10 CFR 20.1001 to 20.2402, 1997 ed., which is incorporated by referer

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

(i) The licensee or registrant shall determine the fraction of the limit in Table III of Appendix B of 1 which is incorporated by reference, represented by discharges into sanitary sewerage by dividing concentration of each radionuclide released by the licensee or registrant into the sewer by the co Table III of Appendix B of 10 CFR 20.1001 to 20.2402, 1997 ed., which is incorporated by referer

(ii) The sum of the fractions for each radionuclide required by Subsection R313-15-1003(1)(c)(i) d

(d) The total quantity of licensed or registered radioactive material that the licensee or registrant r system in a year does not exceed 185 GBq (five Ci) of hydrogen-3, 37 GBq (one Ci) of carbon-14 radioactive materials combined.

(2) Excreta from individuals undergoing medical diagnosis or therapy with radioactive material are in Subsection R313-15-1003(1).

R313-15-1004. Treatment or Disposal by Incineration.

A licensee or registrant may treat or dispose of licensed or registered material by incineration onl in Section R313-15-1005 or as specifically approved by the Executive Secretary pursuant to Sect

R313-15-1005. Disposal of Specific Wastes.

(1) A licensee or registrant may dispose of the following licensed or registered material as if it wer

(a) 1.85 kBq (0.05 uCi), or less, of hydrogen-3 or carbon-14 per gram of medium used for liquid s

(b) 1.85 kBq (0.05 uCi) or less, of hydrogen-3 or carbon-14 per gram of animal tissue, averaged c

(2) A licensee or registrant shall not dispose of tissue pursuant to Subsection R313-15-1005(1)(b either as food for humans or as animal feed.

(3) The licensee or registrant shall maintain records in accordance with Section R313-15-1109.

R313-15-1006. Transfer for Disposal and Manifests.

(1) Requirements of Section R313-15-1006 and Appendix F and G of 10 CFR 20.1001 to 20.240

(a) The requirements of Section R313-15-1006 and Appendix F and G of 10 CFR 20.1001 to 20.2 into these rules by reference, are designed to:

(i) control transfers of low-level radioactive waste by any waste generator, waste collector, or was Appendix F or G in 10 CFR 20.1001 to 20.2402, 1997 ed., who ships low-level waste either direct or waste processor, to a licensed low-level waste land disposal facility as defined in Section R31

(ii) establish a manifest tracking system; and

(iii) supplement existing requirements concerning transfers and recordkeeping for those wastes.

(b) Beginning March 1, 1998, all affected licensees must use Appendix G of 10 CFR 20.1001 to 2 into these rules by reference. Prior to March 1, 1998, a low-level waste disposal facility operator c shipper to use Appendix F or Appendix G of 10 CFR 20.1001 to 20.2402, 1997 ed. Licensees usi Subsection R313-15-1006(2)(a). Licensees using Appendix G shall comply with Subsection R31

(2) Shipment of Radioactive Waste.

(a) Each shipment of radioactive waste designated for disposal at a licensed low-level radioactive accompanied by a shipment manifest as specified in Section I of Appendix F of 10 CFR 20.1001

incorporated by reference.

(b) Any licensee shipping radioactive waste intended for ultimate disposal at a licensed land disp information required on the U.S. Nuclear Regulatory Commission's Uniform Low-Level Radioactiv recorded information to the intended consignee in accordance with Appendix G to 10 CFR 20.10(incorporated into these rules by reference.

(3) Each shipment manifest shall include a certification by the waste generator as specified in Se appropriate, of 10 CFR 20.1001 to 20.2402, 1997 ed., which is incorporated by reference. See St determine the appropriate Appendix.

(4) Each person involved in the transfer of waste for disposal or in the disposal of waste, includin waste processor, and disposal facility operator, shall comply with the requirements specified in Se appropriate, of 10 CFR 20.1001 to 20.2402, 1997 ed., which is incorporated by reference. See St determine the appropriate Appendix.

R313-15-1007. Compliance with Environmental and Health Protection Rules.

Nothing in Sections R313-15-1001, R313-15-1002, R313-15-1003, R313-15-1004, R313-15-100 licensee or registrant from complying with other applicable Federal, State and local rules governir properties of materials that may be disposed of pursuant to Sections R313-15-1001, R313-15-10 R313-15-1005, or R313-15-1006.

R313-15-1008. Classification and Characteristics of Low-Level Radioactive Wa

(1) Classification of Radioactive Waste for Land Disposal

(a) Considerations. Determination of the classification of radioactive waste involves two considera to the concentration of long-lived radionuclides (and their shorter- lived precursors) whose potenti precautions as institutional controls, improved waste form, and deeper disposal have ceased to b time when long-lived radionuclides could cause exposures. In addition, the magnitude of the pote and availability of the radionuclide at the time of exposure. Second, consideration shall be given t radionuclides for which requirements on institutional controls, waste form, and disposal methods

(b) Classes of waste.

(i) Class A waste is waste that is usually segregated from other waste classes at the disposal site of Class A waste shall meet the minimum requirements set forth in Subsection R313-15- 1008(2) stability requirements set forth in Subsection R313-15-1008(2)(b), it is not necessary to segregate

(ii) Class B waste is waste that shall meet more rigorous requirements on waste form to ensure st and characteristics of Class B waste shall meet both the minimum and stability requirements set f

(iii) Class C waste is waste that not only shall meet more rigorous requirements on waste form to additional measures at the disposal facility to protect against inadvertent intrusion. The physical f waste shall meet both the minimum and stability requirements set forth in Subsection R313-15-1(

(c) Classification determined by long-lived radionuclides. If the radioactive waste contains only ra classification shall be determined as follows:

(i) If the concentration does not exceed 0.1 times the value in Table I, the waste is Class A.

(ii) If the concentration exceeds 0.1 times the value in Table I, but does not exceed the value in T

(iii) If the concentration exceeds the value in Table I, the waste is not generally acceptable for lan

(iv) For wastes containing mixtures of radionuclides listed in Table I, the total concentration shall l rule described in Subsection R313-15-1008(1)(g).

TABLE I

Radionuclide	Concentration curie/cubic meter(1)	Concentration nanocurie/gram(2)
C-14	8	
C-14 in activated metal	80	
Ni-59 in activated metal	220	
Nb-94 in activated metal	0.2	
Tc-99	3	
I-129	0.08	
Alpha emitting transuranic radionuclides with half-life greater than five years		100
Pu-241		3,500
Cm-242		20,000
Ra-226		100

NOTE: (1) To convert the Ci/m^3 values to gigabecquerel (GBq)/cubic meter, multiply t 37.
(2) To convert the nCi/g values to becquerel (Bq)/gram, multiply the nCi/g value by 3

(d) Classification determined by short-lived radionuclides. If the waste does not contain any of the classification shall be determined based on the concentrations shown in Table II. However, as sp R313-15-1008(1)(f), if radioactive waste does not contain any nuclides listed in either Table I or II

(i) If the concentration does not exceed the value in Column 1, the waste is Class A.

(ii) If the concentration exceeds the value in Column 1 but does not exceed the value in Column 2

(iii) If the concentration exceeds the value in Column 2 but does not exceed the value in Column

(iv) If the concentration exceeds the value in Column 3, the waste is not generally acceptable for

(v) For wastes containing mixtures of the radionuclides listed in Table II, the total concentration sl fractions rule described in Subsection R313-15-1008(1)(g).

TABLE II

Radionuclide	Concentration, curie/cubic meter(1) Column 1	Column 2	Column 3
Total of all radionuclides with less than 5-year half-life	700	(2)	(2)
H-3	40	(2)	(2)
Co-60	700	(2)	(2)
Ni-63	3.5	70	700

Ni-63 in activated metal	35	700	7000
Sr-90	0.04	150	7000
Cs-137	1	44	4600

NOTE: (1) To convert the Ci/m^3 value to gigabecquerel (GBq)/cubic meter, multiply th
37.
(2) There are no limits established for these radionuclides in Class B or C wastes.
effects of external radiation and internal heat generation on transportation, handling
concentrations for these wastes. These wastes shall be Class B unless the concentrati
II determine the waste to be Class C independent of these radionuclides.

(e) Classification determined by both long- and short-lived radionuclides. If the radioactive waste
some of which are listed in Table I and some of which are listed in Table II, classification shall be

(i) If the concentration of a radionuclide listed in Table I is less than 0.1 times the value listed in T
by the concentration of radionuclides listed in Table II.

(ii) If the concentration of a radionuclide listed in Table I exceeds 0.1 times the value listed in Tab
Table I, the waste shall be Class C, provided the concentration of radionuclides listed in Table II
Column 3 of Table II.

(f) Classification of wastes with radionuclides other than those listed in Tables I and II. If the wast
listed in either Table I or II, it is Class A.

(g) The sum of the fractions rule for mixtures of radionuclides. For determining classification for w
radionuclides, it is necessary to determine the sum of fractions by dividing each radionuclide's co
adding the resulting values. The appropriate limits shall all be taken from the same column of the
the column shall be less than 1.0 if the waste class is to be determined by that column. Example:
concentration of 1.85 TBq/m^3 (50 Ci/m^3) and Cs-137 in a concentration of 814 GBq/m^3 (22 Ci/m^3
the values in Column 1, Table II, they shall be compared to Column 2 values. For Sr-90 fraction,
22/44 = 0.5; the sum of the fractions = 0.83. Since the sum is less than 1.0, the waste is Class B.

(h) Determination of concentrations in wastes. The concentration of a radionuclide may be detern
of scaling factors which relate the inferred concentration of one radionuclide to another that is me
accountability, if there is reasonable assurance that the indirect methods can be correlated with a
of a radionuclide may be averaged over the volume of the waste, or weight of the waste if the uni
(nanocurie) per gram.

(2) Radioactive Waste Characteristics

(a) The following are minimum requirements for all classes of waste and are intended to facilitate
health and safety of personnel at the disposal site.

(i) Wastes shall be packaged in conformance with the conditions of the license issued to the site
shipped. Where the conditions of the site license are more restrictive than the provisions of Rule
shall govern.

(ii) Wastes shall not be packaged for disposal in cardboard or fiberboard boxes.

(iii) Liquid waste shall be packaged in sufficient absorbent material to absorb twice the volume of

(iv) Solid waste containing liquid shall contain as little free-standing and non-corrosive liquid as is

shall the liquid exceed one percent of the volume.

(v) Waste shall not be readily capable of detonation or of explosive decomposition or reaction at r of explosive reaction with water.

(vi) Waste shall not contain, or be capable of generating, quantities of toxic gases, vapors, or fum handling, or disposing of the waste. This does not apply to radioactive gaseous waste packaged i R313-15-1008(2)(a)(viii).

(vii) Waste shall not be pyrophoric. Pyrophoric materials contained in wastes shall be treated, pre nonflammable.

(viii) Wastes in a gaseous form shall be packaged at an absolute pressure that does not exceed ' Total activity shall not exceed 3.7 TBq (100 Ci) per container.

(ix) Wastes containing hazardous, biological, pathogenic, or infectious material shall be treated tc the potential hazard from the non-radiological materials.

(b) The following requirements are intended to provide stability of the waste. Stability is intended t degrade and affect overall stability of the site through slumping, collapse, or other failure of the di infiltration. Stability is also a factor in limiting exposure to an inadvertent intruder, since it provides waste.

(i) Waste shall have structural stability. A structurally stable waste form will generally maintain its the expected disposal conditions such as weight of overburden and compaction equipment, the p activity, and internal factors such as radiation effects and chemical changes. Structural stability ca processing the waste to a stable form, or placing the waste in a disposal container or structure tha

(ii) Notwithstanding the provisions in Subsections R313-15-1008(2)(a)(iii) and R313-15- 1008(2)(a liquid, shall be converted into a form that contains as little free- standing and non-corrosive liquid case shall the liquid exceed one percent of the volume of the waste when the waste is in a dispos stability, or 0.5 percent of the volume of the waste for waste processed to a stable form.

(iii) Void spaces within the waste and between the waste and its package shall be reduced to the

(3) Labeling. Each package of waste shall be clearly labeled to identify whether it is Class A, Clas with Subsection R313-15-1008(1).

R313-15-1101. Records - General Provisions.

(1) Each licensee or registrant shall use the SI units becquerel, gray, sievert and coulomb per kilc rem, and roentgen, including multiples and subdivisions, and shall clearly indicate the units of all r R313-15.

(2) Notwithstanding the requirements of Subsection R313-15-1101(1), when recording informatio Subsection R313-15-1006(2), information must be recorded in SI units or in SI units and the spec R313-15-1101(1).

(3) The licensee or registrant shall make a clear distinction among the quantities entered on the r as, total effective dose equivalent, total organ dose equivalent, shallow dose equivalent, eye dose committed effective dose equivalent.

R313-15-1102. Records of Radiation Protection Programs.

(1) Each licensee or registrant shall maintain records of the radiation protection program, includin

(a) The provisions of the program; and

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

(2) The licensee or registrant shall retain the records required by Subsection R313-15-1102(1)(a) each pertinent license or registration requiring the record. The licensee or registrant shall retain th R313-15-1102(1)(b) for three years after the record is made.

R313-15-1103. Records of Surveys.

(1) Each licensee or registrant shall maintain records showing the results of surveys and calibratic and Subsection R313-15-906(2). The licensee or registrant shall retain these records for three ye

(2) The licensee or registrant shall retain each of the following records until the Executive Secreta registration requiring the record:

(a) Records of the results of surveys to determine the dose from external sources of radiation use with individual monitoring data, in the assessment of individual dose equivalents; and

(b) Records of the results of measurements and calculations used to determine individual intakes assessment of internal dose; and

(c) Records showing the results of air sampling, surveys, and bioassays required pursuant to Sub R313-15-703(1)(c)(ii); and

(d) Records of the results of measurements and calculations used to evaluate the release of radic

R313-15-1104. Records of Tests for Leakage or Contamination of Sealed Sour

Records of tests for leakage or contamination of sealed sources required by Section R313-15-14(microcurie and maintained for inspection by the Executive Secretary for five years after the recor

R313-15-1105. Records of Prior Occupational Dose.

For each individual who is likely to receive in a year an occupational dose requiring monitoring pu licensee or registrant shall retain the records of prior occupational dose and exposure history as s form DRC-05 or equivalent until the Executive Secretary terminates each pertinent license requiri shall retain records used in preparing form DRC-05 or equivalent for three years after the record i

R313-15-1106. Records of Planned Special Exposures.

(1) For each use of the provisions of Section R313-15-206 for planned special exposures, the lice records that describe:

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

(b) The name of the management official who authorized the planned special exposure and a cop

(c) What actions were necessary; and

(d) Why the actions were necessary; and

(e) What precautions were taken to assure that doses were maintained ALARA; and

(f) What individual and collective doses were expected to result; and

(g) The doses actually received in the planned special exposure.

(2) The licensee or registrant shall retain the records until the Executive Secretary terminates eac requiring these records.

R313-15-1107. Records of Individual Monitoring Results.

(1) Recordkeeping Requirement. Each licensee or registrant shall maintain records of doses rece monitoring was required pursuant to Section R313-15-502, and records of doses received during and emergency conditions. Assessments of dose equivalent and records made using units in effe changed. These records shall include, when applicable:

(a) The deep dose equivalent to the whole body, eye dose equivalent, shallow dose equivalent to the extremities; and

(b) The estimated intake of radionuclides, see Section R313-15-202; and

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

(d) The specific information used to calculate the committed effective dose equivalent pursuant tc

(e) The total effective dose equivalent when required by Section R313-15-202; and

(f) The total of the deep dose equivalent and the committed dose to the organ receiving the highe

(2) Recordkeeping Frequency. The licensee or registrant shall make entries of the records specifi intervals not to exceed one year.

(3) Recordkeeping Format. The licensee or registrant shall maintain the records specified in Subs DRC-06, in accordance with the instructions for form DRC-06, or in clear and legible records cont form DRC-06.

(4) The licensee or registrant shall maintain the records of dose to an embryo/fetus with the recor woman. The declaration of pregnancy, including the estimated date of conception, shall also be k separately from the dose records.

(5) The licensee or registrant shall retain each required form or record until the Executive Secreta registration requiring the record.

R313-15-1108. Records of Dose to Individual Members of the Public.

(1) Each licensee or registrant shall maintain records sufficient to demonstrate compliance with th the public. See Section R313-15-301.

(2) The licensee or registrant shall retain the records required by Subsection R313-15-1108(1) un each pertinent license or registration requiring the record. Requirements for disposition of these r located in Section R313-12-51 for activities licensed under these rules.

R313-15-1109. Records of Waste Disposal.

(1) Each licensee or registrant shall maintain records of the disposal of licensed or registered mat R313-15-1002, R313-15-1003, R313-15-1004, R313-15-1005, Rule R313-25, and disposal by bu before January 28, 1981.

(2) The licensee or registrant shall retain the records required by Subsection R313-15-1109(1) un each pertinent license or registration requiring the record.

R313-15-1110. Records of Testing Entry Control Devices for Very High Radiati

(1) Each licensee or registrant shall maintain records of tests made pursuant to Subsection R313 for very high radiation areas. These records shall include the date, time, and results of each such

(2) The licensee or registrant shall retain the records required by Subsection R313-15-1110(1) for

R313-15-1111. Form of Records.

Each record required by Rule R313-15 shall be legible throughout the specified retention period. reproduced copy or a microform, provided that the copy or microform is authenticated by authoriz capable of producing a clear copy throughout the required retention period or the record may alsc capability for producing legible, accurate, and complete records during the required retention peri and specifications, shall include all pertinent information, such as stamps, initials, and signatures. safeguards against tampering with and loss of records.

R313-15-1201. Reports of Stolen, Lost, or Missing Licensed or Registered Sou

(1) Telephone Reports. Each licensee or registrant shall report to the Executive Secretary by tele

(a) Immediately after its occurrence becomes known to the licensee or registrant, stolen, lost, or r radioactive material in an aggregate quantity equal to or greater than 1,000 times the quantity spe to 20.2402, 1997 ed., which is incorporated by reference, under such circumstances that it appea exposure could result to individuals in unrestricted areas;

(b) Within 30 days after its occurrence becomes known to the licensee or registrant, lost, stolen, c radioactive material in an aggregate quantity greater than ten times the quantity specified in Appe 1997 ed., which is incorporated by reference, that is still missing.

(c) Immediately after its occurrence becomes known to the registrant, a stolen, lost, or missing ra

(2) Written Reports. Each licensee or registrant required to make a report pursuant to Subsection after making the telephone report, make a written report to the Executive Secretary setting forth tl

(a) A description of the licensed or registered source of radiation involved, including, for radioacti chemical and physical form; and, for radiation machines, the manufacturer, model and serial num radiation emitted;

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

(c) A statement of disposition, or probable disposition, of the licensed or registered source of radi

(d) Exposures of individuals to radiation, circumstances under which the exposures occurred, anc equivalent to persons in unrestricted areas; and

(e) Actions that have been taken, or will be taken, to recover the source of radiation; and

(f) Procedures or measures that have been, or will be, adopted to ensure against a recurrence of registered sources of radiation.

(3) Subsequent to filing the written report, the licensee or registrant shall also report additional su within 30 days after the licensee or registrant learns of such information.

(4) The licensee or registrant shall prepare any report filed with the Executive Secretary pursuant of individuals who may have received exposure to radiation are stated in a separate and detachal

R313-15-1202. Notification of Incidents.

(1) Immediate Notification. Notwithstanding other requirements for notification, each licensee or r event involving a source of radiation possessed by the licensee or registrant that may have cause following conditions:

(a) An individual to receive:

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

(ii) An eye dose equivalent of 0.75 Sv (75 rem) or more; or

(iii) A shallow dose equivalent to the skin or extremities or a total organ dose equivalent of 2.5 Gy

(b) The release of radioactive material, inside or outside of a restricted area, so that, had an indiv individual could have received an intake five times the occupational ALI. This provision does not a not normally stationed during routine operations, such as hot- cells or process enclosures.

(2) Twenty-Four Hour Notification. Each licensee or registrant shall, within 24 hours of discovery c Secretary each event involving loss of control of a licensed or registered source of radiation poss may have caused, or threatens to cause, any of the following conditions:

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

(i) A total effective dose equivalent exceeding 0.05 Sv (five rem); or

(ii) An eye dose equivalent exceeding 0.15 Sv (15 rem); or

(iii) A shallow dose equivalent to the skin or extremities or a total organ dose equivalent exceedin

(b) The release of radioactive material, inside or outside of a restricted area, so that, had an indiv individual could have received an intake in excess of one occupational ALI. This provision does n are not normally stationed during routine operations, such as hot- cells or process enclosures.

(3) The licensee or registrant shall prepare each report filed with the Executive Secretary pursuar names of individuals who have received exposure to sources of radiation are stated in a separate

(4) Licensees or registrants shall make the reports required by Subsections R313-15-1202(1) anc Secretary by telephone, telegram, mailgram, or facsimile to the Executive Secretary.

(5) The provisions of Section R313-15-1202 do not apply to doses that result from planned speci within the limits for planned special exposures and are reported pursuant to Section R313-15-12(

R313-15-1203. Reports of Exposures, Radiation Levels, and Concentrations of the Constraints or Limits.

(1) Reportable Events. In addition to the notification required by Section R313-15-1202, each lice report within 30 days after learning of any of the following occurrences:

(a) Incidents for which notification is required by Section R313-15-1202; or

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

(i) The occupational dose limits for adults in Section R313-15-201; or

(ii) The occupational dose limits for a minor in Section R313-15-207; or

(iii) The limits for an embryo/fetus of a declared pregnant woman in Section R313-15-208; or

(iv) The limits for an individual member of the public in Section R313-15-301; or

(v) Any applicable limit in the license or registration; or

(vi) The ALARA constraints for air emissions established under Subsection R313-15-101(4); or

(c) Levels of radiation or concentrations of radioactive material in:

(i) A restricted area in excess of applicable limits in the license or registration; or

(ii) An unrestricted area in excess of ten times the applicable limit set forth in Rule R313-15 or in t not involving exposure of any individual in excess of the limits in Section R313- 15-301; or

(d) For licensees subject to the provisions of U.S. Environmental Protection Agency's generally ap standards in 40 CFR 190, levels of radiation or releases of radioactive material in excess of those related to those standards.

(2) Contents of Reports.

(a) Each report required by Subsection R313-15-1203(1) shall describe the extent of exposure of

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 a limits, ALARA constraints, generally applicable environmental standards, and associated license

(b) Each report filed pursuant to Subsection R313-15-1203(1) shall include for each occupational Social Security account number, and date of birth. With respect to the limit for the embryo/fetus ir should be those of the declared pregnant woman. The report shall be prepared so that this inform detachable portion of the report.

(3) All licensees or registrants who make reports pursuant to Subsection R313-15-1203(1) shall s Executive Secretary.

R313-15-1204. Reports of Planned Special Exposures.

The licensee or registrant shall submit a written report to the Executive Secretary within 30 days f conducted in accordance with Section R313-15-206, informing the Executive Secretary that a pla and indicating the date the planned special exposure occurred and the information required by Se

R313-15-1205. Reports to Individuals of Exceeding Dose Limits.

When a licensee or registrant is required, pursuant to the provisions of Sections R313-15-1203 or Executive Secretary any exposure of an identified occupationally exposed individual, or an identif radiation, the licensee or registrant shall also provide a copy of the report submitted to the Execut report shall be transmitted at a time no later than the transmittal to the Executive Secretary.

R313-15-1207. Notifications and Reports to Individuals.

(1) Requirements for notification and reports to individuals of exposure to radiation or radioactive

(2) When a licensee or registrant is required pursuant to Section R313-15-1203 to report to the E individual to radiation or radioactive material, the licensee or registrant shall also notify the individ a time not later than the transmittal to the Executive Secretary, and shall comply with the provisio

R313-15-1208. Reports of Leaking or Contaminated Sealed Sources.

If the test for leakage or contamination required pursuant to Section R313-15-1401 indicates a se a report of the test shall be filed within five days with the Executive Secretary describing the equip corrective action taken.

R313-15-1301. Vacating Premises.

Each specific licensee or registrant shall, no less than 30 days before vacating or relinquishing pc may have been contaminated with radioactive material as a result of his activities, notify the Exec

vacate. When deemed necessary by the Executive Secretary, the licensee shall decontaminate tl annual total effective dose equivalent to any individual after the site is released for unrestricted us rem)above background and that the annual total effective dose equivalent from any specific envir decommissioning activities should not exceed 0.1 mSv (0.01 rem)above background.

R313-15-1401. Testing for Leakage or Contamination of Sealed Sources.

(1) The licensee or registrant in possession of any sealed source shall assure that:

(a) Each sealed source, except as specified in Subsection R313-15-1401(2), is tested for leakage are received before the sealed source is put into use unless the licensee or registrant has a certif the sealed source was tested within six months before transfer to the licensee or registrant.

(b) Each sealed source that is not designed to emit alpha particles is tested for leakage or contan months or at alternative intervals approved by the Executive Secretary, an Agreement State, a Lic Regulatory Commission.

(c) Each sealed source that is designed to emit alpha particles is tested for leakage or contamina months or at alternative intervals approved by the Executive Secretary, an Agreement State, a Lic Commission.

(d) For each sealed source that is required to be tested for leakage or contamination, at any othe sealed source might have been damaged or might be leaking, the licensee or registrant shall assu leakage or contamination before further use.

(e) Tests for leakage for all sealed sources, except brachytherapy sources manufactured to conta the presence of 185 Bq (0.005 uCi) of radioactive material on a test sample. Test samples shall b the surfaces of the container in which the sealed source is stored or mounted on which one might For a sealed source contained in a device, test samples are obtained when the source is in the "c

(f) The test for leakage for brachytherapy sources manufactured to contain radium shall be capab of 37 Bq (0.001 uCi) of radon-222 in a 24 hour period when the collection efficiency for radon-222 with respect to collection method, volume and time.

(g) Tests for contamination from radium daughters shall be taken on the interior surface of brachy shall be capable of detecting the presence of 185 Bq (0.005 uCi) of a radium daughter which has

(2) A licensee or registrant need not perform tests for leakage or contamination on the following s

(a) Sealed sources containing only radioactive material with a half-life of less than 30 days;

(b) Sealed sources containing only radioactive material as a gas;

(c) Sealed sources containing 3.7 MBq (100 uCi) or less of beta or photon-emitting material or 37 material;

(d) Sealed sources containing only hydrogen-3;

(e) Seeds of iridium-192 encased in nylon ribbon; and

(f) Sealed sources, except teletherapy and brachytherapy sources, which are stored, not being us

licensee or registrant shall, however, test each such sealed source for leakage or contamination a use or transfer unless it has been tested for leakage or contamination within six months before th

(3) Tests for leakage or contamination from sealed sources shall be performed by persons specif Secretary, an Agreement State, a Licensing State, or the U.S. Nuclear Regulatory Commission tc

(4) Test results shall be kept in units of becquerel or microcurie and maintained for inspection by Secretary. Records of test results for sealed sources shall be made pursuant to Section R313-15

(5) The following shall be considered evidence that a sealed source is leaking:

(a) The presence of 185 Bq (0.005 uCi) or more of removable contamination on any test sample.

(b) Leakage of 37 Bq (0.001 uCi) of radon-222 per 24 hours for brachytherapy sources manufacti

(c) The presence of removable contamination resulting from the decay of 185 Bq (0.005 uCi) or n

(6) The licensee or registrant shall immediately withdraw a leaking sealed source from use and sh contamination. The leaking sealed source shall be repaired or disposed of in accordance with Ru

(7) Reports of test results for leaking or contaminated sealed sources shall be made pursuant to

KEY

radioactive material, contamination, waste disposal, safety

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19-3-104; 19-3-108;

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[*Utah Administrative Code* List of Titles]|[Search Rules Publications]

Rule R313-18. Notices, Instructions and Reports to Workers by Licensees or Registrants--Inspections.

As in effect on July 1, 2001

Table of Contents

R313-18-1. Purpose and Authority.

(1) The purpose of this rule is to establish requirements for notices, instructions and reports by licensees or registrants to individuals engaged in work under a license or registration and options available to such individuals in connection with inspections of licensees or registrants.

(2) The rules set forth herein are adopted pursuant to the provisions of Sections 19-3-104(3) and 19-3-104(6).

R313-18-2. General.

The rules of R313-18 shall apply to all persons who receive, possess, use, own or transfer a source of radiation licensed by or registered with the Department pursuant to the rules in R313-16, R313-19 or R313-22.

R313-18-11. Posting of Notices to Workers.

(1) Licensees or registrants shall post current copies of the following documents:

(a) the rules in R313-15 and R313-18;

(b) the license, certificate of registration, conditions or documents incorporated into the license by reference and amendments thereto;

(c) the operating procedures applicable to work under the license or registration; and

(d) a notice of violation involving radiological working conditions, proposed imposition of civil penalty, order issued pursuant to R313-14, or any response from the licensee or registrant.

(2) If posting of a document specified in R313-18-11(1)(a), (b), or (c) is not practicable, the licensee or registrant may post a notice which describes the document and states where it may be examined.

(3) DRC-04 "Notice to Employees," shall be posted by licensees or registrants wherever individuals work in or frequent a portion of a restricted area.

(4) Documents from the Executive Secretary which are posted pursuant to R313-18-11(1)(d) shall be posted within five working days after receipt of the documents from the Executive Secretary; the licensee's or registrant's response, if there is one, shall be posted for a minimum of five working days after dispatch from the licensee or registrant. The documents shall remain posted for a minimum of five working days or until action correcting the violation has been competed, whichever is later.

(5) Documents, notices or forms posted pursuant to R313-18-11 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.

R313-18-12. Instructions to Workers.

(1) All individuals who in the course of employment are likely to receive in a year an occupational dose in excess of 1.0 mSv (100 mrem):

(a) shall be kept informed of the storage, transfer, or use of sources of radiation in the licensee's or registrant's workplace;

(b) shall be instructed in the health protection considerations associated with exposure to radiation or radioactive material to the individual and potential offspring, in precautions or procedures to minimize exposure, and in the purposes and functions of protective devices employed;

(c) shall be instructed in, and instructed to observe, to the extent within the worker's control, the applicable provisions of these rules and licenses for the protection of personnel from exposure to radiation or radioactive material;

(d) shall be instructed as to their responsibility to report promptly to the licensee or registrant a condition which may constitute, lead to, or cause a violation of the Act, these rules, or a condition of the licensee's license or unnecessary exposure to radiation or radioactive material;

(e) shall be instructed in the appropriate response to warnings made in the event of an unusual occurrence or malfunction that may involve exposure to radiation or radioactive material; and

(f) shall be advised as to the radiation exposure reports which workers shall be furnished pursuant to R313-18-13.

(2) In determining those individuals subject to the requirements of R313-18-12(1), licensees must take into consideration assigned activities during normal and abnormal situations involving exposure to radiation or radioactive material which can reasonably be expected to occur during the life of a licensed facility. The extent of these instructions shall be commensurate with potential radiological health protection considerations for the workplace.

R313-18-13. Notifications and Reports to Individuals.

(1) Radiation exposure data for an individual and the results of measurements, analyses, and calculations of radioactive material deposited or retained in the body of an individual shall be reported to the individual as specified in R313-18-13. The information reported shall include data and results obtained pursuant to these rules, orders, or license conditions, as shown in records maintained by the licensee or registrant pursuant to R313-15-1107. Notifications and reports shall:

(a) be in writing;

(b) include appropriate identifying data such as the name of the licensee or registrant, the name of the individual, and the individual's identification number, preferably social security number;

(c) include the individual's exposure information; and

(d) contain the following statement:

"This report is furnished to you under the provisions of the Utah Administrative Code Section R313-18- 13. You should preserve this report for further reference."

(2) Licensees or registrants shall furnish to each worker annually a written report of the worker's dose as shown in records maintained by the licensee or registrant pursuant to R313-15-1107.

(3) Licensees or registrants shall furnish a written report of the worker's exposure to sources of radiation at the request of a worker formerly engaged in activities controlled by the licensee or registrant. The report shall include the dose record for each year the worker was required to be monitored pursuant to R313-15-502. The report shall be furnished within 30 days from the date of the request, or within 30 days after the dose of the individual has been determined by the licensee or registrant, whichever is later. The report shall cover the period of time that the worker's activities involved exposure to sources of radiation and shall include the dates and locations of work under the license or registration in which the worker participated during this period.

(4) When a licensee or registrant is required pursuant to R313-15-1202, R313-15-1203, or R313-15-1204 to report to the Executive Secretary an exposure of an individual to sources of radiation, the licensee or the registrant shall also provide the individual a written report on the exposure data included therein. Reports shall be transmitted at a time not later than the transmittal to the Executive Secretary.

(5) At the request of a worker who is terminating employment with the licensee or registrant in work involving exposure to radiation or radioactive material, during the current year, the licensee or registrant shall provide at termination to the worker, or to the worker's designee, a written report regarding the radiation dose received by that worker from operations of the licensee or

registrant 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 shall be provided together with a clear indication that this is an estimate.

R313-18-14. Presence of Representatives of Licensees or Registrants and Workers During Inspection.

(1) Licensees or registrants shall afford representatives of the Board or the Executive Secretary, at reasonable times, the opportunity to inspect materials, machines, activities, facilities, premises, and records pursuant to these rules.

(2) During an inspection, representatives of the Board or the Executive Secretary may consult privately with workers as specified in R313-18-15. The licensee or registrant may accompany representatives during other phases of an inspection.

(3) If, at the time of inspection, an individual has been authorized by the workers to represent them during Department inspections, the licensee or registrant shall notify the representatives of the Board or the Executive Secretary of the authorization and shall give the workers' representative an opportunity to accompany the representatives during the inspection of physical working conditions.

(4) The workers' representative shall be routinely engaged in work under control of the licensee or registrant and shall have received instructions as specified in R313-18-12.

(5) Different representatives of licensees or registrants and workers may accompany the representatives of the Board or the Executive Secretary 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 representatives of the Board or the Executive Secretary.

(6) With the approval of the licensee or registrant and the workers' representative, an individual who is not routinely engaged in work under control of the licensee or registrant, for example, a consultant to the licensee or registrant or to the workers' representative, shall be afforded the opportunity to accompany representatives of the Board or the Executive Secretary during the inspection of physical working conditions.

(7) Notwithstanding the other provisions of R313-18-14, representatives of the Board or the Executive Secretary are authorized to refuse to permit accompaniment by an individual who deliberately interferes with a fair and orderly inspection. With regard to areas containing information classified by an Agency of the U.S. Government in the interest of national security, an individual who accompanies an inspector may have access to such information only if authorized to do so. With regard to areas containing proprietary information, the workers' representative for that area shall be an individual previously authorized by the licensee or registrant to enter that area.

R313-18-15. Consultation with Workers During Inspections.

(1) Representatives of the Board or the Executive Secretary may consult privately with workers concerning matters of occupational radiation protection and other matters related to applicable provisions of these rules and licenses to the extent the representatives deem necessary for the conduct of an effective and thorough inspection.

(2) During the course of an inspection, workers may bring privately to the attention of the representatives of the Board or the Executive Secretary, either orally or in writing, a past or present condition which the worker has reason to believe may have contributed to or caused a violation of the Act, these rules, or license condition, or an unnecessary exposure of an individual to sources of radiation under the licensee's or registrant's control. A notice in writing shall comply with the requirements of R313-18-16(1).

(3) The provisions of R313-18-15(2) shall not be interpreted as authorization to disregard instructions pursuant to R313-18-12.

R313-18-16. Request by Workers for Inspections.

(1) A worker or representative of workers believing that a violation of the Act, these rules, 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 Executive Secretary. The 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 licensee or registrant by representatives of the Board or the Executive Secretary no later than at the time of inspection except that, upon the request of the worker giving the notice, his name and the name of individuals referred to therein shall not appear in a copy or on a record published, released, or made available by the Department except for good cause shown.

(2) If, upon receipt of the notice, representatives of the Board or the Executive Secretary, determine that the complaint meets the requirements set forth in R313-18-16(1), and that there are reasonable grounds to believe that the alleged violation exists or has occurred, an inspection shall be made as soon as practicable to determine if the alleged violation exists or has occurred. Inspections pursuant to R313-18-16 need not be limited to matters referred to in the complaint.

(3) A licensee, registrant or contractor or subcontractor of a licensee or registrant shall not discharge or discriminate against a worker because that worker has filed a complaint or instituted or caused to be instituted a proceeding under these rules or has testified or is about to testify in a proceeding or because of the exercise by the worker on behalf of the worker or others of an option afforded by R313-18.

R313-18-17. Inspections Not Warranted -- Informal Review.

(1)(a) If the representatives of the Board or the Executive Secretary determine, with respect to a complaint under Section R313-18-16, that an inspection is not warranted because there are no reasonable grounds to believe that a violation exists or has occurred, the Executive Secretary shall notify the complainant in writing of that determination. The complainant may obtain review of the determination by submitting a written statement of position with the Executive Secretary. The Executive Secretary will provide the licensee or registrant with a copy of the statement by certified mail, excluding, at the request of the complainant, the name of the complainant. The licensee or registrant may submit an opposing written statement of position with the Executive Secretary. The Executive Secretary will provide the complainant with a copy of the statement by certified mail.

(b) Upon the request of the complainant, the Board may hold an informal conference in which the complainant and the licensee or registrant may orally present their views. An informal

conference may also be held at the request of the licensee or registrant, but disclosure of the identity of the complainant will be made only following receipt of written authorization from the complainant. After considering written and oral views presented, the Board shall affirm, modify, or reverse the determination of the representatives of the Board or the Executive Secretary and furnish the complainant and the licensee or registrant a written notification of the decision and the reason therefor.

(2) If the Executive Secretary determines that an inspection is not warranted because the requirements of R313-18-16(1) have not been met, the complainant shall be notified in writing of the determination. The determination shall be without prejudice to the filing of a new complaint meeting the requirements of R313-18-16(1).

KEY

radioactive material, inspection, radiation safety, licensing

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