STATE OF NEW YORK
DEPARTMENT OF HEALTH
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May 5, 2010

Terrence Reis, Deputy Director
Division Materials Safety and State Agreements
Office of Federal and State Materials and
Environmental Management Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Mr. Reis:

Enclosed please find the definition of shallow-dose equivalent and excerpts from the proposed draft occupational dose limits for adults.

RATS ID	Title
2002-1	Revisions of the Skin Dose Limit – Part 20
1998-5	Minor Corrections, Clarifying Changes and a Minor Policy Change

We believe that the proposed draft definitions and requirements in the enclosure satisfies the compatibility and health and safety categories established in the Office of Federal and State Materials and Environmental Programs (FSME) Procedure SA-200.

If you have any questions, please feel free to contact me at 518-402-7550 or Robert Dansereau at 518-402-7550 or red07@health.state.ny.us.

Sincerely,

Stephen M. Gavitt, CHP, Director
Bureau of Environmental Radiation Protection
New York State Department of Health

Enclosure: As stated

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

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

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

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

“Shallow dose equivalent” (Hs), which applies to the external exposure of the skin of the whole body or the skin of an extremity, is taken as the dose equivalent at a tissue depth of 0.007 centimeter (7 mg/cm2).

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

16.5 Responsibility for radiation safety. No person shall operate or permit the operation of a radiation installation nor shall the person operate, transfer, receive, possess or use or permit the operation, transfer, receipt, possession or use of any radiation source unless that person:

(a) achieves occupational doses and doses to members of the public as low as is reasonably achievable (ALARA). Such effort shall include, to the extent practicable, the use of procedures and engineering controls which are based on sound radiation protection principles.

16.6 Occupational dose limits

16.6(a)(1) Except for planned special exposures pursuant to subdivision 16.6(f), no person shall transfer, receive, possess or use any radiation source so as to cause any individual adult to receive an occupational dose from all sources of radiation that exceeds any of the following limits:

(i) The annual limit, which is the more limiting of:
(a) The total effective dose equivalent being equal to 0.05 Sv (5 rem); or
(b) The sum of the deep dose equivalent and the committed dose equivalent to any individual organ or tissue other than the lens of the eye being equal to 0.50 Sv (50 rem).
(ii) The annual limits to the lens of the eye, to the skin of the whole body, and to the skin of the extremities, which are:
(a) a lens dose equivalent of 0.15 Sv (15 rem), and

(b) a shallow dose equivalent of 0.50 Sv (50 rem) to the skin of the whole body or to the skin of any extremity.

16.6(a)(3) The assigned deep dose equivalent shall be for the portion of the body receiving the highest exposure. The assigned shallow dose equivalent must be the dose averaged over the contiguous 10 square centimeters of the skin receiving the highest exposure. The assigned deep dose equivalent, lens dose equivalent and assigned shallow dose equivalent shall be determined as follows:
(i) The deep dose equivalent, lens dose equivalent and shallow dose equivalent may be assessed from surveys or other radiation measurements for the purposes of demonstrating compliance with the occupational dose limits, if the individual monitoring device was not in the region of highest potential exposure, or the results of the individual monitoring are unavailable.

16.10(a) Each person who possesses any radiation source shall make, or cause to be made, the applicable surveys required under this section and such additional surveys as may be necessary for him/her to comply with other sections in this Part, to determine the magnitude and extent of radiation levels, or as the department may direct in order to evaluate the extent of the radiation hazard or potential radiation hazard that may be present.[1] Each person who possesses any radioactive material not in a sealed source for which surveys are required shall provide or have available appropriate calibrated and operable instruments capable of detecting and measuring radiation and radioactive contamination.

16.6(c) Determination of external dose from airborne radioactive material.

(1) Licensees shall, when determining the dose from airborne radioactive material, include the contribution to the deep dose equivalent, lens dose equivalent, and shallow dose equivalent from external exposure to the radioactive cloud (See Appendix 16-C, Footnotes 1 and 2).

16.6(h) Dose to an embryo/fetus.

(1) 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).

(2) The dose equivalent to an embryo/fetus is the sum of:
(i) The deep dose equivalent to the declared pregnant woman; and
(ii) The dose equivalent to the embryo/fetus from radionuclides in the embryo/fetus and radionuclides in the declared pregnant woman.

16.6(h)(4) If by the time the woman declares her pregnancy to the licensee or registrant, the dose to the embryo/fetus exceeds 5mSv (0.5rem), or is within 0.5 mSv (0.05 rem) of this dose, the licensee or registrant shall be deemed to be in compliance with paragraph (1) of this subdivision if the additional dose equivalent to the embryo/fetus does not exceed 0.50 mSv (0.05 rem) during the remainder of the pregnancy.

[1] The specific survey requirements set forth in this section shall not be construed as relieving any person from any survey requirements specified in any registration or license.

16.11 Personnel monitoring.

(a) External radiation sources. Each person who possesses any radiation source shall supply and require the proper use of appropriate, calibrated and operable individual monitoring devices by:

(1) Adults likely to receive, in one year from sources external to the body, a dose in excess of 10 percent of the limits in paragraph (1) of section 16.6(a); and

(2) Minors likely to receive, in one year from sources external to the body, a dose in excess of 10 percent of any of the applicable limits in sections 16.6(g) or 16.6(h); and

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

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

(d) Intake of radioactive material. Each licensee shall perform all appropriate measurements of those specified in paragraph (1) of subdivision (d) of section 16.6 of this Part which will enable him/her to determine the occupational intake of radioactive material by and assess the committed effective dose equivalent to:

(1) Adults likely to receive, in one year, an intake in excess of 10 percent of the applicable ALI in Appendix 16-C, Table 1, Columns 1 and 2, infra; and

(2) Minors likely to receive, in one year, a committed effective dose equivalent in excess of 0.50 mSv (0.05 rem); and

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

16.14 Records

(a) General provisions.

(1) Each licensee or registrant shall use the SI units - becquerel, gray, sievert and coulomb per kilogram, or the special units: curie, rad, rem, and roentgen, including multiples and subdivisions, and shall clearly indicate the units of all quantities on records required by Part 16.

16.14(f)(1) Recordkeeping requirement. Each licensee or registrant shall maintain records of doses received by all individuals for whom monitoring was required pursuant to section 16.11, and records of doses received during planned special exposures, accidents, and emergency conditions. Assessments of dose equivalent and records made using units in effect before the effective date of Part 16 need not be changed. These records shall include, when applicable:

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

(ii) The estimated intake or body burden of radionuclides, see section 16.6(b); and

(iii) The committed effective dose equivalent assigned to the intake or body burden of radionuclides; and

(iv) The specific information used to calculate the committed effective dose equivalent pursuant to section 16.6(d); and

(v) The total effective dose equivalent when required by section 16.6(b); and

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

16.16 Procedures for picking up, receiving and opening packages.

16.16(c) The licensee shall immediately notify the final delivery carrier and the department if packages, other than those transported by exclusive use vehicle, are found to have any of the conditions in paragraphs (1) and (2) of this subdivision. Notification to the department shall be made by telephone as well as by telegram, mailgram or facsimile.

16.1(c) Communications. Except as otherwise provided for in this Part or authorized by the department, all applications filed under this Part and all communications, notifications and reports concerning this Part shall be addressed to the New York State Department of Health, Bureau of Environmental Radiation Protection, Flanigan Square, 547 River Street, Troy, New York 12180-2216; Telephone (normal business hours): (518) 402-7550; after-hours and weekends: (518) 292-2200.

16.15 Reports

(b) Notification of incidents.

(1) Immediate notification. Notwithstanding other requirements for notification, each licensee or registrant shall immediately report each event involving a source of radiation possessed by the licensee or registrant that may have caused or threatens to cause any of the following conditions:

(i) An individual to receive:

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

(b) A lens dose equivalent of 0.75 Sv (75 rem) or more; or

(c) A shallow dose equivalent to the skin or extremities of 2.5 Gy (250 rad) or more; 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 five times the 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.

(2) Twenty-four hour notification. Each licensee or registrant shall, within 24 hours of discovery of the event, report each event involving loss of control of a licensed or registered source of radiation possessed by the licensee or registrant that may have caused, or threatens to cause, any of the following conditions:

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

(a) A total effective dose equivalent exceeding 0.05 Sv (5 rem); or

(b) A lens dose equivalent exceeding 0.15 Sv (15 rem); or

(c) A shallow dose equivalent to the skin or extremities exceeding 0.5 Sv (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.

16.124 Specific requirements for well-logging operations.

(a) Purpose. The requirements of this section are established for persons conducting well-logging operations in New York State. The requirements of this section are in addition to, and not in substitution of, other requirements of this Part.

(b) Specific requirements. Each person conducting well-logging operations shall comply with the provisions of Part 39 of Title 10 of the Code of Federal Regulations, "Licenses and Radiation Safety Requirements for Well-Logging"; January 1, 2007.[2]

Notes:

With respect to RATS ID 1988-5:

Part 35 currently does not contain a section 35.641 and the current 35.643 is in regard to periodic spot checks for remote afterloader units, not modification of teletherapy units or rooms.

2 See section 16.200.