

PART N**REGULATION AND LICENSING OF
TECHNOLOGICALLY ENHANCED NATURALLY OCCURRING RADIOACTIVE
MATERIAL (TENORM)**

Sec. N.1 - Purpose. This Part establishes radiation protection standards for Technologically Enhanced Naturally Occurring Radioactive Material (TENORM). These standards include the possession, use, processing, manufacture, distribution, transfer, and disposal of TENORM and of products with TENORM. This Part also provides for the licensing of TENORM, including license termination. The provisions of this Part are in addition to the definitions and applicable requirements of Parts A, C, D, J, M, O and T of these regulations.

Sec. N.2 - Scope.

- a. Except as otherwise excluded in this Part, Part N applies to any person who receives, possesses, uses, processes, transfers, distributes, or disposes of TENORM.
- b. The manufacture and distribution of products containing TENORM in which the TENORM's emitted radiation is considered beneficial to the products are licensed pursuant to the provisions of Part C of these regulations.
- c. This Part also addresses the introduction of TENORM into products in which the radiation emitted from the TENORM is not considered to be beneficial to the products.
- d. This Part does not apply to source material and byproduct material as both are defined in the Atomic Energy Act of 1954, as amended (AEA 42 USC §2011 *et seq.*) and relevant regulations implemented by the Nuclear Regulatory Commission (NRC).
- e. Storage incident to transportation and transportation of TENORM are governed by Parts D and T respectively of these regulations.

Sec. N.3 - Definitions. As used in this Part, the following definitions apply:

"Beneficial to the product" means that the radioactivity of the TENORM is necessary to the use of the product.

"Conditional release" means release by a licensee for a specified use other than release for unrestricted use.

"Consumer" means a member of the public exposed to TENORM from final end-use products available on a retail basis.

"Consumer or retail product" means any product, article, or component part thereof, produced, distributed or sold for use by a consumer in or around a permanent or temporary household or residence, or for the personal use, consumption, or enjoyment of a consumer, or for use in or around a school or playground.

"Critical group" means the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances.

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

"Reasonably maximally exposed individual" means a representative of a population who is exposed to TENORM at the maximum TENORM concentration measured in environmental media found at a site along with reasonable maximum case exposure assumptions. The exposure is determined by using maximum values for one or more of the most sensitive parameters affecting exposure, based on cautious but reasonable assumptions, while leaving the others at their mean value.

"Residual radioactivity" means radioactivity in structures, materials, soils, groundwater, and other media at a site resulting from activities under the licensee's control. This includes radioactivity from all licensed and unlicensed sources used by the licensee, but excludes background radiation. It also includes radioactive materials remaining at the site as a result of routine or accidental releases of radioactive material at the site and previous burials at the site, even if those burials were made in accordance with the provisions of [Part D of these regulations].

"Technologically Enhanced Naturally Occurring Radioactive Material (TENORM)" means naturally occurring radioactive material whose radionuclide concentrations are increased by or as a result of past or present human practices. TENORM does not include background radiation or the natural radioactivity of rocks or soils. TENORM does not include "source material" and "byproduct material" as both are defined in the Atomic Energy Act of 1954, as amended (AEA 42 USC §2011 *et seq.*) and relevant regulations implemented by the NRC.^{*/}

["Transfer" means the physical relocation of TENORM within a business' operation or between general or specific licensees. This term does not include commercial distribution or a change in legal title to TENORM that does not involve physical movement of those materials.]

"Total effective dose equivalent" or "TEDE" means [applicable state definition for consistency with other regulations.]

Sec. N.4 - Exemptions. ^{**/}

- a. Persons who receive, possess, use, process, transfer, distribute, or dispose of TENORM are exempt from the requirements of Part N with respect to any combination of ²²⁶Ra and ²²⁸Ra if the materials contain, or are contaminated at, concentrations less than 185 becquerel per

^{*/} All radionuclides are listed as hazardous substances pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA 42 USC §9601 *et seq.* as amended). Because the Superfund definition of hazardous substances extends to natural hazardous substances that have been removed from their place in nature and exposed to the accessible environment, materials containing naturally occurring radionuclides which have not been enriched in concentration are covered by CERCLA and related US Environmental Protection Agency (U.S. EPA) regulations.

^{**/} States may establish alternative exemption criteria using site and industry specific data, provided that the criteria are consistent with N.5b. and N.5c.

kilogram (5 pCi/g) excluding natural background. The progeny of the exempt TENORM ^{226}Ra and ^{228}Ra are also exempt. Manufacture of consumer or retail products at concentrations greater than 185 becquerel per kilogram (5 pCi/g) is regulated pursuant to N.22c. and N.23.^{*/}

- b. Persons who receive products or materials containing TENORM distributed in accordance with a specific license issued by the Agency pursuant to N.20a., or to an equivalent license issued by another Licensing State, are exempt from this Part with regard to those products or materials.
- c. Persons who receive, possess, use, process, transfer and distribute, including preparation of custom blends for distribution, phosphate or potash ore-based fertilizers containing TENORM are exempt from this Part.
- d. [Persons who receive, possess, use, process, transfer, dispose into a permitted landfill, and distribute, including preparation of custom blends for distribution, zirconia, zircon, and products of zirconia and zircon containing TENORM are exempt from this Part. A facility that manufactures zirconia or zircon from ore is not exempt from this Part. A facility that chemically processes zirconia or zircon resulting in increased environmental mobility of TENORM is not exempt from this Part.]^{**/}
- e. Persons who possess TENORM waste regulated by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA 42 USC §9601 *et seq.* as amended) or by the Resource Conservation and Recovery Act (RCRA 42 USC §6901 *et seq.* as amended) [or equivalent state authority] are exempt from this Part for the TENORM waste regulated by either of these federal acts.
- f. Other persons who possess or use TENORM shall be exempt when the Agency makes a determination, upon its own initiative or upon request for such determination, that the reasonably maximally exposed individual will not receive a public dose with a total effective dose equivalent (TEDE) of more than 1 millisievert (0.1 rem) in one year from all licensed or registered sources of radiation including TENORM.
- g. [Persons who receive water treatment plant or sewage treatment plant liquid or sludge, apply such material to farmland by spreading, or cultivate such material into farmland as a soil amendment in accordance with a permit from the [appropriate state agency] are hereby exempt from this Part if the concentration of ^{226}Ra and ^{228}Ra combined in the liquid or sludge before application to farmland is less than 370 becquerel per kilogram (10 pCi/g).]^{***/}

^{*/}To apply this exemption to equipment such as pipe, it must be determined that the concentration of total radium is less than 185 becquerel per kilogram (5 pCi/g) excluding the weight of the pipe or object contaminated with TENORM.

^{**/}Should a state Agency wish to exempt zircon and zirconia from its TENORM rule, there is sufficient basis to do so in situations where processing has not increased the environmental mobility of radionuclides.

^{***/}The Agency should coordinate with the appropriate state agency that authorizes the application of liquid or sludge. The related assessment was based on a total of 3 applications of 5,000 kg of material per acre for each application.

Sec. N.5 - Standards for Radiation Protection for Members of the Public.

- a. Each person licensed under N.10 or N.20 shall conduct operations with TENORM so that individual members of the public will not exceed 1 millisievert (0.1 rem) TEDE annually from all licensed or registered sources of radiation, including TENORM.
- b. Persons subject to a specific or general license under this Part shall comply with the standards for radiation protection set out in Part D of these regulations.^{*/}
- c. Doses from inhalation of indoor radon and its short half-life (less than 1 hour) progeny shall not be included in calculations of the TEDE, except when the dose is due to effluent releases from licensed operations involving the handling or processing of TENORM.

Sec. N.6 - Protection of Workers During Operations. Each person subject to a specific or general license under Part N shall conduct operations such that protection of workers is in compliance with the standards for radiation protection set out in Parts D and J of these regulations.

Sec. N.7 - Unrestricted Use and Conditional Release. The following criteria apply for persons subject to a specific or general license under this Part:

- a. Release of equipment for unrestricted use. Equipment can be released from the site for unrestricted use when that equipment is not contaminated with TENORM at levels greater than those in Appendix A of this Part. Upon application, specific approval of alternative levels may be granted by the Agency.
- b. Release of a site for unrestricted use. ^{**/} The Agency shall release a site for unrestricted use upon request by the licensee who has demonstrated to the Agency that the following applicable criteria have been met:
 - i. The average member of the critical group will not receive annually a public dose in excess of 0.25 millisievert (0.025 rem) TEDE from residual radioactive materials on site other than residual TENORM ²²⁶Ra and ²²⁸Ra and their progeny;
 - ii. The concentration of residual TENORM ²²⁶Ra and ²²⁸Ra, on land averaged over 100 square meters, is less than 185 becquerel per kilogram (5 pCi/g) above the background concentration, averaged over any 15 cm layer of soil. The 15 cm layers are contiguous depth increments from the surface down. Each of the progeny radionuclides of the residual TENORM ²²⁶Ra and ²²⁸Ra may also be present in concentrations similar to the residual TENORM ²²⁶Ra and ²²⁸Ra concentration;
 - iii. Where residual TENORM ²²⁶Ra and ²²⁸Ra and their progeny and other residual

^{*/} States which have already adopted Part D of these regulations or the equivalent shall substitute the appropriate reference.

^{**/} The Agency must consider, where applicable, the Clean Water Act, Safe Drinking Water Act, and other requirements of the U.S.EPA.

TENORM radionuclide contamination are present, the sum of fractions shall be used for combining the criteria of N.7b.i. and N.7b.ii. The sum of fractions is determined by dividing each average radium concentration by the radium limit of 185 becquerel per kilogram (5 pCi/g) and dividing the estimated annual dose from other residual TENORM radionuclides by 0.25 millisievert (0.025 rem) and then adding the ratios together. The sum of the fractions must be less than, or equal to, 1.0 to meet this criterion; and

- iv. The license termination requirements are in Part O of these regulations. [Whenever TENORM ^{226}Ra and ^{228}Ra and other non-TENORM licensed radioactive material is present, the Agency will determine on a case-by-case basis how the criteria of Part O will be applied because Part N covers only TENORM and Part O covers all other licensed radioactive material regulated by the Agency and 185 becquerel per kilogram (5 pCi/g) of TENORM ^{226}Ra and ^{228}Ra above background is exempt.]
- c. Persons with a specific license shall comply also with requirements of N.26a.vi., N.26a.vii., and N.27 that are applicable to remediation and termination of the license.
- d. Persons with a general license shall also notify the Agency in writing prior to commencing activities to reclaim the site. Decontamination activities require a specific license.
 - i. Notification of Site or Area Closure. When the general licensee has permanently ceased use of radioactive materials at a site or portion of a site or facility or when an area has not been used for a period of two years, the licensee shall, within 60 days, provide the following information in writing to the Agency:
 - (1) The location of the site or area; and
 - (2) The plan for reclaiming or decontaminating the site or area.
- e. Actions taken to confine TENORM on site or to remediate sites shall be based on expected longevity-related controls for 1000 years [or longer].^{*/}
- f. Conditional release of metal for recycle. Conditionally released metal for recycle shall be done only under the condition that metal contaminated with TENORM does not exceed a maximum exposure level of 50 microroentgen per hour, including background radiation, at any accessible location of the metal surface prior to release from the site.^{**/}
- g. Equipment not released for unrestricted use. Equipment contaminated with TENORM in excess of levels specified in Appendix A may be transferred pursuant to N.10e.

^{*/} The emphasis of CERCLA policies for permanent solutions and the License Termination Rule of Part O of these regulations should be considered by the Agency.

^{**/} States may establish screening levels based on gamma survey instrument results for use in releasing facilities and equipment consistent with N.5.

- h. Other transfers of TENORM. Other transfers of TENORM shall be in accordance with N.8, N.10, or N.20 of these regulations.

Sec. N.8 - Disposal and Transfer of Waste for Disposal.

- a. Each person subject to specific or general license requirements of this Part shall manage and dispose of wastes containing TENORM:
- i. By transfer of the wastes for storage, treatment, or disposal at a facility licensed by the Agency, the applicable agency of another state, or the NRC, or authorized by the Department of Energy (DOE) for storage, treatment, or disposal of TENORM;
 - ii. By transfer of the wastes for storage, treatment, or disposal to a facility licensed by the Agency, the applicable agency of another state, or the NRC for storage, treatment or disposal of low-level radioactive waste unless the disposal facility license prohibits disposal of TENORM;
 - iii. By transfer of the waste for disposal at a permitted solid or hazardous waste disposal facility, provided such facility is not prohibited from receiving and disposing such TENORM waste and the disposal is in accordance with applicable federal and state law;
 - iv. By disposal in an injection well approved in accordance with [insert reference to appropriate state regulation] or by transfer for disposal at an out-of-state injection well approved by the applicable governmental authority;
 - v. By transfer for disposal in another state as otherwise approved by the applicable governmental authority [and with written approval of the Agency]; or
 - vi. In accordance with alternate methods authorized by the permitting agency for the disposal site upon application or upon the Agency's initiative, consistent with N.5 [and where applicable the Clean Water Act, Safe Drinking Water Act and other requirements of the EPA for disposal of such wastes].
- b. Records of disposal, including manifests for TENORM, shall be maintained consistent with the provisions of Part D of these regulations.
- c. TENORM waste shall not be diluted for the sole purpose of making the waste exempt from the disposal requirements without prior Agency approval. The criteria in N.5 shall be used by the Agency to determine whether or not to approve such a request.^{1/}

^{1/} Examples of uses that have been approved by other states include mineral processing wastes as an ingredient in asphalt, contaminated soil as a soil amendment, and treated sludge as material to melt snow on road ways.

Sec. N.9 - Prohibition. Purposeful dilution to render TENORM exempt shall not be performed without prior Agency approval.^{2/}

General Licenses

Sec. N.10 - General Licenses.

- a. Subject to the requirements of N.5 through N.8 and N.10, unless and until a specific license has been issued in accordance with N.20, a general license is hereby issued to possess, use, transfer, distribute or dispose of TENORM without regard to quantity.^{*/}
- b. This general license does not authorize the manufacture of consumer or retail products containing TENORM in concentrations greater than those specified in N.4a. or the receipt and disposal of wastes from other persons.
- c. Employees or contractors under control and supervision of a general licensee may perform routine maintenance on equipment, facilities, and land owned or controlled by the general licensee. Maintenance that provides a pathway for exposure different from that found in periodic maintenance operations and that increases the potential for additional exposure is not considered routine maintenance. The decontamination of equipment, facilities, and land shall be performed only by persons specifically licensed by the Agency, an Agreement State, or another Licensing State to conduct such work.

[d.^{**/} Any person subject to the general license issued by N.10a. shall notify the Agency within 60 days of the effective date of this Part or of becoming subject to the general license. Such notification shall include:

- i. Name and address of the licensee;
 - ii. Location and description of the facility [facilities]or portion of a facility where the TENORM is situated;^{3/}
 - iii. Description of the TENORM including estimates of the amount and extent of TENORM.]
- e. Transfer of material, equipment or real property.
- i. The transfer of TENORM not exempt from these regulations from one general licensee to another general licensee is authorized if:

^{2/} Dilution resulting from normal product processing is not considered purposeful dilution.

^{*/} Ownership of TENORM is authorized by the general license in C.22f. of these regulations.

^{**/} This subsection may be omitted at the option of the adopting state.

[^{3/} This allows an option of a general license for each facility or for a single general license for multiple facilities owned by same person. The Agency can allow the general licensee to select the option.]

- (1) The equipment and facilities contaminated with TENORM are to be used by the recipient for a similar purpose, provided that no member of the public shall receive a dose in excess of that allowed under N.5a.; or
 - (2) The transfer of control or ownership of land contaminated with TENORM includes [an annotation of the deed records]^{*/}[notice to owners of surface and mineral rights]^{**/} to indicate the presence of TENORM.
- ii. For transfers not made in accordance with N.10e.i., prior written approval by the Agency is required. [To obtain Agency approval, the transferor shall submit information that demonstrates compliance with N.7. Records of such compliance shall be maintained as specified in (cite record keeping for decommissioning).^{***/}]
 - iii. For transfers made under N.10e.i., the general licensee who makes the transfer shall assess the amount and extent of TENORM contamination or material present, inform the general licensee receiving the TENORM of these assessments prior to such transfer, and maintain records required by these regulations that include:
 - (1) The date, recipient name and location;
 - (2) A description and quantity of the material; and
 - (3) A description of the procedures and mechanisms used to ensure that material will not be released in another manner, such as an unrestricted release.
 - iv. A general licensee intending to transfer material or real property for unrestricted use shall document compliance with the requirements of N.7. Records of such compliance shall be maintained [state's option].
- f. Distribution of TENORM products between general licensees. The distribution of TENORM products not exempt from these regulations from one general licensee to another general licensee is authorized provided the product is accompanied by labels or manifests which identify the type and amount of TENORM.^{4/}
- g. The Agency may, by written notice, require any person authorized by a general license to

^{*/} The notice to local government is to ensure notification of the appropriate government agency that regulates land use. The intent is to ensure that no use of the land or construction occurs that would cause exposure to the TENORM above the limit for a member of the public without the knowledge of the individuals being exposed.

^{**/} This option is provided for those states in which notations to recorded deeds are prohibited

^{***/} Procedural aspects need to be considered in a Regulatory Guide

^{4/} This may be accomplished by providing notification to the recipient through literature such as Material Safety Data Sheets, manifests, or labeling accompanying the product.

apply for and obtain a specific license if the Agency determines that specific licensure is necessary to ensure that exposures do not exceed the criteria of N.5 and N.6. The notice shall state the reason or reasons for requiring a specific license.

Specific Licenses

Sec. N.20 - Specific Licenses.

- a. A specific license is required pursuant to N.22c. and N.23 to manufacture and distribute any consumer or retail product containing TENORM unless the manufacture and distribution are:
 - i. Authorized as specified by N.10a. or N.10f.;
 - ii. Licensed under the provisions of Part C of these regulations;
 - iii. Exempted under the provisions of N.4; or
 - iv. Otherwise exempt in accordance with another Part of these regulations;
- b. A specific license is required to decontaminate equipment or land not exempted under the provisions of N.4 or to decontaminate facilities contaminated with TENORM in excess of the levels in N.7. For purposes of this subsection, the term “decontaminate” shall not include routine maintenance which results in the incidental removal of contamination; and
- c. A specific license is required to receive TENORM from other persons for storage, treatment or disposal unless otherwise provided by Part N [or authorized in writing by the Agency].

Sec. N.21 - Filing Application for Specific Licenses. ^{*/}

- a. Applications for specific licenses shall be in English and filed in a manner and on a form prescribed by the Agency.
- b. The Agency may at any time after the filing of the original application, and before the termination of the license, require further statements in order to enable the Agency to determine whether the application should be granted or denied or whether a license should be modified or revoked.
- c. Each application shall be signed by the applicant or licensee or a person duly authorized to act for and on the licensee's behalf.
- d. An application for a license may include a request for a license authorizing one or more activities.

^{*/} This section duplicates the requirements of Part C of these regulations; states having equivalent requirements may elect to refer to appropriate regulations.

- e. Each application for a specific license shall be accompanied by the fee prescribed in [cite the appropriate regulation].
- [f. In an application, the applicant may incorporate by reference information contained in previous applications, statements, or reports filed with the Agency provided such references are clear and specific.]
- g. Applications and documents submitted to the Agency may be made available for public inspection [state's option: include references to applicable freedom of information statute, trade secrets, etc.].

Sec. N.22 - Requirements for the Issuance of Specific Licenses.^{*/}

- a. A license application will be approved if the Agency determines that:
 - i. The applicant is qualified by reason of training and experience to use the TENORM in question for the purpose requested in accordance with these regulations in such a manner as to protect the public health and safety or property;
 - ii. The applicant's proposed equipment, facilities, and procedures are adequate to protect the public health and safety or property;
 - iii. The issuance of the license will not be inimical to the health and safety of the public;
 - iv. The applicant satisfied all applicable special requirements in this Part;
 - v. The applicant has met the financial assurance requirements of N.50;
 - vi. The applicant has adequately addressed the following items in the application:
 - (1) Procedures and equipment for monitoring and protecting workers;
 - (2) An evaluation of the radiation levels and concentrations of contamination expected during normal operations;
 - (3) Operating and emergency procedures, including procedures for waste reduction and quality assurance of items released for unrestricted use; and
 - (4) A method for managing the radioactive material removed from contaminated equipment, facilities, and land.

^{*/} This section duplicates the requirements of Part C of these regulations; states having equivalent requirements may elect to refer to appropriate regulations.

- vii. For each location to be listed on the license as an authorized use location, the applicant shall submit either:
 - (1) A statement that the applicant owns the facility where radioactive material is to be used or stored; or
 - (2) A statement verifying that the facility owner has been informed, in writing, of the use or storage of radioactive material at the facility, and that the use of such material is subject to the regulations of the Agency.
- b. An application for a specific license to decontaminate equipment, land, or facilities contaminated with TENORM in excess of the levels set forth in N.7, as applicable, and to dispose of the resulting waste will be approved if the applicant satisfies the general requirements specified in N.22a..
- c. An application for a specific license to transfer or manufacture or distribute consumer or retail products containing TENORM to persons exempted from these regulations pursuant to N.4b. will be approved if:
 - i. The applicant satisfies the general requirements specified in N.22a.;
 - ii. The TENORM is not contained in any food, beverage, cosmetic, drug, or other commodity designed for ingestion or inhalation by, or application to, a human being; and
 - iii. The applicant submits sufficient information relating to the design, manufacture, prototype testing, quality control procedures, labeling or marking, and conditions of handling, storage, use, and disposal of the TENORM product to demonstrate that the product will meet the safety criteria set forth in N.23. The information shall include:
 - (1) A description of the product and its intended use or uses;
 - (2) The type, quantity, and concentration of TENORM in each product;
 - (3) The chemical and physical form of the TENORM in the product and changes in chemical and physical form that may occur during the useful life of the product;
 - (4) An analysis of the solubility in water and body fluids of the radionuclides in the product;
 - (5) The details of manufacture and design of the product relating to containment and shielding of the TENORM and other safety features under normal and severe conditions of handling, storage, use, reuse, and disposal of the product;
 - (6) The degree of access of human beings to the TENORM product during normal handling, use, and disposal;

- (7) The total quantity of TENORM expected to be distributed annually in the product;
- (8) The expected useful life of the product;
- (9) The proposed method of labeling or marking each unit of the product with identification of the manufacturer or initial transferor of the product and the radionuclides and quantity of TENORM in the product;
- (10) The procedures for prototype testing of the product to demonstrate the effectiveness of the containment, shielding, and other safety features under both normal and severe conditions of handling, storage, use, reuse, and disposal;
- (11) The results of the prototype testing of the product, including any change in the form of the TENORM contained in it, the extent to which the TENORM may be released to the environment, any change in radiation levels, and any other changes in safety features;
- (12) The estimated external radiation doses and committed dose equivalent relevant to the safety criteria in N.23 and the basis for such estimates;
- (13) A determination that the probabilities with respect to doses referred to in N.23 meet the safety criteria;
- (14) The quality control procedures to be followed in the processing of production lots of the product, and the quality control standards the product will be required to meet; and
- (15) Any additional information, including experimental studies and tests, required by the Agency to facilitate a determination of the radiation safety of the product.

[d. Notwithstanding the provisions of N.23b., the Agency may deny an application for a specific license if the end uses of the product are frivolous or cannot be reasonably foreseen.]

Sec. N.23 - Safety Criteria for Consumer and Retail Products. An applicant for a license pursuant to N.22c. shall demonstrate that the product is designed and will be manufactured so that:

- a. In normal use and disposal of a single exempt item,^{*/} and in normal handling and storage of the quantities of exempt items likely to accumulate in one location during marketing, distribution, installation, and servicing of the product, it is unlikely that the dose 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 product will exceed the doses in Column I of N.24.

^{*/} "Exempt items" as used in Part C.4c. of these regulation. It applies to items such as household smoke detectors.

- b. In use and disposal of a single exempt item and in handling and storage of the quantities of exempt items likely to accumulate in one location during marketing, distribution, installation, and servicing of the product, the probability is low^{**} that the containment, shielding, or other safety features of the product would fail under such circumstances that a person would receive an external radiation dose or committed dose equivalent in excess of the dose to the appropriate part of the body as specified in Column II of the table in N.24 and the probability is negligible^{**} that a person would receive an external radiation dose or committed dose equivalent in excess of the dose to the appropriate part of the body as specified in Column III of the table in N.24.^{***}
- c. It is unlikely that there will be a significant reduction in the effectiveness of the containment, shielding, or other safety features of the product from wear and abuse likely to occur in normal handling and use of the product during its useful life.

Sec. N.24 - Table of Doses.

Part of Body	Column I [†] Dose (N.23a.)	Column II [†] Dose (N.23b.)	Column III [†] Dose (N.23b.)
Whole body; head and trunk; active blood-forming organs; gonads; or lens of eye	0.05 mSv (0.005 rem)	5 mSv (0.5 rem)	150 mSv (15 rem)
Hands and forearms; feet and ankles; localized areas of skin averaged over areas no larger than 1 square centimeter	0.75 mSv (0.075 rem)	75 mSv (7.5 rem)	2000 mSv (200 rem)
Other organs	0.15mSv (0.015 rem)	15mSv (1.5 rem)	500mSv (50 rem)
[†] <i>Dose Limit is the dose above background from the product</i>			

Sec. N.25 - Issuance of Specific Licenses.

- a. Upon a determination that an application meets the requirements of [applicable authorizing statutes and rules of the Agency], the Agency will issue a specific license authorizing the proposed activity in such form and containing such conditions and limitations as it deems

^{**} Low-not more than one such failure per year for each 10,000 exempt units distributed. Negligible-not more than one such failure per year for each one million exempt units distributed.

^{***} It is the intent of this paragraph that as the magnitude of the potential dose increases above that permitted under normal conditions, the probability that any individual will receive such a dose must decrease. The probabilities have been expressed in general terms to emphasize the approximate nature of the estimates which are to be made. The above values may be used as guidelines in estimating compliance with the criteria.

appropriate or necessary.

- b. The Agency may incorporate in any license at the time of issuance, or thereafter by amendment, such additional requirements and conditions with respect to the licensee's receipt, possession, use, and transfer of TENORM subject to this Part as it deems appropriate or necessary in order to:
 - i. Protect public health and safety or property;
 - ii. 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
 - iii. Prevent loss, theft, or loss of control of TENORM subject to this Part.

Sec. N.26 - Conditions of Specific Licenses Issued Under N.22.

a. General Terms and Conditions

- i. Each specific license issued pursuant to this Part shall be subject to all the provisions of the [applicable Act], now or hereafter in effect, and to all rules, regulations, and orders of the Agency.
- ii. No specific license issued or granted under this Part and no right to possess or utilize TENORM granted by any license issued pursuant to this Part shall be transferred, assigned, or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of any license to any person unless the Agency shall, after securing full information, find that the transfer is in accordance with the provisions of the [applicable Act], and shall give its consent in writing.
- iii. Each person specifically licensed by the Agency pursuant to this Part shall confine use and possession of the TENORM licensed to the locations and purposes authorized in the specific license.
- iv. Each person specifically licensed by the Agency pursuant to this Part is subject to the provisions of N.5, N.6, N.7, and N.8.
- v. Notification of Bankruptcy.
 - (1) Each licensee shall notify the Agency, in writing, immediately following the filing of a voluntary or involuntary petition for bankruptcy under any Chapters of Title II (Bankruptcy) of the United States Code (11 U.S.C.) by or against:
 - (a) The licensee;
 - (b) An entity [as that term is defined in 11 U.S.C. 101 (15)] controlling a licensee or listing the license or licensee as property of the estate; or

- (c) An affiliate [as that term is defined in 11 U.S.C. 101 (2)] of the licensee.
- (2) This notification shall indicate:
 - (a) The bankruptcy court in which the petition for bankruptcy was filed; and
 - (b) The date of the filing of the petition.
- vi. Each licensee shall notify the Agency in writing prior to commencing activities to reclaim the licensed facility and site.
- vii. Notification of Site or Area Closure. When a licensee has permanently ceased use of radioactive materials at a site or portion of a facility and the licensee has not decontaminated the area, or when an area has not been used for a period of two years, the licensee shall, within 60 days, provide the following information in writing to the Agency:
 - (1) The location of the facility, site, or area;
 - (2) The plan for reclaiming or decontaminating the facility, site or area; and
 - (3) An evaluation of any changes to the financial assurance submitted in accordance with N.50.
- viii. Temporary Jobsites.
 - (1) When temporary jobsites are authorized on a specific license, TENORM may be used at temporary jobsites throughout the State of [name of your state] in accordance with the reciprocal recognition provisions of N.40 [or C.90 of these regulations], in areas not under exclusive federal jurisdiction.
 - (2) Before TENORM can be used at a temporary jobsite at any federal facility within the State of [name of your state], the jurisdictional status of the jobsite shall be determined as it pertains to the TENORM. Authorization for use of TENORM at jobsites under exclusive federal jurisdiction shall be obtained from the applicable federal agency.[Authorization for use of TENORM at jobsites under exclusive federal jurisdiction must be obtained from the federal agency having jurisdiction of the property. Also, specific licenses issued by the Agency do not authorize activities in other states or in areas of exclusive federal jurisdiction in this state or in any other state. Before radioactive materials can be used at a temporary jobsite in another state or an area of exclusive federal jurisdiction, a license or equivalent authorization must be obtained from the appropriate state or federal agency.]

- [b. Quality Control, Labeling, and Reports of Transfer. ^{*/} Each person licensed under N.22c. shall:
- i. Carry out adequate control procedures in the manufacture of the product to assure that each production lot meets the quality control standards approved by the Agency;
 - ii. Label or mark each unit so that the manufacturer, processor, producer, or initial transferor of the product and the TENORM in the product can be identified; and
 - iii. Maintain records [identifying, by name and address, each person to whom TENORM is transferred for use under N.4b. or the equivalent regulations of another Licensing State, and stating the kinds, quantities, and uses of TENORM transferred. An annual summary report stating the total quantity of each radionuclide transferred under the specific license shall be filed with the Agency. Each report shall cover the year ending December 31, and shall be filed within 90 days thereafter. If no transfers of TENORM have been made pursuant to N.22c. during the reporting period, the report shall so indicate.]^{**/}

Sec. N.27 - Expiration and Termination of Specific Licenses.

- a. Except as provided in N.28b., the authority to engage in licensed activities as specified in the specific license shall expire at the end of the specified day in the month and year stated therein. Any expiration date on a specific license applies only to the authority to engage in licensed activities. Expiration of a specific license shall not relieve the licensee of responsibility for decommissioning its facility and terminating the specific license.
- b. Each licensee shall notify the Agency immediately, in writing, and request termination of the license when the licensee decides to terminate all activities involving radioactive materials authorized under the license. This notification and request for termination shall include the documents required by N.27d. and shall otherwise substantiate that the licensee has met all of the requirements in N.27d.
- c. No less than 30 days before the expiration date specified in a specific license, the licensee shall either:
 - i. Submit an application for license renewal pursuant to N.28; or
 - ii. Notify the Agency, in writing, if the licensee decides not to renew the license. The licensee requesting termination of a license shall comply with the requirements of N.27d.;

^{*/} State option; this section may be omitted or modified as appropriate based on state quality control standards.

^{**/} Implementing state may require reporting as appropriate for each category of licensee.

d. Termination of Licenses.

- i. If a licensee does not submit a complete application for license renewal pursuant to N.28, the licensee shall, on or before the expiration date specified in the license;
- (1) Terminate use of the TENORM specified in the license;
 - (2) Remove radioactive contamination to the level outlined in N.7, to the extent practicable;
 - (3) Properly dispose of the TENORM specified in the license;
 - (4) Submit a completed Agency Form T “Certificate–Disposition of Radioactive Materials”^{*/}; and
 - (5) Submit a radiation monitoring report to confirm the absence of TENORM specified in the license or to establish the levels of residual radioactive contamination, unless the licensee demonstrates the absence of residual radioactive contamination in some other manner acceptable to the Agency. The radiation monitoring report shall specify the instrumentation used and certify that each instrument was properly calibrated and tested. The licensee shall, as applicable, report levels or quantities of:
 - (a) Beta and gamma radiation at 1 centimeter from surfaces in units, multiples, or subunits of sieverts or rem per hour or microroentgens per hour;
 - (b) Gamma radiation at 1 meter from surfaces in units, multiples, or subunits of sieverts or rem per hour or microroentgens per hour;
 - (c) Removable radioactivity on surfaces in units, multiples, or subunits of becquerels or curies per 100 square centimeters of surface area or in disintegrations (transformations) per minute per 100 square centimeters of surface area;
 - (d) Fixed radioactivity on surfaces in units, multiples, or subunits of becquerels or curies per 100 square centimeters of surface areas or in disintegrations (transformations) per minute per 100 square centimeters of surface area;
 - (e) Radioactivity in contaminated liquids such as water, oils or solvents in units, multiples, or subunits of becquerels or curies per milliliter of

^{*/} "Form T" is found in Attachment A of Part O of these regulations. The Agency should indicate where this form resides within its regulations.

volume or per gram of liquid; and

- (f) Radioactivity in contaminated solids such as soils or concrete in units, multiples, or subunits of becquerels or curies per gram of solid.
- ii. If levels of residual radioactive contamination attributable to activities conducted under the license are less than those established in N.7, the licenses shall so certify. If the Agency determines that this certification and the information submitted pursuant to N.27d.i.(5) is adequate and monitoring confirms the findings, then the Agency will notify the licensee, in writing, of the termination of the license.
- iii. If residual radioactive contamination attributable to activities conducted under the license are not in conformance with criteria established in N.7:
 - (1) The license continues in effect beyond the expiration date, if necessary, with respect to possession of residual TENORM material present as contamination until the Agency notifies the licensee in writing that the license is terminated. During this time the licensee is subject to the provisions of N.27e.
 - (2) In addition to the information submitted pursuant to N.27d.i.(4) and N.27d.i.(5), the licensee shall submit a plan for decontamination and disposal, if required, as regards residual TENORM contamination remaining at the time the license expires.
- e. Each licensee who possesses TENORM pursuant to N.27d.iii., following the expiration date specified in the license, shall:
 - i. Limit actions involving TENORM as specified in the license to those related to decontamination and other activities related to preparation for release for unrestricted use; and
 - ii. Continue to control entry to restricted areas until they are suitable for release for unrestricted use and the Agency notifies the licensee in writing that the license is terminated.

Sec. N.28 - Renewal of Specific Licenses.

- a. Applications for renewal of specific licenses shall be filed in accordance with N.21.
- b. In any case in which a licensee, not less than [30 days]^{*/} prior to expiration of an existing license, has filed an application in proper form for renewal or for a new license authorizing the same activities, such existing license shall not expire until final action by the Agency.

^{*/} State option; appropriate time for review.

Sec. N.29 - Amendment of Specific Licenses at Request of Licensee. Applications for amendment of a license shall be filed in accordance with N.21 and shall specify the respects in which the licensee desires the license to be amended and the grounds for such amendment.

Sec. N.30 - Agency Action on Applications to Renew and Amend Specific Licenses. In considering an application by a licensee to renew or amend the license, the Agency will apply the criteria set forth in N.22.

Sec. N.31 - Modification and Revocation of Specific Licenses.

- a. The terms and conditions of all licenses shall be subject to amendment, revision, or modification or the license may be suspended or revoked by reason of amendments to the [applicable Act], or by reason of rules, regulations, and orders issued by the Agency.
- b. In accordance with [cite appropriate rule], any license may be revoked, suspended, or modified, in whole or in part, for any material false statement in the application or any statement of fact required under provisions of the [applicable Act], or because of conditions revealed by such application or statement of fact or any report, record, or inspection or other means which would warrant the Agency to refuse to grant a license on an original application, or for violation of, or failure to observe any of the terms and conditions of the [applicable Act], or of the license, or of any rule, regulation, or order of the Agency.
- c. Except in cases of willfulness or those in which the public health, interest or safety requires otherwise, no license shall be modified, suspended or revoked, prior to the institution of proceedings to modify, suspend, or revoke the license, unless facts or conduct which may warrant such action shall have been called to the attention of the licensee in writing and the licensee shall have been accorded an opportunity to demonstrate or achieve compliance with all lawful requirements.

Sec. N.32 - Record Keeping Requirements for Site Reclamation. Each licensee shall keep records of information important to the safe and effective reclamation of a facility in an identified location until the license is terminated by the Agency. If records of relevant information are maintained for other purposes, reference to these records and their locations may be used. For purposes of N.32 “reclaiming”^{*/} shall mean returning property to a condition or state such that the property no longer presents a health or safety hazard or threat to the environment. Information the Agency considers important to reclaiming includes:

- a. Records of spills or other unusual occurrences involving the spread of contamination in and around the facility, equipment or site. These records may be limited to instances when contamination remains after any cleanup procedures or when there is reasonable likelihood that contaminants may have spread to inaccessible areas as in the case of possible seepage into porous materials such as concrete. These records must include any known information on identification of involved radionuclides, quantities, forms and concentrations.

^{*/} For purposes of N.32, the term “reclaiming” includes but is not limited to those activities necessary to decommission the licensed facility (i.e., to remove (as a facility) safely from service and reduce residual radioactivity to a level that permits release of the property for unrestricted use and termination of license).

- b. As-built drawings and modifications of structures and equipment in restricted areas where radioactive materials are used or stored, and of locations of possible inaccessible contamination, such as buried pipes which may be subject to contamination. If required drawings are referenced, each relevant document need not be indexed individually. If drawings are not available, the licensee shall substitute appropriate records of available information concerning these areas and locations.
- c. If required by N.50, records of this reclaiming cost estimate prepared for the amount approved by the Agency for reclaiming.

Reciprocity

Sec. N.40 - Reciprocal Recognition of Specific Licenses.

- a. Subject to these regulations, any person who holds a specific license from another Agreement State or Licensing State, issued by the agency having jurisdiction where the licensee maintains an office for directing the licensed activity and at which radiation safety records are normally maintained, is hereby granted a general license to conduct the activities authorized in such licensing document within this State for a period not in excess of 180 days in any 12 month period, provided that:
 - i. A current copy of the licensing document or equivalent authorization is on file with the Agency and the authorized activities are not limited to specified installations or locations;
 - ii. The out-of-state licensee notifies the Agency by telephone, telefacsimile, telegraph, or letter prior to engaging in such activity. Such notification shall indicate the location, period, and type of proposed possession and use within the State. Upon receipt from the out-of-state licensee of a written request which contains a schedule of activities to be conducted within [name of the State] the Agency will waive the requirement for additional notifications during the 12-month period following the receipt of the initial notification from a person engaging in activities under the general license provided in N.40a.;
 - iii. The out-of-state licensee complies with all applicable regulations of the Agency and with all the terms and conditions of the licensing document or equivalent authorization, except any such terms and conditions which may be inconsistent with applicable regulations of the Agency;
 - iv. The out-of-state licensee supplies any other information necessary to show compliance with these regulations; and
 - v. The out-of-state licensee shall not transfer or dispose of TENORM possessed or used under the general license provided in N.40a. except by transfer to a person:
 - (1) Specifically licensed by the Agency or by another Licensing State to receive

such TENORM; or

(2) Exempt from the requirements for a license for such TENORM under N.4.

- b. The Agency may withdraw, limit or qualify its acceptance of any specific license or equivalent authorization issued by a Licensing State, or any product distributed pursuant to such license or equivalent authorization, if the Agency determines that, had the out-of-state licensee been licensed by [name of the State], the licensee's license would have been subject to action under N.31 or [cite State's rules for Administrative or Criminal Procedures as applicable].

Sec. N.50 - Financial Assurance Arrangements. Pursuant to [cite applicable State statute], each licensee or applicant for a license subject to the requirements of N.22 shall post with the Agency financial assurance, or security, to ensure the protection of the public health and safety and the environment in the event of abandonment, default, or other inability or unwillingness of the licensee to meet the requirements of the Act and these regulations. Financial assurance arrangements shall:

- a. Consist of [surety bonds], [cash deposits], [certificates of deposit], [government securities], [irrevocable letters or lines of credit], [corporate guarantees], [insurance], [state funds],^{*/} or any combination of these;
- b. Be in an amount sufficient to meet the applicant's or licensee's obligations under the Act and these regulations and shall be based upon Agency approved cost estimates;
- c. Be established prior to issuance of the license or the commencement of operations to assure that sufficient funds will be available to carry out the decontamination and decommissioning of the facility;
- d. Be continuous for the duration of the license and for a period coincident with the applicant or licensee's responsibility under the Act and these regulations;
- e. Be available in [name of State] subject to judicial process and execution in the event required for the purposes set forth; and
- f. Be established within 90 days of [the effective date of this regulation] for licenses in effect on that date.

[Sec. N.51 - Effective Date. The provisions and requirements of this Part shall take effect on [effective date of the regulations] and shall apply to all facilities or sites owned or controlled by a person on that date. [Products introduced into commerce and disposals approved prior to that date are not subject to the provisions of this Part.]^{**/}

^{*/} State option; may include corporate guarantees, insurance, state funds, as state deems appropriate.

^{**/} This provision may not be necessary if covered by generally applicable laws or rules of the state.

Part N

APPENDIX A**ACCEPTABLE SURFACE CONTAMINATION¹ LEVELS FOR TENORM**

	AVERAGE ^{2, 3, 6}	MAXIMUM ^{2, 4, 6}	REMOVABLE ^{2, 3, 5, 6}
Alpha	5,000 dpm/100 cm ²	15,000 dpm /100 cm ²	1,000 dpm /100 cm ²
Beta-gamma	5,000 dpm/100 cm ²	15,000 dpm /100 cm ²	1,000 dpm /100 cm ²

¹ Where surface contamination by both alpha and beta-gamma emitting nuclides exists, the limits established for alpha and beta-gamma emitting nuclides should apply independently.

² As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

³ Measurements of average contamination level should not be averaged over more than one square meter. For objects of less surface area, the average should be derived for each object.

⁴ The maximum contamination level applies to an area of not more than 100 cm².

⁵ The amount of removable radioactive material per 100 cm² of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of surface area *A* (where *A* is less than 100 sq. cm) is determined, the entire surface should be wiped and the contamination level multiplied by 100/*A* to convert to a "per 100 sq cm" basis.

⁶ The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr (2 μGy/hr) at 1 cm and 1.0 mR/hr (10 μGy/hr) at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

**2004
RATIONALE FOR REVISIONS**

**PART N
REGULATION AND LICENSING OF
TECHNOLOGICALLY ENHANCED NATURALLY OCCURRING RADIOACTIVE
MATERIAL (TENORM)**

Introduction

The following are reasons for changes made to the April 1999 version of Part N:

Specific Provisions

Sec. N.1 - Purpose.

Changes clarify the activities for which radiation standards or licensing criteria have been established by Part N.

Sec. N.2 - Scope.

N.2a. The minor editorial change is for clarification that some TENORM is excluded, such as the TENORM that is exempt.

N.2b. and N.2c. The order of these two sections was swapped. Because "Beneficial attribute" and "Beneficial to the product" had the same meaning, the first term was replaced by the second in the text. The "and/or its" words were deleted from N.2b. because the item being covered is covered well in N.2c. The words "neither the TENORM, nor" were deleted because Part N addresses radiation hazards.

N.2d. Here and elsewhere specific references to the Atomic Energy Act (AEA) definitions of source material and byproduct material were used because the NORM radionuclides for which NRC retains exclusive jurisdiction are defined by the terms used in SR-N's revised language rather than by radionuclide. Work is being done that may change the concentrations at which these materials are regulated by the NRC and Agreement States.

N.2e. The reference to location of transportation requirements has been moved here from N.4e. because the requirements are not exemptions.

Sec. N.3 - Definitions.

The term "Beneficial attribute" has been deleted because the identically defined term "Beneficial to the product" is now used throughout to be clearer.

The term "Conditional release" has been defined because it was used in N.7.

The term "Consumer" has been defined to clarify requirements in N.10, N.20, and N.22.

The term "Consumer or retail product" has been defined because it has been used in several sections including N.10, N.20, and N.22. The definition is a slight modification of the definition in the Consumer Product Safety Act (15 USC Section 2052).

The term "Critical group" has been defined as it is used in N.7b.

The terms "General environment" and "Institutional controls" are not used in the text so these terms have been deleted.

The definition for "Product" had a word that is not the generally accepted term of art for the affected industries so it was replaced with the generally accepted word -- "beneficiated."

The term "Residual radioactivity" has been defined as it is used in N.7. The definition was taken from 10 CFR 20.1003.

The definition of "Technologically Enhanced Naturally Occurring Radioactive Material (TENORM)" including the pre-1978 tailings of waste produced by the extraction or concentration of uranium or thorium has been modified to match the language used in N.2d. See the comment for N.2d. above for the reason.

A footnote was added to address the EPA's concern regarding the definition of TENORM.

The definition of "Transfer" was revised for clarity.

Sec. N.4 - Exemptions.

N.4 formatting was revised.

N.4a. Minor editorial changes were made for clarification. The last sentence was moved to N.8e. because it is a prohibition rather than an exemption. Disposal is not the only issue here because dilution could be done to become or remain exempt. NOTE: SR-N also introduced a section, N.9, to address the prohibition. A footnote has been added to clarify that the concentration of TENORM may not be averaged over the weight of the contaminated article. The word "own" was deleted because ownership is addressed in Part C. The last sentence was clarified to indicate that consumer or retail products having greater than 5 pCi/g of radium are subject to specific licensing.

N.4b. Because the reference is to TENORM distributed in accordance with N.20a. and such TENORM is only regulated by Part N, "these regulations" has been changed to "this Part" for clarity.

N.4c. The word "fertilizer" was preceded by "phosphate or potash ore-based" to distinguish phosphate or potash fertilizers from organic-based fertilizers.

N.4d. The optional exemption for zircon, zirconia and zircon products was added after evaluation of information submitted demonstrated that the dose criteria specified in N.4f. would not be exceeded. The zircon exemption was added as a new N.4d.

N.4d. through N.4f. were relettered due to the insertion of the new N.4d.

N.4e. To be consistent the words have been spelled for the acronym CERCLA as was done for RCRA. The statutory references for the two federal statutes have been added as a user friendly item for persons desiring the information.

N.4e. The transportation provision has been moved to N.2e. because it is not an exemption. Transportation of TENORM is covered by the same regulations as all other radioactive material.

N.4f. The criterion upon which exemptions from Part N are to be based has been added.

N.4g. A section was added to address land spreading of water treatment plant and sewage treatment plant liquid or sludge.

A footnote was added for clarification in response to U.S. EPA's comments.

Sec. N.5 - Standards for Radiation Protection for Members of the Public.

The title has been changed for clarity because radiation protection for workers is addressed in N.6.

N.5a. This provision includes standards for radiation protection for TENORM that are consistent with Part D. N.5a. refers to controlling exposure to the general public from activities licensed or registered by the Agency. For clarity minor editorial changes were made to include words used in the referenced sections.

N.5b. For clarity the words were changed to correspond with the title of Part D.

N.5c. The dose from inhalation of radon and its short half-life decay products is excluded from the dose to members of the public, except when the dose is due to effluent releases from licensed operations from handling or processing TENORM. For licensed facilities that cause the release of radon from materials being processed the impact on the public is controlled by the effluent release criteria of Part D, and the dose from the released radon should be included in dose to workers.

N.5c. The standards for radiation protection exclude doses from indoor radon and its progeny. Radon, a radioactive gas, can accumulate to elevated levels inside buildings. Isotopes of radon are formed by the decay of uranium and thorium. There are many factors such as construction methods that make it nearly impossible to accurately predict the level of radon expected from a given concentration of uranium or thorium in soils or building materials. SR-N recommends that use, transfer or disposal of TENORM be done in such a manner to be consistent with EPA/HHS 1994 indoor radon guidance. This may be achieved by institutional controls or the adherence to building codes. As such, implementation of the Agency's radon program should provide adequate protection of the public from indoor radon.

Sections N.5b. and N.5c. have been revised to clarify that the TEDE dose from radon and its short half-life progeny for effluent emissions from licensed sites is included based on Part D, but that the indoor inhalation dose from diffusion of radon from subsurface residual radium is excluded from calculations of the TEDE dose.

N.5d.of 1999 has been deleted, due to revisions in N.5b. and N.5c.

Sec. N.6 - Protection of Workers During Operations.

Words have been changed for clarification.

Sec. N.7 - Unrestricted Use and Conditional Release.

The title has been changed to reflect changes in what is now covered by this section and the section has been rewritten. The section has been rephrased to state what can be done rather than what cannot. New subsections have been added to clarify criteria for transfer, unrestricted use and conditional release.

To be consistent with N.4 and for clarity "²²⁶Ra or ²²⁸Ra" has been changed to "²²⁶Ra and ²²⁸Ra". A provision was added to cover TENORM other than ²²⁶Ra or ²²⁸Ra and its associated progeny. The 25 millirem/y criterion for the average member of the critical group is added to apply when ²²⁶Ra or ²²⁸Ra is not present.

N.7b. A footnote was added, in response to U.S. EPA comments.

N.7e. A new footnote denoting the emphasis of CERCLA policies on permanent solutions is added to N.7e. A limit has been added for application to results from environmental pathways dose assessments to ensure the engineering design of sites, when remediation is performed, and the assumptions used in the dose assessment modeling meet the longevity requirements of Part D (equivalent to 10 CFR 20 and corresponding to the requirements of the EPA for radioactivity with similar characteristics).

N.7f. The screening criterion, which is for conditional release, has been rephrased to clearly state that such release is for metal recycle only. This eliminates the apparent contradiction with the concentration criterion. Also, SR-N is specifically stating a 50 microroentgen per hour screening level in an effort to encourage uniformity of this level nationwide. Specification in this manner eliminates arguments regarding what the true value of background was for each measurement.

Sec. N.8 - Disposal and Transfer of Waste for Disposal.

N.8a. Several words have been changed for purposes of clarity.

These options include, but are not limited to, disposal at sites licensed by the Nuclear Regulatory Commission or Agreement States and also provide the option for disposal of waste at sites that have been permitted for receipt and disposal of appropriate waste by other applicable regulatory agencies. Part N is not intended to foreclose the option of transferring TENORM waste to regulated waste disposal facilities, including RCRA-permitted solid waste disposal facilities. N.8a.iii. clarifies acceptance and disposal of TENORM waste is conditioned on the absence of express prohibition, e.g., by the disposal facility's operating permit, and must not be contrary to applicable federal and state law governing the type of TENORM waste to be disposed.

For example; WCS (Waste Control Specialists), in Texas, does not have a license for disposal of radioactive waste or TENORM, but under the Texas regulatory structure, it has permits for disposal of NORM exempt from the Texas NORM regulations (30 pCi/g of radium). Also, there are two sites in California with permits for disposal of geothermal NORM waste. The SR-N group does not wish the Part N rules to restrict these permitted options.

N.8a.iv. Provides the option for disposal in injection wells approved by applicable government authority, without Agency action.

N.8a.v. In N.8a.v. changes have been made to clarify that use of a disposal site is appropriately a function of the permitting agency for that disposal site not another Agency issuing the license to use the TENORM. This change eliminates potential conflicts with existing regulatory structure in some states. It also increases the options likely to be available to TENORM licensees.

N.8a.vi. In response to U.S.EPA comments, N.8a.iii. is reinstated in this section.

N.8b. This is the N.8d. of the 1999 Part N.

N.8c. This section was added to prohibit dilution for the purpose of making waste exempt, without regulatory approval. A footnote was added giving examples of approved uses.

Sec. N.9 - Prohibition.

This section has been added to clarify that dilution is not allowed to be used to avoid regulation by an Agency. This section applies to materials that are not waste, because waste is covered by a similar provision in N.8c. A footnote was added explaining that normal product processing is not considered purposeful dilution.

Sec. N.10 - General License.

N.10a. Words were added to clarify that a specific license and a general license are mutually exclusive for the same TENORM. A footnote was added concerning ownership.

N.10b. The words "consumer or retail" have been added to clarify that a general license is required for industrial products manufacturing but a specific license is required to manufacture consumer or retail products.

N.10c. Minor editing has been done for clarification.

N.10d. Minor editing has been done for clarification. A time limit for the notification has been added. A footnote was added indicating Agency options.

N.10e. The title was revised for clarity to include the item covered by the provisions that was not previously indicated in the title. The order of the subsections has been changed for clarity.

N.10e.i. Clarifications were made. A footnote was added for notification of local governments.

N.10e.ii. Minor editing has been performed to change to a clear positive requirement rather than a negative statement.

N.10e.iii. This section was formerly N.10e.iv.

N.10e.iv. . This provision has been rewritten to clarify that the prior approval must be in writing to transfer property and equipment in a manner other than the same person for the same purpose or there is an ownership/possession of property change. The criteria used to grant approval has been added. A record keeping provision has been added that conforms to decommissioning record keeping requirements. Another option has been added to the optional methods for documentation.

N.10f. Words were changed to allow more flexibility. A footnote was added to identify options for providing notification of recipients.

N.10g. A phrase has been added to clarify that radiation exposure concerns are the basis for an Agency to require a general licensee to apply for a license and become a specific licensee. This should be a rare event. An example of such would be some Florida facilities that have already been specifically licensed because of concerns for personnel exposures.

Sec. N.20 - Specific Licenses.

N.20 Editorial rephrasing has been done for clarity. We tried to eliminate some of the confusion caused by use of "unless", "except" and "not."

N.20a. The words "consumer or retail" have been added to clarify the type of manufacturing and distribution operations that require a specific license rather than a general license.

N.20b. Editorial rephrasing was done for clarity.

N.20c. Added storage and treatment to cover other waste management practices.

Sec. N.21 - Filing Application for Specific License.

N.21a. Words were added to require an application for a license to be in English.

N.21b. The word "expiration" was changed to "termination" to conform to regulatory practice. This change also has been made in other appropriate sections of the rule.

Sec. N.22 - Requirements for the Issuance of Specific Licenses.

A footnote has been added for clarity.

N.22a.v. The legally correct term has been used by changing "surety" to "assurance".

N.22a.vii. Because the land owner is or can be ultimately held liable for contamination existing on the property, this provision has been added. It may reduce potential liability for the licensing Agency.

N.22c. The words "consumer or retail" have been added to clarify the type of manufacturing and distribution operations that require a specific license rather than a general license. Defining "consumer or retail product" also indicated the need to delete "material or" where it was used with "product" for clarity.

N.22c.iii.(4) The word "radionuclides" replaced "TENORM" to clarify that solubility analysis will be for each form of each element.

N.22c.iii.(6) The word "material" has been replaced with "TENORM", because that is the material we are concerned with and want to keep isolated.

N.22c.iii.(14) The term "processing" seemed clearer than "production" before "production lots."

N.23. The words "consumer and retail" were added as adjectives for "products" for clarity to match new defined terms.

Sec. N.24 - Table of Doses.

N.24 The word "Organ" has been deleted because the doses are not all organ doses.

Sec.'s N.25 through N.40 These generic sections of licensing are found in Part C and basically applied to all kinds of licensees. An Agency may choose to reference appropriate sections of Part C rather than repeat them. The Agency should carefully review the recommended changes included in Part N before deciding to reference Part C provisions. The sections have been placed in Part N so that Part N can stand alone for most of the affected licensees.

N.26a.i., ii., iii. and iv. The word "specific" or "specifically" has been added for clarity.

N.26a.iv. N.5 has been added to the referenced sections to provide a comprehensive list of applicable sections.

N.26a.v. Editorial changes have been made for clarification and accuracy in reference to the definition of "entity".

N.26a.vi. and vii. These are updated requirements from N.32 (equivalent to NRC's License Termination Rulemaking).

N.26a.viii. The temporary jobsite provision from Part C has been modified to cover the lack of jurisdiction under the Atomic Energy Act of 1954, as amended.

Sec. N.27 - Expiration and Termination of Specific Licenses.

This section has been rewritten to more clearly indicate the distinction between expiration and termination of a license. It also more clearly indicates the licensees continuing responsibility for licensed material when a license has expired but has not been terminated by the Agency. Radiation monitoring reporting requirements are more clearly specified. Procedural requirements are more detailed for clarity.

Sec. N.31 - Modification and Revocation of Specific Licenses.

Minor editorial changes have been made for clarity.

Sec. N.32 - Record Keeping Requirements for Site Reclamation.

These are updated requirements from (equivalent to NRC's License Termination Rulemaking).

Sec. N.40 - Reciprocal Recognition of Specific Licenses.

The section has been revised to make it more user friendly and for clarity.

N.40b. This provision has been added to advise licensees who have been licensed under a less restrictive set of conditions that conditions or limitations can be imposed by the Agency with authority to grant the reciprocal recognition.

Sec. N.50 - Financial Surety Arrangements.

In the title and N.50a., the term "financial surety arrangements" has been revised to the technically correct term "financial assurance arrangements."

Matters for Future Consideration

1. TENORM Definition In letters dated April 2001 and May 3, 2002, the U.S. Environmental Protection Agency (EPA) recommended that the National Academy of Sciences (NAS) TENORM definition be adopted in Part N to address those circumstances where exposure risk to TENORM is increased without radionuclide concentration increasing. The NAS definition of TENORM is very broad, and could include trivial situations, such as plowing a field, or the use of granite in countertops. The SR-N Committee believes that the definition of TENORM proposed in this model rule will meet the needs of most States, as well as, address the major portions of the TENORM problems. The Committee agrees with EPA's comments that the definition will not address all situations, such as the potential TENORM problems associated with waste rock or drill cuttings. In those few situations, the individual state may wish to consider altering the model rule to address its specific TENORM problems. With the additional experience that the states will gain in the regulation of TENORM using the model rule and any additional TENORM studies that may be conducted, the definition of TENORM and EPA's comments should be reexamined during the next revision of Part N.
2. Release of Solid Materials (Clearance) and Conditional Release The NRC staff, as directed by the Commission, is currently proceeding with enhanced participatory rulemaking on the control of solid materials. The Conference of Radiation Control Program Directors, through a resolution, recommended that NRC move forward with the rulemaking process by developing national standards for the control of solid materials and that the technical bases developed by NRC include considerations of naturally-occurring and accelerator-produced

radioactive material and TENORM. The EPA and DOE are also currently working on developing standards for the release of solid materials. In addition to federal agencies, the National Council on Radiation Protection and Measurements (NCRP), is preparing a report with recommendations on alternatives for disposition and possible recycling of solid material. In this revision of Part N, the SR-N Committee only addressed the conditional release of metal for recycle of equipment contaminated with a maximum exposure level of 50 microrentgen per hour including background. However, with the additional information that should be forthcoming from these current studies by federal agencies and other organizations, the release of solid materials should be reexamined during the next revision of Part N.

3. Disposal of TENORM The EPA expressed concerns that the provisions in N.8a. addressing the disposal of TENORM were not adequate for the protection of groundwater. This concern was addressed by stating that SR-N believed that the 25 millirem per year all pathways criteria is protective of the environment with an adequate margin of safety. The SR-N committee believes that TENORM contamination of groundwater is very unlikely with the exception of uranium mining, rare earth metals extraction industries, or a few other metals mining and extraction industries where NORM is known to exist in significant concentrations (e.g., copper). These types of industries are currently subject to existing federal and state statues that address the protection of groundwater. However, this issue should be considered a matter for future consideration. EPA should identify for SR-N situations in which TENORM contamination of groundwater occurred that was not amenable to regulatory intervention under the existing environmental laws.
4. Table of Doses The Table of Doses and the dose terminology in N.22c.iii.(12) and N.23b. were revised to include the present terminology used in Part D and 10 CFR Part 20.
5. Concentration Limits Concentrations limits for other radionuclides should be developed for N.4 (Exemptions) and N.10b. (General License).
6. Regulatory Guidance A regulatory guide identifying the procedures for obtaining Agency approval as specified in N.10e.ii. for the transfer of material, equipment or real property not made in accordance with N.10e.i. should be developed.
7. Appendix A When NRC and the Agreement States adopt a dose based criteria for acceptable levels of surface contamination, Appendix A should be replaced using similar criteria. (e.g., ANSI/HPS N13.12-1999 *Surface and Volume Radioactivity Standards for Clearance*)
8. RSO Requirements Additional provisions to N.21 and N.22 should be considered to address RSO requirements and responsibilities consistent with anticipated changes to Part C.