EDITORIAL COMMENTS ON PARTS A AND D

ENCLOSURE 2

Part A

"Lens dose equivalent" (revised). This definition is consistent with the definition in the revised 10 CFR Part 20.

"Licensing state" (revised). This definition of licensing state was revised for additional clarification and had been recommended in the 1995 Matters for Future Consideration.

"Individual monitoring devices" (revised). This definition is consistent with the definition in the revised 10 CFR Part 20.

"Occupational dose" (revised). This definition is consistent with the definition in the revised 10 CFR Part 20.

"Public dose" (revised). This definition is consistent with the definition in the revised 10 CFR Part 20.

"Radiation safety officer" (revised). This definition of radiation safety officer was revised for additional clarification and had been recommended in the 1995 Matters for Future Consideration.

"Sealed source and device registry" new definition, a recommendation from the Part G working group

"Year" (revised). This definition of year was revised for additional clarification and had been recommended in the 1995 Matters for Future Consideration.

The following definitions are being added as a result of the new regulations found in Part D entitled "Respirator Protection and Controls to Restrict Internal Exposures," (64 FR 54543, October 7, 1999 and 64 FR 55524, October 13, 1999), effective February 2, 2000:

add powered air-purifying respirator

"Air Purifying Respirator"; "Assigned Protection Factor"; "Atmosphere Supplying Respirator"; "Class"; "Demand Respirator"; Disposable Respirator"; "Fit Factor"; "Fit Test'; "Filtering Facepiece"; "Helmet"; "Hood"; "Loose Fitting Facepiece"; "Negative Pressure Respirator"; "Positive Pressure Respirator"; "Pressure Demand Respirator"; "Qualitative Fit Test"; "Quantitative Fit Test"; Self Contained Breathing Apparatus"; "Supplied Air Respirator"; "Tight Fitting Facepiece"; and "User Seal Check."

Matters for Future Consideration

1. Presently, the Food and Drug Administration is considering replacing "exposure" with the term "air kerma" in the diagnostic x-ray system performance standard (21 CFR, Subchapter J). Air kerma is currently in use by the National Council on Radiation Protection and Measurements and international organizations. The Suggested State Regulations should be amended when the federal definition is amended.

2. The Working Group recommended that the definition of "waste" be referred to the Working Group for Part M to consider inclusion of NARM and NORM waste.

3. When Part U has been approved, the Working Group will revise the definition of "byproduct material."

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

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

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

"Explosive material" means any chemical compound, mixture, or device which produces a substantial instantaneous release of gas and heat spontaneously or by contact with sparks or flame.

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

"Exposure" means the quotient of dQ by dm where "dQ" is the absolute value of the total charge of the ions of one sign produced in air when all the electrons (negatrons and positrons) liberated by photons in a volume element of air having mass "dm" are completely stopped in air. The SI unit of exposure is the coulomb per kilogram (C/kg). See A.13 Units of Exposure and Dose for the special unit.*/

"Exposure rate" means the exposure per unit of time, such as roentgen per minute and milliroentgen per hour.

"External dose" means that portion of the dose equivalent received from any source of radiation outside the body.

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

~~"Eye Lens dose equivalent" (LDE) means the external dose equivalentexposure to the lens of the eye as the dose equivalent at a tissue depth of 0.3 centimeter (300 mg/cm^2).~~

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

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

"Fit Test" means the use of a protocol to qualitatively evaluate the fit of a respirator on an individual.

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*/ *States may wish to distinguish throughout their regulations, and to include a footnote here specifying a distinction, between the Internaitonal Commission on Radiation Units and Measurements definition of exposure and the general use of exposure. The footnote could be similar to the following: "When not underlined as above [or indicated as 'exposure'(X)], the term 'exposure' has a more general meaning in these regulations. "*

"Lost or missing source of radiation" means licensed [or registered] source of radiation whose location is unknown. This definition includes, but is not limited to, radioactive material that has been shipped but has not reached its planned destination and whose location cannot be readily traced in the transportation system.

"Major processor" means a user processing, handling, or manufacturing radioactive material exceeding Type A quantities as unsealed sources or material, or exceeding 4 times Type B quantities as sealed sources, but does not include nuclear medicine programs, universities, industrial radiographers, or small industrial programs. Type A and B quantities are defined in T.2 of these regulations.

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

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

"Monitoring" means the measurement of radiation, radioactive material concentrations, surface area activities or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses. For purposes of these regulations, "radiation monitoring" and "radiation protection monitoring" are equivalent terms.

"NARM" means any naturally occurring or accelerator-produced radioactive material. It does not include byproduct, source, or special nuclear material.** "Natural radioactivity" means radioactivity of naturally occurring nuclides.** text of footnote not included

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

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

"Occupational dose" means the dose received by an individual in the course of employment in which the individual's assigned duties for the licensee or registrant involve exposure to sources of radiation, whether or not the sources of radiation are in the possession of the licensee, registrant, or other person. Occupational dose does not include doses received: from background radiation, ~~or as a patient from medical practices, or~~ from any medical administration the individual has received, from exposure to individuals administered radioactive material and released in accordance with [cite appropriate Part G reference], from voluntary participation in medical research programs, or as a member of the public.

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

"Particle accelerator" [See "Accelerator"].

"Person" means any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, agency, political subdivision of this State, any other State or political subdivision or agency thereof, and any legal successor, representative, agent, or agency of the foregoing [, but shall not include federal government agencies].

and (b) classified as low-level radioactive waste consistent with existing law and in accordance with (a) by the Nuclear Regulatory Commission.

"Waste handling licensees" mean persons licensed to receive and store radioactive wastes prior to disposal and/or persons licensed to dispose of radioactive waste.

"Week" means 7 consecutive days starting on Sunday.

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

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

"Working level" (WL) means any combination of short-lived radon daughters in 1 liter of air that will result in the ultimate emission of 1.3E+5 MeV of potential alpha particle energy. The short-lived radon daughters of radon-222 are polonium-218, lead-214, bismuth-214, and polonium-214; and those of radon-220 are polonium-216, lead-212, bismuth-212, and polonium-212.

"Working level month" (WLM) means an exposure to 1 working level for 170 hours -- 2,000 working hours per year divided by 12 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 provisions of these regulations. The licensee or registrant may change the starting date of the year used to determine compliance by the licensee or registrant provided that the change is made at the beginning of the year. If a licensee or registrant changes in a year, the licensee or registrant shall assure ~~and that~~ no day is omitted or duplicated in consecutive years.

Exemptions from the Regulatory Requirements

Sec. A.3 - Exemptions.

a. General Provision. The Agency may, upon application or upon its own initiative, grant such exemptions or exceptions from the requirements of these regulations as it determines are authorized by law and will not result in undue hazard to public health and safety or property.

b. Department of Energy Contractors and Nuclear Regulatory Commission Contractors. Any Department of Energy contractor or subcontractor and any Nuclear Regulatory Commission contractor or subcontractor of the following categories operating within this State is exempt from these regulations to the extent that such contractor or subcontractor under his contract receives, possesses, uses, transfers, or acquires sources of radiation:

   i. Prime contractors performing work for the Department of Energy at U.S. Government-owned or -controlled sites, including the transportation of sources of radiation to or from such sites and the performance of contract services during temporary interruptions of such transportation;

f. The licensee or registrant shall reduce the dose that an individual may be allowed to receive in the current year by the amount of occupational dose received while employed by any other person during the current year. See D.1205.

Sec. D.1202 - Compliance with Requirements for Summation of External and Internal Doses.

a. If the licensee or registrant is required to monitor pursuant to both D.1502a. and b. or registrant shall demonstrate compliance with the dose limits by summing doses. If the licensee or registrant is required to monitor only pursuant to D. pursuant to D.1502b., then summation is not required to demonstrate compli limits. The licensee or registrant may demonstrate compliance with the requi summation of external and internal doses pursuant to D.1202b., c. and d. The for the lens of the eye, the skin, and the extremities are not included in the sun subject to separate limits.

b. Intake by Inhalation. If the only intake of radionuclides is by inhalation, the tot equivalent limit is not exceeded if the sum of the deep dose equivalent divided t effective dose equivalent limit, and one of the following, does not exceed unity:

i. The sum of the fractions of the inhalation ALI for each radionuclide; or

ii. The total number of derived air concentration-hours (DAC-hours) for all ra divided by 2,000; or

iii. The sum of the calculated committed effective dose equivalents to all signif irradiated organs or tissues (T) calculated from bioassay data using appropri models and expressed as a fraction of the annual limit. For purposes of this i an organ or tissue is deemed to be significantly irradiated if, for that organ or product of the weighting factors, w_T, and the committed dose equivalent, $H_{T,5}$ intake is greater than 10 percent of the maximum weighted value of $H_{T,50}$, that per unit intake for any organ or tissue.

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

d. Intake through Wounds or Absorption through Skin. The licensee or registrant shall evaluate and, to the extent practical, account for intakes through wounds or skin absorption. The intake through intact skin has been included in the calculation of DAC for hydrogen-3 and does not need to be evaluated or accounted for pursuant to D.1202d.

Sec. D.1203 - Determination of External Dose from Airborne Radioactive Material.

a. Licensees or registrants shall, when determining the dose from airborne radioactive material, include the contribution to the deep dose equivalent, eye dose equivalent, and shallow dose equivalent from external exposure to the radioactive cloud. See Appendix B, footnotes [a/] and [b/].

Part D

i. The sum of the ratios of the concentration to the appropriate DAC value, that is, D, W, or Y, from Appendix B for each radionuclide in the mixture; or

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

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

g. When a mixture of radionuclides in air exists, a licensee or registrant may disregard certain radionuclides in the mixture if:

i. The licensee or registrant uses the total activity of the mixture in demonstrating compliance with the dose limits in D.1201 and in complying with the monitoring requirements in D.1502b.; and

ii. The concentration of any radionuclide disregarded is less than 10 percent of its DAC; and

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

h. When determining the committed effective dose equivalent, the following information may be considered:

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

ii. For an ALI and the associated DAC determined by the nonstochastic organ dose limit of 0.5 Sv (50 rem), the intake of radionuclides that would result in a committed effective dose equivalent of 0.05 Sv (5 rem), that is, the stochastic ALI, is listed in parentheses in Table I of Appendix B. The licensee or registrant may, as a simplifying assumption, use the stochastic ALI to determine committed effective dose equivalent. However, if the licensee or registrant uses the stochastic ALI, the licensee or registrant shall also demonstrate that the limit in D.1201a.i.(2) is met.

D.1205 (eq. to 20.2104 NRC rego)

Sec. D.205 - Determination of Prior Occupational Dose.

However, this appears to be duplicate of Sec. D.2104. I think in wks SIP, it was going to be deleted here

a. For each individual who may enter the licensee's or registrant's restricted area and is likely to receive, in a year, an occupational dose requiring monitoring pursuant to D.502, the licensee or registrant shall:

i. Determine the occupational radiation dose received during the current year; and

ii. Attempt to obtain the records of lifetime cumulative occupational radiation dose.

b. Prior to permitting an individual to participate in a planned special exposure, the licensee or registrant shall determine:

i. The internal and external doses from all previous planned special exposures; and

ii. All doses in excess of the limits, including doses received during accidents and emergencies, received during the lifetime of the individual.

c. In complying with the requirements of D.205a., a licensee or registrant may: 1205a if sects doesn't go away

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

ii. Accept, as the record of lifetime cumulative radiation dose, an up-to-date Agency Form Y or equivalent, signed by the individual and countersigned by an appropriate official of the most recent employer for work involving radiation exposure, or the individual's current employer, if the individual is not employed by the licensee or registrant; and

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

d. i. The licensee or registrant shall record the exposure history, as required by D.205a., on Agency Form Y, or other clear and legible record, of all the information required on that form. The form or record shall show each period in which the individual received occupational exposure to radiation or radioactive material and shall be signed by the individual who received the exposure. For each period for which the licensee or registrant obtains reports, the licensee or registrant shall use the dose shown in the report in preparing Agency Form Y or equivalent. For any period in which the licensee or registrant does not obtain a report, the licensee or registrant shall place a notation on Agency Form Y or equivalent indicating the periods of time for which data are not available.

ii. Licensees or registrants are not required to partition historical dose between external dose equivalent(s) and internal committed dose equivalent(s). Further, occupational exposure histories obtained and recorded on Agency Form Y or equivalent before [the effective date of these regulations], might not have included effective dose equivalent, but may be used in the absence of specific information on the intake of radionuclides by the individual.

e. If the licensee or registrant is unable to obtain a complete record of an individual's current and previously accumulated occupational dose, the licensee or registrant shall assume:

D.1201f (?) if section doesn't go away

i. In establishing administrative controls pursuant to ~~D.201f.~~ for the current year, that the allowable dose limit for the individual is reduced by 12.5 mSv (1.25 rem) for each quarter for which records were unavailable and the individual was engaged in activities that could have resulted in occupational radiation exposure; and

ii. That the individual is not available for planned special exposures.

f. The licensee or registrant shall retain the records on Agency Form Y or equivalent until the Agency terminates each pertinent license or registration requiring this record. The licensee or registrant shall retain records used in preparing Agency Form Y or equivalent for 3 years after the record is made.

Sec. D.1206 - Planned Special Exposures. A licensee or registrant may authorize an adult worker to receive doses in addition to and accounted for separately from the doses received under the limits specified in D.201 provided that each of the following conditions is satisfied:

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

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

c. Before a planned special exposure, the licensee or registrant ensures that each individual involved is:

i. Informed of the purpose of the planned operation; and

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

iii. Instructed in the measures to be taken to keep the dose ALARA considering other risks that may be present;

d. Prior to permitting an individual to participate in a planned special exposure, the licensee or registrant ascertains prior doses as required by D.1205b. during the lifetime of the individual for each individual involved;

e. Subject to D.1201b., the licensee or registrant shall not authorize a planned special exposure that would cause an individual to receive a dose from all planned special exposures and all doses in excess of the limits to exceed:

i. The numerical values of any of the dose limits in D.1201a. in any year; and

ii. Five times the annual dose limits in D.1201a. during the individual's lifetime;

f. The licensee or registrant maintains records of the conduct of a planned special exposure in accordance with D.~~1106~~2105and submits a written report in accordance with D.12204;

g. The licensee or registrant records the best estimate of the dose resulting from the planned special exposure in the individual's record and informs the individual, in writing, of the dose within 30 days from the date of the planned special exposure. The dose from planned special exposures shall not be considered in controlling future occupational dose of the individual pursuant to D.1201a. but shall be included in evaluations required by D.1206d. and e.

Sec. D.1207 - Occupational Dose Limits for Minors. The annual occupational dose limits for minors are 10 percent of the annual occupational dose limits specified for adult workers in D.1201.

Sec. D.1208 - Dose Equivalent to an Embryo/Fetus. (Is consistent with NRPTC) → Editorial Comment from NRC's OGC

a. The licensee or registrant shall ensure that the dose equivalent to an embryo/fetus during the entire pregnancy, due to occupational exposure of a declared pregnant woman, does not exceed 5 mSv (0.5 rem). See D.1107 for recordkeeping requirements. ? (D.2106 ?) Ck #. there is no D.1107 in revision 01 D version

b. The licensee or registrant ~~shall make~~ efforts to avoid substantial variation*/ above a uniform monthly exposure rate to a declared pregnant woman so as to satisfy the limit in D.208a. D.1107. 1208a. changed to D.2106 in Wkg Group.

c. The dose equivalent to ~~an~~ the embryo/fetus ~~shall be taken as~~is the sum of:

i. The deep dose equivalent to the ~~embryo/fetus from radionuclides in the embryo/fetus radionuclides in the~~ declared pregnant woman; and

ii. The dose equivalent ~~that is most representative of the dose~~ resulting from radionuclic the embry/fetus and radionuclides in the declared pregnant woman. ~~to the embryo/fe from external radiation, that is, in the mother's lower torso region.~~

~~(1) If multiple measurements have not been made, assignment of the highest dee dose equivalent for the declared pregnant woman shall be the dose to the embryo/fetus, in accordance with D.205c.; or~~

~~(2) If multiple measurements have been made, assignment of the deep dose equivalent for the declared pregnant woman from the individual monitoring device which is most representative of the dose to the embryo/fetus shall be dose to the embryo/fetus. Assignment of the highest deep dose equivalent declared pregnant woman to the embryo/fetus is not required unless that de also the most representative deep dose equivalent for the region of the embryo/fetus.~~

*/ *The National Council on Radiation Protection and Measurements recommended in NCRP Report No. 91 "Recommend Limits for Exposure to Ionizing Radiation" (June 1, 1987) that no more than 0.5 mSv (0.05 rem) to the embryo/fetus be re any one month.*

d. If ~~by the time the woman declares pregnancy to the licensee or registrant,~~ the dose equivalent to the embryo/fetus ~~has~~ is found to have exceeded ~~4.5~~ milli~~S~~sieverts (0.~~4~~5 rem), or is with 0.5 milliseiverts (0.05 rem) of this dose, by the time the woman declares the pregnancy to the licensee or registrant, the licensee or registrant shall be deemed to be in compliance with D.208a. if the additional dose to the embryo/fetus does not exceed 0.5 mSv (0.05 rem) during the remainder of the pregnancy.

Radiation Dose Limits for Individual Members of the Public

Sec. D.1301 - Dose Limits for Individual Members of the Public.

a. Each licensee or registrant shall conduct operations so that:

i. ~~Except as provided in D.301a.iii., t~~The total effective dose equivalent to individual members of the public from the licensed or registered operation does not exceed 1 milli~~S~~sievert~~v~~. (0.1 rem) in a year, exclusive of the dose contribution from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released in accordance with [cite appropriate Part G reference], from voluntary participation in medical research programs, and from the licensee's or registrant's disposal of radioactive material into sanitary sewerage in accordance with D.~~1~~2003;[**] and

ii. The dose in any unrestricted area from external sources exclusive of the dose contributions from patients administered radioactive material and released in accordance with [cite appropriate Part G reference], does not exceed 0.02 milli~~S~~sievert (0.002 rem) in any one hour; and

iii. The total effective dose equivalent to individual members of the public from infrequent exposure to radiation from radiation machines does not exceed 5 mSv (0.5 rem).

b. If the licensee or registrant permits members of the public to have access to restricted areas, the limits for members of the public continue to apply to those individuals.

c. A licensee, registrant, or an applicant for a license or registration may apply for prior Agency authorization to operate up to an annual dose limit for an individual member of the public of 5 mSv (0.5 rem). This application shall include the following information:

i. Demonstration of the need for and the expected duration of operations in excess of the limit in D.1301a.; and

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[**] *Retrofit shall not be required for locations within facilities where only radiation machines existed prior to [the effective date of these regulations] and met the previous requirements of 5 mSv (0.5 rem) in a year.*

ii. Minors ~~and declared pregnant women~~ likely to receive, in 1 year from sources external to the body, a deep dose equivalent in excess of ~~10 percent of any of the applicable limits in D.207 or D.208~~0.1 rem (1 mSv), a lens dose equivalent in excess of 1.5 milliservert (0.15 rem), or a shallow dose equivalent to the skin or to the extremeties in excess of 5 millisevert (0.5 rem);~~.~~ and

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

~~iii~~iv. Individuals entering a high or very high radiation area;

~~iv~~v. Individuals working with medical fluoroscopic equipment.

(1) An individual monitoring device used ~~for the~~ dose to an embryo/fetus of a declared pregnant woman, pursuant to D.208a., shall be located under the protective apron at the waist. 1208A

(2) An individual monitoring device used for eye dose equivalent shall be located at the neck, or an unshielded location closer to the eye, outside the protective apron.

(3) When only 1 individual monitoring device is used to determine the effective dose equivalent for external radiation pursuant to D.201c.ii., it shall be located at the neck outside the protective apron. When a second individual monitoring device is used, for the same purpose, it shall be located under the protective apron at the waist. The second individual monitoring device is required for a declared pregnant woman.

b. Each licensee or registrant shall monitor, to determine compliance with D.204, the occupational intake of radioactive material by and assess the committed effective dose equivalent to:

i. Adults likely to receive, in 1 year, an intake in excess of 10 percent of the applicable ALI in Table I, Columns 1 and 2, of Appendix B; and

ii. Minors ~~and declared pregnant women~~ likely to receive, in 1 year, a committed effective dose equivalent in excess of 0.~~5~~1 milli~~S~~servert (0.0~~5~~1 rem).

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

Sec. D.1503 - Location of Individual Monitoring Devices. Each licensee or registrant shall ensure that individuals who are required to monitor occupational doses in accordance with D.1502a. wear individual monitoring devices as follows:

a. An individual monitoring device used for monitoring the dose to the whole body shall be worn at the unshielded location of the whole body likely to receive the highest exposure. When a

c. Licensees, registrants, or applicants for licenses or registrations for sources of radiation within the purview of D.1603b. which will be used in a variety of positions or in locations, such as open fields or forests, that make it impracticable to comply with certain requirements of D.603b., such as those for the automatic control of radiation levels, may apply to the Agency for approval of alternative safety measures. Alternative safety measures shall provide personnel protection at least equivalent to those specified in D.1603b. At least one of the alternative measures shall include an entry-preventing interlock control based on a measurement of the radiation that ensures the absence of high radiation levels before an individual can gain access to the area where such sources of radiation are used.

d. The entry control devices required by D.1603b. and c. shall be established in such a way that no individual will be prevented from leaving the area.

Respiratory Protection and Controls to Restrict Internal Exposure in Restricted Areas

Sec. D.1701 - Use of Process or Other Engineering Controls. The licensee or registrant shall use, to the extent ~~practicable~~practical, process or other engineering controls, such as, containment, decontamination or ventilation, to control the concentrations of radioactive material in air.

Sec. D.1702 - Use of Other Controls.

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

~~a~~i. Control of access; or

~~b~~ii. Limitation of exposure times; or

~~c~~iii. Use of respiratory protection equipment; or

~~d~~iv. Other controls.

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

Sec. D.1703 - Use of Individual Respiratory Protection Equipment.~~a.~~ If the licensee or registrant uses respiratory protection equipment to limit intakes pursuant to D.702: 1702 D.1703b

~~i~~a. Except as provided in D.1703a.ii., the licensee or registrant shall use only respiratory protection equipment that is tested and certified ~~or had certification extended~~ by the National Institute for Occupational Safety and Health ~~and the Mine Safety and Health Administration~~;

~~ii~~b. The licensee or registrant ~~may~~ wishes to use equipment that has not been tested or certified by the National Institute for Occupational Safety ~~and Health and the Mine Safety and Health Administration has not had certification extended by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration~~, or for which there is no schedule for testing or certification, the licensee shall submit an application to ~~provided the licensee or registrant has submitted to the Agency and~~ the Agency ~~has approved an application~~ for authorized use of ~~that~~this equipment, except as provided in Part D. The application must include evidence ~~including a demonstration by testing, or a demonstration on the basis of test information,~~ that the material and performance characteristics of the equipment are capable of providing the proposed degree of protection under anticipated conditions of use. This must be demonstrated either by the licensee testing or on the basis of reliable test information.;

Change needed for complete sentence - easiest fix

~~;~~

~~iii~~c. The licensee or registrant shall implement and maintain a respiratory protection program that includes:

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

~~(2)~~ii. Surveys and bioassays, as ~~appropriate~~necessary, to evaluate actual intakes; ~~and~~

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

e-indent

~~(4)~~iv. Written procedures regarding: ~~selection, fitting, issuance, maintenance, and testing of respirators, including testing for operability immediately prior to each use; supervision and training of personnel; monitoring, including air sampling and bioassays; and recordkeeping; and~~

(1) Monitoring, including air sampling and bioassays;

(2) Supervision and training or respirator users;

(3) Fit testing

(4) Respirator selection;

(5) Breathing air quality;

(6) Inventory and control;

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

(8) Recordkeeping; and

(9) Limitations on periods of respirator use and relief from repsirator use.

~~(5)~~v. Determination by a ~~physician prior to initial fitting of respirators, and at least every 12 months thereafter,~~ physician that the individual user is ~~physically able~~ medically fit to use the respiratory protection equipment before

(1) The initial fitting of a face sealing respirator;

(2) Before the first field use of non-face sealing respirators, and

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

~~iv. The licensee or registrant shall issue a written policy statement on respirator usage covering:~~

~~(1) The use of process or other engineering controls, instead of respirators; and~~

~~(2) The routine, nonroutine, and emergency use of respirators; and~~

~~(3) The length of periods of respirator use and relief from respirator use;~~

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

~~vi. The licensee or registrant shall use respiratory protection equipment within the equipment manufacturer's expressed limitations for type and mode of use and shall provide proper visual, communication, and other special capabilities, such as adequate skin protection, when needed.~~

~~b. When estimating exposure of individuals to airborne radioactive materials, the licensee or registrant may make allowance for respiratory protection equipment used to limit intakes pursuant to D.702, provided that the following conditions, in addition to those in D.703a., are satisfied:~~

~~i. The licensee or registrant selects respiratory protection equipment that provides a protection factor, specified in Appendix A, greater than the multiple by which peak concentrations of airborne radioactive materials in the working area are expected to exceed the values specified in Appendix B, Table I, Column 3. However, if the selection of respiratory protection equipment with a protection factor greater than the peak concentration is inconsistent with the goal specified in D.702 of keeping the total effective dose equivalent ALARA, the licensee or registrant may select respiratory protection equipment with a lower protection factor provided that such a selection would~~

Sec. D.1705 – Application for use of Higher Assigned Protection Factors. The licensee or registrant shall obtain authorization from the Agency before using assigned respiratory protection factors in excess of those specified in Appendix A. The Agency may authorize a licensee or registrant to use higher protection factors on receipt of an application that:

a. Describes the situation for which a need exists for higher protection factors, and

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

Storage and Control of Licensed or Registered Sources of Radiation

Sec. D.1801 - Security and Control of Licensed or Registered Sources of Radiation.

a. The licensee or registrant shall secure licensed or registered radioactive material from unauthorized removal or access.

b. The licensee or registrant shall maintain constant surveillance, and use devices or administrative procedures to prevent unauthorized use of licensed or registered radioactive material that is in an unrestricted area and that is not in storage.

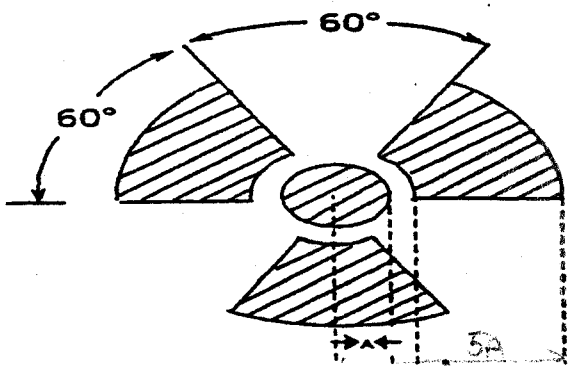
c. The registrant shall secure registered radiation machines from unauthorized removal.

d. The registrant shall use devices or administrative procedures to prevent unauthorized use of registered radiation machines.

Precautionary Procedures

Sec. D.1901 - Caution Signs.

a. Standard Radiation Symbol. Unless otherwise authorized by the Agency, the symbol prescribed by D.1901 shall use the colors magenta, or purple, or black on yellow background. The symbol prescribed is the three-bladed design as follows:



need to be sure corr measurements in 201901 show on final - may be an electronic transfer issue.

i. 1.85 kilo~~B~~becquerel (0.05 μCi), or less, of hydrogen-3 or carbon-14 per gram of medium used for liquid scintillation counting; and

ii. 1.85 kilo~~B~~becquerel (0.05 μCi), or less, of hydrogen-3 or carbon-14 per gram of animal tissue, averaged over the weight of the entire animal.

b. A licensee or registrant shall not dispose of tissue pursuant to D.~~1~~2005a.ii. in a manner that would permit its use either as food for humans or as animal feed.

c. The licensee or registrant shall maintain records in accordance with D.~~1~~2109.

Sec. D.~~1~~2006 - Transfer for Disposal and Manifests.

a. Requirements of D.2006 and Appendix G.

? Appx G gone - need manifest information (Appx G, 10CFR Part 20.)

i. The requirements of D.~~1~~2006 and Appendix ~~D~~G are designed to:

(1) ~~control~~Control transfers of low-level radioactive waste ~~intended for disposal at a licensed low-level radioactive waste disposal facility, establish a manifest tracking system, and supplement existing requirements concerning transfers and recordkeeping for those wastes.~~by any waste generator, waste collector, or waste processor licensee, as defined in Appendix D or G of Part D, who ships low-level waste either directly, or indirectly through a waste collector or waste processor, to a licensed low-level waste land disposal facility as defined in Part A, Section A.2.

(2) Establish a manifest tracking system; and

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

b. Shipment of Radioactive Waste. ~~Each shipment of radioactive waste designated for disposal at a licensed low-level radioactive waste disposal facility shall be accompanied by a shipment manifest as specified in Appendix D.I.~~ Any licensee shipping radioactive waste intended for ultimate disposal at a licensed land disposal facility must document the information required on the Agency's Uniform Low-Level Radioactive Waste Manifest and transfer this recorded information to the intended consignee in accordance with Appendix G.

c. Each shipment manifest shall include a certification by the waste generator as specified in Appendix G, as appropriate ~~Appendix D.II.~~

d. Each person involved in the transfer of waste for disposal or in the disposal of waste, including the waste generator, waste collector, waste processor, and disposal facility operator, shall comply with the requirements specified in Appendix G, as appropriate ~~Appendix D.III.~~

Sec. D.~~1~~2007 - Compliance with Environmental and Health Protection Regulations. Nothing in D.~~1~~2001, D.~~1~~2002, D.~~1~~2003, D.~~1~~2004, D.~~1~~2005, or D.~~1~~2006 relieves the licensee or registrant from

ii. Records of the results of measurements and calculations used to determine individual intakes of radioactive material and used in the assessment of internal dose; and

iii. Records showing the results of air sampling, surveys, and bioassays required pursuant to D.703a.iii.(1) and (2); and

? D.1703C.(2)+(ii) ? Ck # citation (I believe Part 20 has wrong also.)

iv. Records of the results of measurements and calculations used to evaluate the release of radioactive effluents to the environment.

~~[c. Upon termination of the license or registration, the licensee or registrant shall permanently store records on Agency Form Y or equivalent, or shall make provision with the Agency for transfer to the Agency.]~~

~~Sec. D.1104 – Records of Tests for Leakage or Contamination of Sealed Sources. Records of tests for leakage or contamination of sealed sources [required by D.401] shall be kept in units of becquerel or microcurie and maintained for inspection by the Agency for 5 years after the records are made.~~

Sec. D.2104 - Determination and Records of Prior Occupational Dose.

a. For each individual who is likely to receive, in a year, an occupational dose requiring monitoring pursuant to D.1502, the licensee or registrant shall:

i. Determine the occupational radiation dose received during the current year; and

ii. Attempt to obtain the records of cumulative occupational radiation dose.

b. Prior to permitting an individual to participate in a planned special exposure, the licensee or registrant shall determine:

i. The internal and external doses from all previous planned special exposures; and

ii. All doses in excess of the limits, including doses received during accidents and emergencies, received during the lifetime of the individual; and

c. In complying with the requirements of D.1205a, a licensee or registrant may:

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

ii. Accept, as the record of cumulative radiation dose, an up-to-date Agency Form Y or equivalent, signed by the individual and countersigned by an appropriate official of the most recent employer for work involving radiation exposure, or the individual's current employer, if the individual is not employed by the licensee or registrant; and.

b. The licensee or registrant shall retain the records required by D.1109a. until the Agency terminates each pertinent license or registration requiring the record.

Sec. D.~~1110~~2109 - Records of Testing Entry Control Devices for Very High Radiation Areas.

a. Each licensee or registrant shall maintain records of tests made pursuant to D.1603b.ix. on entry control devices for very high radiation areas. These records must include the date, time, and results of each such test of function.

b. The licensee or registrant shall retain the records required by D.~~1110a~~2109a. for 3 years after the record is made.

Sec. D.~~1111~~2110 - Form of Records. Each record required by Part D shall be legible throughout the specified retention period. The record shall be the original or a reproduced copy or a microform, provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of producing a clear copy throughout the required retention period or the record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records, such as letters, drawings, and specifications, shall include all pertinent information, such as stamps, initials, and signatures. The licensee shall maintain adequate safeguards against tampering with and loss of records.

Sec. D.2111 - Records of Tests for Leakage or Contamination of Sealed Sources. Records of tests for leakage or contamination of sealed sources required by D.1401 shall be kept in units of becquerel or microcurie and maintained for inspection by the Agency for ~~5~~ years after the records are made.

Reports

Sec. D.~~1~~2201 - Reports of Stolen, Lost, or Missing Licensed or Registered Source

a. Telephone Reports. Each licensee or registrant shall report to the Agency by follows:

i. Immediately after its occurrence becomes known to the licensee or re or missing licensed or registered radioactive material in an aggregate greater than 1,000 times the quantity specified in Appendix C under s that it appears to the licensee or registrant that an exposure could resu unrestricted areas; or

ii. Within 30 days after its occurrence becomes known to the licensee or stolen, or missing licensed or registered radioactive material in an agg greater than 10 times the quantity specified in Appendix C that is still

ii. The release of radioactive material, inside or outside of a restricted area, so that, had an individual been present for 24 hours, the individual could have received an intake five times the occupational ALI. This provision does not ap[illegible] are not normally stationed during routine operations, suc[illegible] enclosures.

b. Twenty-Four Hour Notification. Each licensee or registrant sh[illegible] of the event, report to the Agency each event involving loss of[illegible] source of radiation possessed by the licensee or registrant that[illegible] cause, any of the following conditions:

i. An individual to receive, in a period of 24 hours:

(1) A total effective dose equivalent exceeding 0.

(2) ~~An eye~~A lens dose equivalent exceeding 0.1[illegible]

(3) A shallow dose equivalent to the skin or extremities or a [illegible] equivalent exceeding 0.5 ~~Sv~~ sievert (50 rem); or

ii. The release of radioactive material, inside or outside of a restricted area, so that, had an individual been present for 24 hours, the individual could have received an intake in excess of one occupational ALI. This provision does not apply to locations where personnel are not normally stationed during routine operations, such as hot-cells or process enclosures.

c. Licensees or registrants shall make the reports required by D.~~1~~2202a. and b. by initial contact by telephone to the Agency and shall confirm the initial contact by telegram, mailgram, or facsimile to the Agency.

d. The licensee or registrant shall prepare each report filed with the Agency pursuant to D.~~1~~2202 so that names of individuals who have received exposure to sources of radiation are stated in a separate and detachable portion of the report.

e. The provisions of D.~~1~~2202 do not apply to doses that result from planned special exposures, provided such doses are within the limits for planned special exposures and are reported pursuant to D.1204.

P2203

Sec. ~~D.1203~~ - Reports of Exposures, Radiation Levels, and Concentrations of Radioactive Material Exceeding the Limits.

a. Reportable Events. In addition to the notification required by D.~~1~~2202, each licensee or registrant shall submit a written report within 30 days after learning of any of the following occurrences:

i. Incidents for which notification is required by D.~~1~~2202; or

ii. Doses in excess of any of the following:

(1) The occupational dose limits for adults in D.1201; or

(2) The occupational dose limits for a minor in D.1207; or

(3) The limits for an embryo/fetus of a declared pregnant woman in D.1208; or

(4) The limits for an individual member of the public in D.1301; or

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

D.1101 C

(6) The ALARA constraints for air emissions established under D.~~2101c.~~

iii. Levels of radiation or concentrations of radioactive material in:

(1) A restricted area in excess of applicable limits in the license or

(2) An unrestricted area in excess of 10 times the applicable limit s
or in the license or registration, whether or not involving exposu
individual in excess of the limits in D.1301; or

iv. For licensees subject to the provisions of the Environmental Protection
generally applicable environmental radiation standards in 40 CFR 190,
or releases of radioactive material in excess of those standards, or of lic
related to those standards.

b. Contents of Reports.

i. Each report required by D.~~1203a~~2203a. shall describe the extent of expo
individuals to radiation and radioactive material, including, as appropria

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

(2) The levels of radiation and concentrations of radioactive material

(3) The cause of the elevated exposures, dose rates, or concentrations

(4) Corrective steps taken or planned to ensure against a recurrence, i
schedule for achieving conformance with applicable limits, ALA
generally applicable environmental standards, and associated lice
registration conditions.

2001
RATIONALE FOR REVISIONS

PART J
NOTICES, INSTRUCTIONS, AND REPORTS TO WORKERS; INSPECTIONS

Introduction

Part J of the *Suggested State Regulations for Control of Radiation* is based on 10 CFR Part 19, which is intended to provide options to workers concerning inspections of working conditions comparable to those provisions provided for inspections pursuant to the Occupational Safety and Health Act. The Nuclear Regulatory Commission continues to revise its standards for protection against ionizing radiation in 10 CFR Part 20. This revision incorporated updated scientific information and reflected changes in the basic philosophy of radiation protection councils for internal doses. Part 19 was revised to incorporate the necessary changes to accommodate the revisions to Part 20, thus necessitating associated changes to Part J.

Compatibility Requirements

The revision of Part 20, including corresponding changes to Part 19, was published in the Federal Register on July 13, 1995 (60 FR 36038) and became effective on August 15, 1995. The Nuclear Regulatory Commission considers the adoption of these regulations a matter of compatibility for all Agreement States.

See the July 13, 1995, Federal Register notice for further background information on specific changes to the revision to Part 19 which corresponds to the Part J revision. Other editorial changes consistent with the Conference of Radiation Control Program Directors, Inc., *Policies and Procedures for the Preparation and Publication of the Suggested State Regulations for Control of Radiation* will not specifically be noted in the rationale discussion for each section.

Specific Provisions

J.12a. and b. The Working Group revised these 2 sections to conform to the ~~revision of Part~~ 20. Part 19

J.13d. "[or D.1206]" was added in brackets since "D.1206" is optional.

Matters for Future Consideration

At this time there are no Matters for Future Consideration.