PART He-P 4020 STANDARDS FOR PROTECTION AGAINST RADIATION

Statutory Authority RSA 125-F:5,V

He-P 4020.01 Purpose.

(a) He-P 4020 through He-P 4023 establish standards for protection against ionizing radiation resulting from activities conducted pursuant to licenses or registrations issued by the DHHS/RHS.

(b) The requirements of He-P 4020 through He P 4023 are designed to control the receipt, possession, use, transfer, and disposal of sources of radiation by any licensee or registrant so the total dose to an individual, including doses resulting from all sources of radiation other than background radiation, does not exceed the standards for protection against radiation prescribed in He-P 4020 through He-P 4023. However, nothing in He-P 4020 through He-P 4023 shall be construed as limiting actions that may be necessary to protect health and safety.

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14

He-P 4020.02 Scope. Except as specifically provided in other parts of these rules, He-P 4020 through He-P 4023 shall apply to persons licensed or registered by the DHHS/RHS to receive, possess, use, transfer, or dispose of byproduct or sources of radiation, including special nuclear material. The limits in He-P 4020 through He-P 4023 shall not apply to doses due to background radiation, to exposure of patients to radiation for the purpose of medical diagnosis or therapy, to exposure from individuals administered radioactive material and released in accordance with He-P 4035.25, or to voluntary participation in medical research programs.

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14

He-P 4020.03 Implementation.

(a) Any existing license or certificate of registration condition that is more restrictive than He-P 4020 through He-P 4023 shall remain in force until there is an amendment or renewal of the license or registration.

(b) If a license or certificate of registration condition exempts a licensee or registrant from a provision of He-P 4020 through He-P 4023 in effect on or before August 6, 1998, it shall also exempt the licensee or registrant from the corresponding provision of He-P 4020 through He-P 4023.

(c) If a license or certificate of registration condition cites provisions of He P 4020 through He P 4023 in effect prior to August 6, 1998, which do not correspond to any provisions of He P 4020 through He-P 4023, the license or registration condition shall remain in force until there is an amendment or renewal of the license or registration that modifies or removes this condition.

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14

He-P 4020.04 Radiation Protection Programs.

(a) Each licensee or registrant shall develop, document, and implement a radiation protection program sufficient to ensure compliance with the provisions of He-P 4020 through He-P 4023.

(b) The licensee or registrant shall use procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and public doses that are as low as is reasonably achievable (ALARA).

(c) The licensee or registrant shall, at intervals not to exceed 12 months, review the radiation protection program content and implementation.

(d) To implement the ALARA requirements of (b) above and notwithstanding the requirements in He-P 4020.13, a constraint on air emissions of radioactive material to the environment, excluding Radon-222 and its daughters, shall be established by licensees other than those subject to Title 10, Code of Federal Regulations, Part 50.34a of the United States Nuclear Regulatory Commission (NRC) regulations, such that the individual member of the public likely to receive the highest dose will not be expected to receive a total effective dose equivalent in excess of 0.1 millisievert (10 mrem) per year from these emissions.

(e) If a licensee subject to the requirement of (d) above exceeds the dose constraint, the licensee shall report the exceedance as provided in He-P 4021.14 and promptly take appropriate corrective action to ensure against recurrence.

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14

He-P 4020.05 Occupational Dose Limits for Adults.

(a) The licensee or registrant shall control the occupational dose to individual adults, except for planned special exposures pursuant to He-P 4020.10, to the following dose limits:

(1) An annual limit, which shall be 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 0.5 Sv (50 rem); and

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

a. A lens dose equivalent of 0.15 Sv (15 rem); and

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

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

(c) When the external exposure is determined by measurement with an external personal monitoring device, the deep-dose equivalent shall be used in place of the effective dose equivalent, unless the effective dose equivalent is determined by a dosimetry method acceptable by DHHS/RHS.

(d) The assigned deep dose equivalent shall be for the portion of the body receiving the highest exposure.

(e) The assigned shallow dose equivalent shall be for the dose averaged over the contiguous 10 square centimeters of skin receiving the highest exposure.

(f) The deep dose equivalent, the lens dose equivalent, and the shallow dose equivalent may be assessed from surveys or other radiation measurements for the purpose of demonstrating compliance with the occupational dose limits, if the individual monitoring device was not in the region of highest potential exposure, or the results of individual monitoring are unavailable.

(g) The effective dose equivalent for external radiation when a protective apron is worn while working with medical fluoroscopic equipment shall be determined as follows:

(1) When one individual monitoring device is used and it is located at the neck outside the protective apron, the reported deep dose equivalent shall be the effective dose equivalent for external radiation;

(2) When only one individual monitoring device is used and it is located at the neck outside the protective apron, and the reported dose equivalent exceeds 25 percent of the limit specified in He-P 4020.05(a), the reported dose equivalent value multiplied by 0.3 shall be the effective dose equivalent for external radiation; or

(3) When individual monitoring devices are worn, both under the protective apron at the waist and outside the protective apron at the neck, the effective dose equivalent for external radiation shall be assigned the value of the sum of the deep dose equivalent reported for the individual monitoring device located at the waist under the protective apron multiplied by 1.5 and the deep dose equivalent reported for the individual monitoring device located at the neck outside the protective apron multiplied by 0.04.

(h) Derived air concentration (DAC) and annual limit on intake (ALI) values shall be as stated in He-P 4090 and may be used to determine the individual's dose and to demonstrate compliance with the occupational dose limits.

(i) Notwithstanding the annual dose limits, the licensee shall limit the soluble uranium intake by an individual to 10 milligrams in a week in consideration of chemical toxicity.

(j) 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.

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14

He-P 4020.06 Compliance with Requirements for Summation of External and Internal Doses.

(a) If the licensee or registrant is required to monitor pursuant to He-P 4022.02 (a), (b) and (c), the licensee or registrant shall demonstrate compliance with the dose limits by summing external and internal doses.

(b) If the licensee or registrant is required to monitor only pursuant to He-P 4022.02(b) or only pursuant to He-P 4022.02(c), then summation is not required to demonstrate compliance with the dose limits.

(c) The licensee or registrant may demonstrate compliance with the requirements for summation of external and internal doses pursuant to He-P 4020.06 (f), (g), or (h).

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

(e) For calculating the effective dose equivalent, the values of W_T shall be as per Table 4020.1 below:

Table 4020.1 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
Whole Body	1.00

(f) The organ dose weighting factor of 0.30 in Table 4020.1 shall result from 0.06 for each of 5 "remainder" organs, excluding the skin and the lens of the eye, that receive the highest doses.

(g) A licensee or registrant may request the use of weighting factors for external exposure other than that specified in Table 4020.1, for situations when reliable, accurate, and predictable estimates of the effective dose equivalent are possible, and approved by the DHHS/RHS under a license issued in accordance with He-P 4030, or a registration issued in accordance with He-P 4040.

(h) If the only intake of radionuclides is by inhalation, the total effective dose equivalent limit shall not be exceeded if the sum of the deep dose equivalent divided by the total effective dose equivalent limit, and one of the following, does not exceed unity:

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

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

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

(i) The organ or tissue specified in He-P 4020.06(h)(3) shall be deemed to be significantly irradiated if, for that organ or tissue, the product of the weighting factors, W_T, and the committed dose equivalent, $H_{T,50}$, per unit intake is greater than 10 percent of the maximum weighted value of H_{50}, that is, $W_T H_{T,50}$, per unit intake for any organ or tissue.

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

(k) A licensee 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 shall not be evaluated or accounted for pursuant to this paragraph.

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14

He-P 4020.07 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, lens dose equivalent, and shallow dose equivalent from external exposure to the radioactive cloud.

(b) Airborne radioactivity measurements and DAC values shall not be used as the primary means to assess the deep dose equivalent when the airborne radioactive material includes radionuclides other than noble gases or if the cloud of airborne radioactive material is not relatively uniform.

(c) The determination of the deep dose equivalent to an individual shall be based upon measurements using instruments or individual monitoring devices.

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14

He-P 4020.08 Determination of Internal Exposure.

(a) For purposes of assessing dose used to determine compliance with occupational dose equivalent limits, the licensee or registrant shall, when required pursuant to He-P 4022.02, take measurements of:

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

(2) Quantities of radionuclides in the body;

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

(4) Any combinations of these measurements.

(b) Unless respiratory protective equipment is used, as provided in He-P 4022.08, or the assessment of intake is based on bioassays, the licensee or registrant shall assume that an individual inhales radioactive material at the airborne concentration in which the individual is present.

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

(1) Use that information to calculate the committed effective dose equivalent;

(2) Adjust the DAC or ALI values to reflect the actual physical and chemical characteristics of airborne radioactive material, only if:

a. The licensee or registrant submits the proposed adjustments to the DHHS/RHS for review;

b. The DHHS/RHS determines upon its review that the proposed adjustments are technically correct, appropriately applied, and consonant with the accepted principles and practices of health physics; and

c. The DHHS/RHS has granted its approval; and

(3) Separately assess the contribution of fractional intakes of Class D, W, or Y compounds of a given radionuclide to the committed effective dose equivalent in accordance with He-P 4090.

(d) If the licensee or registrant uses specific information on the physical and biochemical properties of radionuclides taken into the body or the known behavior of material in an individual to

calculate the committed dose equivalent for that individual, then the licensee or registrant shall document such information in the individual's record.

(e) If the licensee or registrant chooses to assess intakes of Class Y material using the measurements given in He-P 4020.08(a)(2) or (3) in order to make additional measurements basic to the assessments, the licensee or registrant may delay the recording and reporting of the assessments for periods up to 7 months, unless otherwise required by He-P 4021.13 or 4021.14.

(f) If the identity and concentration of each radionuclide in a mixture are known, the fraction of the DAC applicable to the mixture for use in calculating DAC-hours shall be either:

(1) The sum of the ratios of the concentration to the appropriate DAC value, that is, D, W, or Y, from He-P 4090 for each radionuclide in the mixture; or

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

(g) 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.

(h) When a mixture of radionuclides in air exists, a licensee or registrant may disregard certain radionuclides in the mixture if:

(1) The licensee or registrant uses the total activity of the mixture in demonstrating compliance with the dose limits in He-P 4020.05 and in complying with the monitoring requirements in He-P 4022.02(c);

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

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

(i) When determining the committed effective dose equivalent, the following information may be considered:

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

(2) The licensee or registrant may use the stochastic ALI to determine committed effective dose equivalent; and

(3) If the licensee or registrant uses the stochastic ALI, the licensee or registrant shall also demonstrate that the limit in He-P 4020.05(a)(1)b. is met.

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14

He-P 4020.09 Determination of Prior Occupational Dose.

(a) For each individual who is likely to receive, in a year, an occupational dose requiring monitoring pursuant to He-P 4022.02, the licensee or registrant shall determine the occupational radiation dose received during the current year.

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

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

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

(c) In complying with the requirements of He-P 4020.09(a) or (b), a licensee or registrant shall:

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

(2) Accept, as the record of cumulative radiation dose, an up-to-date DHHS/RHS Form Y or equivalent, containing the following:

a. The full name of the individual monitored for occupational radiation dose;

b. The monitored individual's identification number and identification type;

c. The sex of the monitored individual;

d. The date of birth of the monitored individual in the format MM/DD/YYYY;

e. The monitoring period for the which the report is filed, in the format MM/DD/YYYY – MM/DD/YYYY;

f. For each monitoring period reported, the name of the licensee, registrant, or non-licensed facility that provided monitoring;

g. For each monitoring period reported, the license or registration number or numbers;

h. For each monitoring period reported, an indication as to whether the dose data listed represents:

1. A dose record, if the dose data listed is a final determination of the dose received to the best of the licensee's knowledge;

2. A dose estimate, if the listed dose data are preliminary and will be superseded by a final determination resulting in a subsequent report. An example of such an instance shall be dose data based on self-reading dosimeter results and the licensee or registrant intends to assign the record dose on the basis of TLD results that are not yet available;

3. No record, if the individual or organization has indicated that the individual was monitored, but the monitoring records could not be obtained;

4. A routine exposure, if the data represents the results of monitoring for routine exposures; and

5. A planned special exposure (PSE), if the data represents the results of monitoring of planned special exposures. If more than one PSE was received in a single year, the licensee shall sum them and report the total of all PSEs;

i. For each monitoring period, the following dose data, in units of rems:

1. The deep dose equivalent (DDE) to the whole body;

2. The lens dose equivalent (LDE) recorded for the lens of the eye;

3. The shallow dose equivalent recorded for the skin of the whole body (SDE,WB);

4. The shallow dose equivalent recorded for the skin of the extremity receiving the maximum dose (SDE, ME);

5. The committed effective dose equivalent (CEDE) recorded for the maximally exposed organ;

6. The total effective dose equivalent (TEDE); and

7. The total organ dose equivalent (TODE) for the maximally exposed organ;

j. The date and signature of the monitored individual, certifying that the information contained on the form is complete and correct to the best of his or her knowledge;

k. Optionally, the name of the licensee or registrant providing monitoring for exposure to radiation, or the name of the employer if the individual is not employed by the licensee or registrant and the employer chooses to maintain exposure records for its employees; and

l. Optionally, the countersignature, and date signed, of the person designated to represent the most recent licensee, registrant, or current employer in k. above;

(3) 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; and

(4) Request a written verification of the dose data if the authenticity of the transmitted report cannot be established.

(d) The licensee or registrant shall record the exposure history, as required by He-P 4020.09(a) or (b), on DHHS/RHS Form Y, or equivalent, of all the information required on that form.

(e) 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.

(f) 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 DHHS/RHS Form Y or equivalent.

(g) For any period in which the licensee or registrant does not obtain a report, the licensee or registrant shall place a notation on DHHS/RHS Form Y or equivalent indicating the periods of time for which data are not available.

(h) Licensees or registrants shall not be required to reevaluate the separate external dose equivalents and internal committed dose equivalents or intakes of radionuclides assessed before January 1, 1994.

(i) Occupational exposure histories obtained and recorded on DHHS/RHS Form Y or equivalent before January 1, 1994, might not have included effective dose equivalent, but may be used in the absence of specific information on the intake of radionuclides by the individual.

(j) 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:

(1) 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

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

(k) The licensee or registrant shall retain the records on DHHS/RHS Form Y or equivalent until such time as each pertinent license or registration requiring this record is terminated in accordance with this chapter.

(l) The licensee or registrant shall retain records used in preparing DHHS/RHS Form Y or equivalent for 3 years after the record is made.

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14

He-P 4020.10 Planned Special Exposures.

(a) 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 He-P 4020.05.

(b) This authorization in (a) above shall be permitted provided that each of the following conditions is satisfied:

(1) The licensee or registrant authorizes a planned special exposure only in an exceptional situation when alternatives that might avoid the higher exposure are unavailable or impractical;

(2) 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;

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

a. Informed of the purpose of the planned operation;

b. 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

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

(4) Prior to permitting an individual to participate in a planned special exposure, the licensee or registrant ascertains prior doses as required by He-P 4020.09(b) during the lifetime of the individual for each individual involved;

(5) The licensee or registrant does not authorize a planned special exposure that would cause an individual to receive a dose from all planned special exposures and all doses in excess of the limits to exceed:

a. The numerical values of any of the dose limits in He-P 4020.05(a) in any year; and

b. Five times the annual dose limits in He-P 4020.05(a) during the individual's lifetime;

(6) The licensee or registrant maintains records of the conduct of a planned special exposure in accordance with He-P 4021.06 and submits a written report in accordance with He-P 4021.15;

(7) 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; and

(8) The dose from planned special exposures shall not be considered in controlling future occupational dose of the individual pursuant to He-P 4020.05(a) but shall be included in evaluations required by He-P 4020.10(b)(4) and (5).

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14

He-P 4020.11 Occupational Dose Limits for Minors. The annual occupational dose limits for minors shall be 10 percent of the annual occupational dose limits specified for adult workers in He-P 4020.05.

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14

He-P 4020.12 Dose to an Embryo/Fetus.

(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).

(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 He-P 4020.12(a).

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

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

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

(d) If the dose equivalent to the embryo/fetus is found to have exceeded 4.5 mSv (0.45 rem) 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 He-P 4020.12(a) if the additional dose equivalent to the embryo/fetus does not exceed 0.5 mSv (0.05 rem) during the remainder of the pregnancy.

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14

He-P 4020.13 Dose Limits for Individual Members of the Public.

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

(1) The total effective dose equivalent to individual members of the public from the licensed or registered operation does not exceed 1 mSv (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 He-P 4035.25, from voluntary participation in medical research programs, and from the licensee's disposal of radioactive material into sanitary sewerage in accordance with He-P 4023.03;

(2) The dose in any unrestricted area from external sources, exclusive of the dose contributions from patients administered radioactive material and released in accordance with He-P 4035.25, does not exceed 0.02 mSv (0.002 rem) in any one hour; and

(3) The total effective dose equivalent to individual members of the public from an 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 controlled areas, the limits for members of the public continue to apply to those individuals.

(c) Notwithstanding He-P 4020.13(a)(1), a licensee may permit visitors to an individual who cannot be released under He-P 4035.25, to receive a radiation dose greater than one mSv (0.1 rem), if

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

(2) The authorized user, as defined in He-P 4035.03(e), has determined before the visit that it is appropriate.

(d) A licensee, registrant, or an applicant for a license or registration shall apply for prior DHHS/RHS authorization, in accordance with He-P 4030.13, to operate up to an annual dose limit for an individual member of the public of 5 mSv (0.5 rem).

(e) The applicant for authorization under He-P 4020.13(d) shall provide the following information:

(1) Demonstration of the need for and the expected duration of operations in excess of the limit in He-P 4020.13(a);

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

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

(f) In addition to the requirements of He-P 4020 through He-P 4023, a licensee shall comply with the provisions of the U.S. Environmental Protection Agency's generally applicable environmental radiation standards in 40 CFR 190.

(g) As authorized by, and in accordance with He-P 4030.07, 4030.09, and 4030.13, a licensee shall keep radiation levels in unrestricted areas ALARA and monitor the total quantity of radionuclides that the licensee may release in effluents in order to restrict the collective dose.

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14

He-P 4020.14 Compliance with Dose Limits for Individual Members of the Public.

(a) The licensee or registrant shall make or cause to be made surveys of radiation levels in unrestricted areas and controlled areas and radioactive materials in effluents released to unrestricted areas and controlled areas to demonstrate compliance with the dose limits for individual members of the public in He-P 4020.13.

(b) A licensee or registrant shall show compliance with the annual dose limit in He-P 4020.13 by:

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

(2) Demonstrating that:

a. The annual average concentrations of radioactive material released in gaseous and liquid effluents at the boundary of the unrestricted area do not exceed the values specified in He-P 4090, Table 4090.1, Table II; and

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

(c) Upon approval from the DHHS/RHS in accordance with He-P 4030 and He-P 4040, the licensee or registrant may adjust the effluent concentration values in He-P 4090, Table 4090.1, Table II for members of the public, to take into account the actual physical and chemical characteristics of the effluents, such as:

(1) Aerosol size distribution;

(2) Solubility;

(3) Density;

(4) Radioactive decay equilibrium; and

(5) Chemical form.

Source. #5903, eff 2-1-95; ss by #6827, eff 8-6-98; ss by #8481, eff 11-5-05; ss by #10604, eff 5-23-14