

**PART IX**  
**Licensing of Naturally Occurring Radioactive Material (NORM)**

**RHA 9.1 Purpose and Scope.**

This part establishes radiation protection standards for the possession, use, transfer, transport, and/or storage of naturally occurring radioactive material (NORM) or the recycling of NORM contaminated materials not subject to regulation under the Atomic Energy Act of 1954, as amended. The requirements of this part are in addition to and not in substitution for other applicable requirements of Parts I, II, III, VI, and VII of these regulations. Except as otherwise specifically provided, these regulations apply to all persons who engage in the extraction, mining, beneficiating, processing, use, transfer, transport, and/or storage of NORM or the recycling of NORM contaminated materials in a manner that alters the chemical properties or physical state of natural sources of radiation or the potential exposure pathways to humans or environment.

**RHA 9.2 Definitions. As used in these regulations:**

9.2.1 "Beneficiating" means the processing of materials for the purpose of altering chemical or physical properties to improve the quality, purity, or assay grade.

9.2.2 "Naturally occurring radioactive material (NORM)" means any nuclide that is radioactive in its natural physical state (i.e., not man made), but does not include source, byproduct, or special nuclear material. Examples, include but are not limited to, pipe scale containing radium; pipes and other equipment plated with radon daughters; phosphate overburden or waste; phosphogypsum; phosphate slag; waste, overburden, and residue associated with the extraction of metals or rare earths; water treatment filters containing radium; and zircon sands.

9.2.3 "Product" means something produced, made, manufactured refined, or beneficiated.

9.2.4 "Recycling" means a process by which materials that have served their intended purpose are collected, separated, or processed and returned to use in the form of raw materials in the production of new products. Recycling shall not include the use of a material that constitutes disposal.

9.2.5 "Technologically enhanced natural radiation" (TENR) means radiation from naturally occurring isotopes to which exposure would not occur by (or would be increased by) some technological activity not expressly designed to produce radiation.

**RHA 9.3 Exemptions.**

9.3.1 Persons who receive, possess, use, process, transfer, transport, store, and/or commercially distribute NORM are exempt from the requirements of the provisions of this Part if the materials contain, or are contaminated at, concentrations of:

9.3.1.1 Thirty (30) picocuries per gram or less of TENR due to radium 226 or radium 228 in soil, averaged over any 100 square meters and averaged over the first 15 centimeters of soil below the surface, provided the radon emanation rate is less than 20 picocuries per square meter per second.

9.3.1.2 Thirty (30) picocuries per gram or less of TENR due to radium 226 or radium 228 in media other than soil, provided the radon emanation rate is less than 20 picocuries per square meter per second;

or

9.3.1.3 Five (5) picocuries per gram or less of TENR due to radium 226 or radium 228 in soil, averaged over any 100 square meters and averaged over the first 15 centimeters of soil below the surface, in which the radon emanation rate is equal to or greater than 20 picocuries per square meter per second,

9.3.1.4 Five (5) picocuries per gram or less of TENR due to radium 226 or radium 228 in media other than soil, in which the radon emanation rate is equal to or greater than 20 picocuries per square meter per second; or

9.3.1.5 One hundred fifty (150) picocuries or less per gram of any other NORM radionuclide in soil, averaged over any 100 square meters and averaged over the first 15 centimeters of soil below the surface,

9.3.1.6 One hundred fifty (150) picocuries or less per gram of any other NORM radionuclide in media other than soil;

9.3.1.7 Materials in the recycling process contaminated with scale or residue not otherwise exempted, and other equipment containing NORM are exempt from the requirements of these rules if the maximum radiation exposure level does not exceed 50 microrentgens per hour including the background radiation level at any accessible point; or

9.3.2 Persons who possess facilities, equipment or land contaminated with NORM in quantities less than the following levels are exempt from the requirements of the provisions of this part:

9.3.2.1 Surface contamination which averages 5000 disintegrations per minute per 100 centimeters squared over the entire measured surface;

9.3.2.2 Not to exceed a maximum reading of 15000 disintegrations per minute per 100 centimeters squared to an area of not more than 100 centimeters squared, notwithstanding the maximum aforementioned limit. The maximum radiation exposure level shall not exceed the limit specified in RHA 9.3.1.7; or

9.3.2.3 Removable contamination not to exceed 1000 disintegrations per minute per 100 centimeters squared.

#### **RHA 9.4 Radiation Survey Instruments.**

9.4.1 Radiation survey instruments used to determine exemptions pursuant to RHA 9.3 and radiation survey instruments used to make surveys for purposes of compliance with sections RHA 9.5 and 9.7 of these regulations, shall be able to measure from 10 microrentgen per hour through at least 500 microrentgens per hour.

9.4.2 Radiation survey instruments used to make surveys required by this part shall be appropriate, operable and calibrated according to the provisions specified by RHA 3.16 of these regulations.

#### **RHA 9.5 General License.**

9.5.1 A general license is hereby issued to mine, receive, possess, own, use, process, transport, store, and transfer for disposal NORM or to recycle NORM contaminated materials not exempted in RHA 9.3

without regard to quantity. This general license does not authorize the manufacture or commercial distribution of products containing NORM in concentrations greater than those specified in RHA 9.3 or of NORM in any food, beverage, cosmetic, drug, or other commodity designed for ingestion or inhalation by, or application to, a human being. The melting of scrap metal is authorized by the general license if the dilution of the NORM in the end products or melt byproducts is sufficient to reduce any expected average concentration of NORM to levels not to exceed the concentration specified in RHA 9.3.

9.5.2 Facilities contaminated with NORM in excess of the levels specified in RHA 9.3 and equipment not otherwise exempted under the provisions of 9.3.1.7 shall not be released for unrestricted use. The decontamination of equipment, facilities, and land shall be performed only by persons specifically licensed by the Department or another Licensing Agency to conduct such work,

9.5.3 The transfer of NORM not exempt from these rules from one general licensee to another licensee is authorized by the Department if:

9.5.3.1 The equipment and facilities contaminated with NORM are to be used by the recipient for the same purpose or at the same site;

9.5.3.2 The materials being transferred are unrefined ores or unprocessed materials for processing or refinement; or

9.5.3.3 The materials being transferred are in the recycling process.

9.5.4 NORM materials shall be stored so that the external radiation dose in any one year, excluding radon, to the maximally exposed individual will not exceed the doses specified in

Column II, Appendix A, and the average radon concentration in air does not exceed 0.4 picocuries per liter.

## **RHA 9.6 Transfer of Waste for Disposal.**

9.6.1 Each person subject to the general license in RHA 9.5 shall manage and dispose of wastes containing NORM:

9.6.1.1 By transfer of the wastes for disposal to a facility specifically licensed to receive waste containing NORM;

9.6.1.2 By transfer of wastes for disposal to a land disposal facility licensed by the U.S. Nuclear Regulatory Commission, an Agreement State, or a Licensing State; or

9.6.1.3 In accordance with RHA 3.27 of these regulations or alternate methods authorized by the appropriate regulatory agency.

9.6.2 Records of disposal, including waste manifests, shall be maintained according to the provisions of RHA 3.41 of these regulations.

9.6.3 Transfers of waste containing NORM for disposal shall be made only to a person specifically authorized to receive such waste.

## **RHA 9.7 Specific License.**

9.7.1 Unless otherwise exempted under the provisions of RHA 9.3 or licensed under the provisions RHA 9.5 of these regulations, the manufacture and commercial distribution of any material or product containing NORM shall be specifically licensed pursuant to the applicable requirements of Part II of these regulations or pursuant to equivalent rules of another Licensing State.

9.7.2 Persons conducting operations for the purpose of removing NORM contamination from the following shall be specifically licensed pursuant to the requirements of this part:

9.7.2.1 Facilities owned, possessed, or controlled by other persons and contaminated with NORM in excess of the levels set forth in RHA 9.3; and/or

9.7.2.2 Equipment or land owned, possessed, or controlled by other persons and not otherwise exempted under the provisions of RHA 9.3.

9.7.3 Issuance of Specific Licenses.

9.7.3.1 When an application meets the requirements of these regulations, the Department will issue a specific license authorizing the proposed activity in such form and containing appropriate conditions and limitations.

9.7.3.2 The Department may incorporate in a license at the time of issuance, or thereafter by amendment, any additional requirements and conditions with respect to the licensee's receipt, possession, use, and transfer of NORM subject to this part as it considers appropriate or necessary in order to:

9.7.3.2.1 Minimize danger to public health and safety, property, or the environment;

9.7.3.2.2 Require such reports and the keeping of such records, and to provide for such inspections of activities under the license as may be appropriate or necessary; and

9.7.3.2.3 Prevent loss or theft of material subject to this part.

9.7.3.3 An application for a specific license to process ground water for the purpose of bottling or for water systems serving more than fifty (50) taps under these provisions will be approved if:

9.7.3.3.1 The applicant will perform environmental monitoring of the closest public receptor to ensure that exposures do not exceed 0.2 Working Level Month (WLM) per year.

9.7.3.3.2 If Gross alpha of raw water exceeds 5 picocuries per liter, a one gallon sample will be provided to the Department for Ra-226 analysis.

9.7.3.4 An applicant for a specific license shall demonstrate by direct measurement or by calculation that the material or product containing NORM is handled in a manner so that:

9.7.3.4.1 During routine use and disposal, it is unlikely that the external radiation dose in any one year, or the dose equivalent resulting from the intake of radioactive material, excluding radon and its daughters, in any one year, to a suitable sample of the group of individuals expected to be the most highly

exposed to radiation or radioactive material from the material or product, will exceed the doses specified in Column I of Appendix A.

9.7.3.4.2 During routine handling and storage of the quantities of the material or product likely to accumulate in one location during marketing, commercial distribution, installation, and servicing of the material or product, it is unlikely that the external radiation dose in any one year, or the dose equivalent resulting from the intake of radioactive material, excluding radon, in any one year, to a suitable sample of the group of individuals expected to be most highly exposed to radiation or radioactive material from the material or product, will exceed the doses specified in Column II of Appendix A.

9.7.3.4.3 During routine use, disposal, handling, and storage, it is unlikely that the radon released from the material or product will result in an increase in the average radon concentration in air of more than 0.4 picocurie per liter.

9.7.3.4.4 It is unlikely that there will be a significant reduction in the effectiveness of the containment, shielding, or other safety features of the material or product from wear and abuse likely to occur in normal handling and use of the material or product during its useful life.

#### 9.7.4 General Terms and Conditions.

9.7.4.1 Each license issued pursuant to this part shall be subject to all the applicable provisions of Regulation 61-63, Title A, now or hereafter in effect, and to all rules and orders of the Department.

9.7.4.2 No license issued or granted under this part and no right to possess or utilize NORM granted by any license issued pursuant to this part shall be transferred to any person unless the Department, after securing full information, finds that the transfer is in accordance with the provisions of these regulations, and gives its consent in writing.

9.7.4.3 Each person specifically licensed by the Department pursuant to this part is subject to the provisions of RHA 1.15 regarding financial assurances and record keeping for decommissioning.

9.7.4.4 Each person licensed by the Department pursuant to this part is subject to the provisions of RHA 9.4 and RHA 9.6.

9.7.5 Expiration and Termination of Specific Licenses. Except as determined by the Department, each licensee shall be subject to the provisions of RHA 2.11 of these regulations regarding expiration and termination of specific licenses.

**Part IX Appendix A RHA 9.8  
Table of Allowable Organ Doses  
Total Effective Dose Equivalents (TEDE)**

<b><u>Part of Body</u></b>	<b><u>Column I*</u> <u>TEDE(REM)</u></b>	<b><u>Column II*</u> <u>TEDE(REM)</u></b>
Whole body; head and trunk; active blood-forming organs; gonads; or lens of eye	0.005	0.5
Hands and Forearms; feet and ankles; localized areas of skin averaged over areas no larger than 1 square centimeter	0.075	7.5
Other organs	0.015	1.5

\* Dose limit is the dose above background from the material or product