

The Texas Natural Resource Conservation Commission (TNRCC or commission) proposes amendments to §336.2, Definitions; §336.305, Occupational Dose Limits for Adults; §336.307, Determination of External Dose from Airborne Radioactive Material, §336.310, Planned Special Exposures; §336.312, Dose to an Embryo/Fetus; §336.315, General Requirements for Surveys and Monitoring; §336.316, Conditions Requiring Individual Monitoring of External and Internal Occupational Dose; §336.319, Use of Process or Other Engineering Controls; §336.320, Use of Other Controls; §336.321, Use of Individual Respiratory Protection Equipment; §336.322, Further Restrictions on the Use of Respiratory Protection Equipment; §336.335, Reporting Requirements for Incidents; §336.341, General Recordkeeping Requirements for Licensees; §336.346, Records of Individual Monitoring Results; §336.358, Appendix A, Protection Factors for Respirators; §336.359, Appendix B, Annual Limits on Intake (ALI) and Derived Air Concentrations (DAC) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sanitary Sewerage; and §336.611, Public Notification and Public Participation. The commission is also proposing the repeal of Subchapter I, §336.801, Purpose and Scope; §336.802, Definitions; §336.803, Financial Assurance Requirements; §336.804, Financial Assurance Mechanisms; §336.805, Long-Term Care Requirements; §336.806, Wording of Financial Assurance Mechanisms; and §336.807, Appendix A. Wording of Financial Assurance Instruments.

BACKGROUND AND SUMMARY OF THE FACTUAL BASIS FOR THE PROPOSED RULES

Nearly all of the amendments to this chapter are derived from three United States Nuclear Regulatory Commission (NRC) rulemakings: 1.) Respiratory Protection and Controls to Restrict Internal Exposures, October 7, 1999 (64 FR 54543), and October 13, 1999 (64 FR 55524), effective February

4, 2000; 2.) Minor Corrections, Clarifying Changes, and a Minor Policy Change, July 23, 1998 (63 FR 39477), and August 26, 1998 (63 FR 45393), effective October 26, 1998; and, to a very limited extent, 3.) Resolution of Dual Regulation of Airborne Effluents of Radioactive Materials; Clean Air Act, December 10, 1996 (61 FR 65119), effective January 9, 1997, which is being revised to add a definition inadvertently omitted in an earlier rulemaking (in 1998). The commission must incorporate NRC rulemakings into its rules compatible with standards specified by the NRC in each rulemaking to preserve the status of Texas as an Agreement State authorized to administer a portion of the radiation control program in this state. NRC rules must be incorporated into the commission's rules within three years of their effective date.

The amendments from NRC's "Respiratory Protection and Controls to Restrict Internal Exposures" rulemaking make the regulations more consistent with the philosophy of controlling the sum of internal and external radiation exposure, reflect current guidance on respiratory protection from the American National Standards Institute (ANSI), are consistent with recently effective revisions to the Occupational Safety and Health Administration's (OSHA's) respiratory protection rule, and make requirements for radiological protection less prescriptive, while reducing unnecessary regulatory burden without reducing worker protection. The amendments provide greater assurance that worker doses will be maintained as low as is reasonably achievable and that recent technological advances in respiratory protection equipment and procedures are reflected in the regulations and clearly approved for use by licensees.

The amendments from NRC's "Minor Corrections, Clarifying Changes, and a Minor Policy Change" rulemaking make minor corrections and clarifying changes and are also intended to conform with the

NRC's revised radiation protection standards. In addition, the rulemaking includes a minor policy change that raises the criteria for placement of monitoring devices on minors from 0.05 rem to 0.1 rem in a year and on declared pregnant women from 0.05 rem to 0.1 rem during their pregnancies. The 0.1 rem deep dose equivalent monitoring criterion represents a quantity more consistent with the measurement sensitivity of personal dosimeters or individual monitoring devices. (Minor Corrections, Clarifying Changes, and a Minor Policy Change, July 23, 1998 (63 FR 39478)). The NRC determined that the current criteria of 0.05 rem, if received uniformly in a year or throughout the gestation period would result in an average monthly dose of less than 0.005 rem, and that the most routinely utilized monitoring devices cannot accurately measure doses below 0.01 rem, which is greater than the average monthly dose of 0.005 rem. These changes to the threshold for monitoring exposures to radiation and radioactive material do not change the total occupational dose limits for minors or declared pregnant women of 0.5 rem.

Lastly, the definition for "constraint (dose constraint)" from NRC's "Resolution of Dual Regulation of Airborne Effluents of Radioactive Materials; Clean Air Act" rulemaking was inadvertently omitted from a previous commission rulemaking (August 28, 1998 issue of the *Texas Register* (23 TexReg 8837)) and needs to be incorporated now to assure compatibility with the NRC regulations.

The commission also proposes in 30 Texas Administrative Code (TAC) Chapter 336, Radioactive Substance Rules, to update one cross-reference in Subchapter D and one in Subchapter G, and to repeal Subchapter I, which was made obsolete when its requirements were previously incorporated into 30 TAC Chapter 37, Subchapters S and T.

SECTION BY SECTION DISCUSSION

Subchapter A, General Provisions

All of the changes proposed in Subchapter A are derived from the federal rule changes.

Section 336.2, Definitions, is proposed to be amended to make it compatible with the latest version of Title 10 Code of Federal Regulations (CFR) §20.1003. New federal definitions are added for “Air-purifying respirator,” “Assigned protection factor (APF),” “Atmosphere-supplying respirator,” “Constraint (dose constraint),” “Demand respirator,” “Disposable respirator,” “Filtering facepiece (dust mask),” “Fit factor,” “Fit test,” “Helmet,” “Hood,” “Lens dose equivalent (LDE),” “Loose-fitting facepiece,” “Negative pressure respirator (tight fitting),” “Positive pressure respirator,” “Powered air-purifying respirator (PAPR),” “Pressure demand respirator,” “Qualitative fit test (QLFT),” “Quantitative fit test (QNFT),” “Self-contained breathing apparatus (SCBA),” “Supplied-air respirator (SAR) or airline respirator,” “Tight-fitting facepiece,” and “User seal check (fit check).”

Also, per the NRC rules, the commission proposes the amendment of the definitions of “Declared pregnant woman,” “High radiation area,” “Individual monitoring devices,” and “Very high radiation area,” and the deletion of the definition of “Eye dose equivalent.” The new definition of “Constraint (dose constraint)” is proposed to be added to make it clear that although a constraint is not the same as a limit, licensees are expected to develop radiation programs to ensure that doses from air emissions are below ten mrem per year. The definition of “Declared pregnant woman” is proposed to be revised to specify that the written declaration of pregnancy is to be given to the licensee rather than to the employer, unless the employer is also the licensee. This is necessary to ensure that the entity responsible for work assignments involving radiation exposure, the licensee, is aware of the declaration

of pregnancy to facilitate timely and appropriate protective action. The revision also specifies that the declaration, as well as associated dose restrictions, remain in effect until withdrawn in writing or until the woman is no longer pregnant. The determination that a declared pregnant woman is no longer pregnant should be based on a discussion between the declared pregnant woman and the licensee. The definitions of “High radiation area” and “Very high radiation area” are proposed to be revised to make it clear that these area designations exist solely to note radiation levels from sources external to an individual who may receive the dose. The existing definition of “Eye dose equivalent (EDE)” is proposed to be deleted and replaced by the new definition of “Lens dose equivalent (LDE)” to avoid confusion between the acronyms for dose to the lens of the eye (EDE) and effective dose equivalent (EDE). This should pose no procedural burden on licensees because the required NRC Forms 4 and 5 for records and reports were revised in August 1995 to reflect the new terminology, and these forms or their equivalents are required to be used by the existing rules.

Subchapter D, Standards for Protection Against Radiation

All of the changes proposed in Subchapter D are derived from the federal rule changes, except the cross-reference update in §336.359.

Section 336.305(a)(2)(A), Occupational Dose Limits for Adults, is proposed to be amended by replacing the words “an eye” with the words “a lens.” This change is proposed to be consistent with the previously proposed deletion of the definition of “Eye dose equivalent (EDE)” and its replacement by the new definition of “Lens dose equivalent (LDE)” in §336.2 to avoid confusion between the acronyms for dose to the lens of the eye (EDE) and effective dose equivalent (EDE). Section

336.305(c) is proposed to be amended by changing "shall" to "must" for better readability and changing "eye" to "lens" for consistency with the change to §336.305(a)(2)(A). These changes would also update this section to make it consistent with the latest version of 10 CFR §20.1201.

Section 336.307(a), Determination of External Dose from Airborne Radioactive Material, is proposed to be amended in the second line to replace “eye” with “lens” for the same reason given in the discussion of §336.305(a)(2)(A) and to update this section to be consistent with the latest version of 10 CFR §20.1203.

Section 336.310(1), Planned Special Exposures, is proposed to be amended by changing “higher exposure” to “dose estimated to result from the planned special exposure.” This amendment is intended to clarify what was intended by the words “higher exposure” used in the rule previously. The phrase applies to dose estimates performed prior to authorizing the planned special exposure (PSE). The new wording states that PSE’s are authorized only in exceptional situations when alternatives that might avoid the dose estimated to result from the PSE are unavailable or impractical. Improved clarification will avoid possible misinterpretation of a PSE criterion. This change would also make this section compatible with the latest version of 10 CFR §20.1206.

Section 336.312, Dose to an Embryo/Fetus, is proposed to be amended. The section title is proposed to be changed to “Dose Equivalent to an Embryo/Fetus” to make it clear that the dose limit specifically applies to the dose equivalent, which is the technically correct term to denote effect of dose to an organ. Subsection (c)(2) is proposed to be amended by adding the word “resulting” in front of the word

“from” for greater clarity. Subsection (d) is proposed to be amended by moving the phrase “by the time the woman declares pregnancy to the licensee” for greater clarity, by adding “equivalent” after the word “dose” in two places to use the technically correct expression “dose equivalent,” and by changing “has exceeded” to “is found to have exceeded” for greater clarity. These changes would also make this section compatible with the latest version of 10 CFR §20.1208.

Section 336.315, General Requirements for Surveys and Monitoring, is proposed to be amended to be consistent with the latest version of 10 CFR §20.1501. Subsection (a)(2)(A) is proposed to be amended by adding at the beginning the words “magnitude and extent of” in front of “radiation levels” to clarify the intended meaning that surveys should evaluate both the area covering the dose field as well as the amount of dose in that area; and subsection (a)(2)(C) is proposed to be amended by deleting the unnecessary words “that could be present.”

Section 336.316, Conditions Requiring Individual Monitoring of External and Internal Occupational Dose, is proposed to be amended to make it consistent with the latest version of 10 CFR §20.1502. In paragraph (1), the words “from licensed and unlicensed radiation sources under the control of the licensee” are added after “exposure to radiation” to improve clarity and to make it clear that, in determining whether or not monitoring is required, a licensee need not take into account sources of radiation not under its control. In paragraphs (1) and (2), the criteria for monitoring minors and declared pregnant women in subparagraphs (B) are separated into two subparagraphs, (B) and new (C), and amended to make them consistent with §336.312 and technically correct. The criteria for monitoring the deep dose equivalent are changed for minors and declared pregnant women from 0.05

rem to 0.1 rem. (Minor Corrections, Clarifying Changes, and a Minor Policy Change, July 23, 1998 (63 FR 39478)). The 0.1 rem in a year deep dose equivalent monitoring criterion is consistent with the public dose limit and is more consistent with the measurement sensitivity of individual monitoring devices. The NRC determined that the current criteria of 0.05 rem, if received uniformly in a year or throughout the gestation period would result in an average monthly dose of less than 0.005 rem, and that the most routinely utilized monitoring devices cannot accurately measure doses below 0.01 rem, which is greater than the average monthly dose of 0.005 rem. Changing the criteria for monitoring does not, in any way, change the dose limits for declared pregnant women, for the embryo/fetus, or for minors. This change constitutes a small licensee burden reduction while maintaining the current adequate level of protection of health and safety of minors and declared pregnant women.

Section 336.319, Use of Process or Other Engineering Controls, is proposed to be amended by adding “decontamination” to the list of examples of process or engineering controls that licensees should consider for controlling the concentration of radioactive material in air. The NRC and the commission intend that licensees consider decontamination, consistent with maintaining total effective dose as low as reasonably achievable, to reduce resuspension of radioactive material in the work places as a means of controlling internal dose instead of using respirators. This amendment would make this section compatible with the latest version of 10 CFR §20.1701.

Section 336.320, Use of Other Controls, is proposed to be amended to add a subsection (b) to the section. This new subsection is added to clarify that if a licensee performs an as low as reasonably achievable dose analysis to determine whether or not respirators should be used, the licensee may

consider safety factors other than radiological. A reduction in the total effective dose equivalent for a worker is not reasonably achievable if, in the licensee's judgment, an attendant increase in the worker's industrial health and safety risk would exceed the benefit obtained by the reduction in the radiation risk. The NRC's Regulatory Guide 8.15, "Acceptable Programs for Respiratory Protection," and NUREG-0041, "Manual of Respiratory Protection Against Airborne Radioactive Material" address how factors such as heat, discomfort, reduced vision, etc., associated with respirator use, might reduce efficiency or increase stress thereby increasing health risk. The NRC and the commission expect that licensees will exercise judgment in determining how non-radiological factors apply to selecting an appropriate level of respiratory protection. This new subsection would make this section compatible with the latest version of 10 CFR §20.1702.

Section 336.321, Use of Individual Respiratory Protection Equipment, is proposed to be amended to make it consistent with the latest version of 10 CFR §20.1703 and §20.1705. This section states the requirements for licensees who use respiratory protection equipment to limit intakes of radioactive material. The use of a respirator is, by definition, intended to limit intake of airborne radioactive materials, unless the device is clearly and exclusively used for protection against non-radiological airborne hazards. Whether or not credit is taken for the device in estimating doses, use of the respiratory protection device to limit intake of radioactive material and associated physiological stresses to the user activates the requirements of §336.321. Thus this section defines the minimum respiratory protection program expected of any licensee who assigns or permits the use of respirators to limit intake.

Section 336.321(a) is proposed to be amended to change “licensee uses respiratory protection equipment” to “licensee assigns or permits the use of respiratory equipment” to make it clear when this sections applies. This subsection is also proposed to be amended to delete the reference to §336.320 because this language has been misinterpreted at times to mean that an approved respiratory protection program is not needed if respirators are used when concentrations of radioactive material in the air are already below values that define an airborne radioactivity area. The new language makes it clear that, if a licensee uses respiratory protection equipment to limit intakes, the minimum requirements of this section are applicable.

In §336.321(a)(1), the language is proposed to be amended to add the acronym “NIOSH” and to delete “and the Mine Safety and Health Administration (NIOSH/MSHA)” so that licensees are permitted to use only respirators certified by the National Institute for Occupational Safety and Health.

Section 336.321(a)(2) is proposed to be amended to delete “NIOSH/MSHA and has not had certification extended by NIOSH/MSHA” because all existing extensions have expired and no new extensions will be granted except for classes of respirators certified under 42 CFR Part 84 and to be consistent with the previous deletion of the Mine Safety and Health Administration as a respirator certifier. Also, further clarification of the language is proposed, including deletion of “including a demonstration by testing, or a demonstration on the basis of reliable test information, that the material and performance characteristics of the equipment are capable of providing the proposed degree of protection under anticipated conditions of use” and addition of “The application must include evidence that the material and performance characteristics of the equipment are capable of providing the

proposed degree of protection under anticipated conditions of use. This must be demonstrated either by licensee testing or on the basis of reliable test information.”

In §336.321(a)(3)(A) - (E), minor editing is proposed. Subparagraph (D) is proposed to be reworded to improve clarity, reorder priorities, and bring together in one subparagraph all of the elements required in written procedures. Subparagraph (E) is proposed to be revised to clarify that the worker’s medical evaluation for using non-face sealing respirators occurs before the first field use, not before first fitting (as required for tight fitting respirators) because fit testing is not needed for these types.

Section 336.321(a)(3)(F) is proposed to be added to require fit testing before first field use of tight-fitting, face sealing respirators and periodically after the first use. This new language clarifies when and how often fit testing is required. The NRC and the commission require that the licensee specify a frequency of retest in the procedures, that may not exceed one year. The new language also specifies existing NRC staff guidance and American National Standards Institute (ANSI) recommendations regarding the test “fit factors” that must be achieved to use the assigned protection factors (APFs). Specifically, fit testing with “fit factors” greater than or equal to ten times the APF is required for tight fitting, negative pressure devices. A fit factor greater than or equal to 500 is required for all tight fitting face pieces used with positive pressure, continuous flow, and pressure-demand devices. ANSI recommended a fit factor of 100 for these devices, but OSHA selected 500 to provide an additional safety margin. The NRC agrees with the OSHA position and, in the interest of consistency, this fit factor is specified as 500. This provision is intended to maintain a sufficient margin of safety to accommodate the greater difficulty in maintaining a good “fit” under field and work conditions as

compared to fit test environments. It is important to note that all tight fitting facepieces are to be fit tested in the negative pressure mode regardless of the mode in which they will be used.

Section 336.321(a)(4) is proposed to be deleted because it is not needed. All of the elements that were required to be in the policy statement are already found in Subchapter D and in the requirement for licensees to have and implement written procedures in §336.321(3)(D).

Newly renumbered §336.321(a)(5) is proposed to be clarified and expanded to emphasize the existing requirements that provisions be made for vision correction, adequate communications, and low-temperature work environments. A licensee is required to account for the effects of adverse environmental conditions on the equipment and the wearer. The NRC considers the inability of the respirator wearer to read postings, to operate equipment and/or instrumentation, and to properly identify hazards to be an unacceptable degradation of personnel safety. Also, a requirement for licensees to consider low-temperature work environments when selecting respiratory protection devices is added. The NRC believes that this requirement is needed because the moisture from exhaled air when temperatures are below freezing could cause the exhalation valve on negative pressure respirators to freeze in the open position. The open valve would provide a pathway for unfiltered air into the respirator inlet covering without the user being aware of the malfunction. Lens fogging that reduces vision in a full facepiece respirator is another problem that can be caused by low temperature. The reference to adequate skin protection has been removed. The NRC does not consider skin protection to be an appropriate reason for the use of respirators (with the exception of air supplied suits). Limitation of skin dose is currently dealt with elsewhere in the regulations (in §336.305). It may be inconsistent

with maintaining the dose as low as reasonably achievable to use tight fitting respirators solely to prevent facial contamination. Other protective measures such as the use of faceshields instead of respirators or decontamination should be considered.

Section 336.321(b) is proposed to be amended by deleting existing obsolete language in subsection (b)(1), by moving the language in subsection (b)(2) to new subsection (f), and by adding a new requirement for standby rescue persons. This new language requires standby rescue persons to be present whenever one-piece atmosphere-supplying suits, or any other combination of supplied air respirator device and protective equipment is used that is difficult for the wearer to take off without assistance. Standby rescue persons would also need to be in continuous communication with the workers, be equipped with appropriate protective clothing and devices and be immediately available to provide needed assistance if the air supply fails. Without continuous air supply, unconsciousness can occur within seconds to minutes.

Section 336.321(c) is proposed to be amended by deleting existing obsolete language and adding new language. The new language specifies the minimum quality of supplied breathing air, as defined by the Compressed Gas Association (CGA) in their publication G-7.1, "Commodity Specification for Air," 1997, that must be provided whenever atmosphere-supplying respirators are used. This change, which recognizes the CGA recommendations for air quality, was initiated by NIOSH and endorsed by ANSI. The quantity of air supplied, as a function of air pressure or flow rate, would be specified in the NIOSH approval certificate for each particular device and is not addressed in the rule.

Section 336.321(d) is proposed to be amended by deleting existing obsolete language and adding new language. The new language prohibits the use of respirators whenever any objects, materials, or substances such as facial hair, or any other conditions interfere with the seal of the respirator. The intent of this provision is to prevent the presence of facial hair, cosmetics, spectacle earpieces, surgeon's caps, and other things from interfering with the respirator seal, exhalation valves, and/or proper operation of the respirator.

New §336.321(e) is proposed to provide the provisions for changing intake estimates if later, more accurate measurements show that intake was greater or less than initially estimated. Protection factors for use in these calculations are specified in §336.358 (relating to Appendix A. Assigned Protection Factors for Respirators).

New §336.321(f) is proposed to contain language moved from deleted §336.321(b)(2) with slight modification, such as changing "commission" to "executive director." This proposed amendment provides compatibility with NRC regulations in 10 CFR §20.1705 in that the authorization for a licensee to assign respiratory protection factors in excess of those specified in §336.358 does not require an amendment of the license. The proposed amendment clarifies that the authorization may be approved by the executive director. The licensee may file with the chief clerk a motion to overturn, under §50.139(b) - (g) of this title (relating to Motion to Overturn Executive Director's Decision), of the executive director's decision on an application for authorization to use higher assigned protection factors.

Section 336.322(1), Further Restrictions on the Use of Respiratory Protection Equipment, is proposed to be amended to clarify that the commission will use “keeping doses as low as reasonably achievable” considerations in any additional restrictions imposed by the commission on the use of respiratory protection equipment for the purpose of limiting exposures of individuals to airborne radioactive materials. This amendment will also make this section consistent with the latest version of 10 CFR §20.1704.

Section 336.335, Reporting Requirements for Incidents, is proposed to be amended to make it consistent with the latest version of 10 CFR §20.2202. Subsections (a)(1)(B) and (b)(1)(B) are proposed to be amended by changing “eye dose equivalent” to “lens dose equivalent” to be consistent with previous similar changes.

Section 336.341, General Record keeping Requirements for Licensees, is proposed to be amended to make it consistent with the latest version of 10 CFR §20.2101. A new subsection (b) is added to permit licensees to add the new International System of Units (SI) units to the old (special) units of dose on records required by this chapter. Each of the recorded dose quantities is to be recorded in the appropriate special unit and, if so desired, followed by the appropriate SI unit in parentheses. Also, in newly designated subsection (d), “eye dose equivalent” is proposed to be replaced by “lens dose equivalent” to be consistent with previous similar changes. Subsequent subsections are renumbered to account for the addition of the new subsection and in new subsection (c) the SI acronym is now used rather than first defining the SI acronym here.

Section 336.346, Records of Individual Monitoring Results, is proposed to be amended to make it consistent with the latest version of 10 CFR §20.2106. In subsection (a)(1), “eye dose equivalent” is changed to “lens dose equivalent” to be consistent with previous similar changes. Also, in subsection (a)(2) and (3), the words “or body burden” are deleted because this expression is now obsolete. Subsection (a)(4) is proposed to be amended by adding a reference to §336.308(a), that requires licensees to take measurements of: 1.) concentrations of radioactive materials in air in work areas; or 2.) quantities of radionuclides in the body; or 3.) quantities of radionuclides excreted from the body; or 4.) combinations of these measurements to determine internal dose. This, in effect, uses recorded concentrations of radioactive material in the air, quantities of radioactive material determined to be in the body or excreta, or any combination of these that would be needed, for assessing the committed effective dose equivalent (CEDE). The NRC believes that this information is necessary to support the recorded results of the licensee’s calculation of CEDE. Adding this reference would not impose any additional record keeping burden on licensees because they are required to obtain this information to calculate CEDE under §336.308. Section 336.316 is also proposed to be added as a reference to indicate when assessment of committed effective dose is required.

Section 336.358, Appendix A, Protection Factors for Respirators, is proposed to be amended to make it consistent with the latest version of 10 CFR Part 20, Appendix A. The title is proposed to be amended to add “Assigned” before “Protection Factors.” A new version of the figure contained in §336.358, Appendix A, which has been modified extensively, is then proposed to be substituted for the old version. In the new figure, new devices are recognized, assigned protection factors are revised to be consistent with current ANSI guidance and technical knowledge, and the footnotes to Appendix A are

moved elsewhere in the rule, deleted, revised, or adjusted so that only those necessary to explain the table remain.

Section 336.359, Appendix B. Annual Limits on Intake (ALI) and Derived Air Concentrations (DAC) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sanitary Sewerage, is proposed to be amended. In the section title, a period is added after “Appendix B” for punctuation consistency throughout the chapter. Subsection (d) is proposed to be amended to update the cross-reference to §336.333 to §336.215 because the requirements in §336.333 were moved to §336.215 in a previous rulemaking.

Subchapter G, Decommissioning Standards

Section 336.611, Public Notification and Public Participation, is proposed to be amended to update the reference to §39.313 to §39.713 because §39.313 was repealed in a previous rulemaking and its requirements moved to §39.713.

Subchapter I, Financial Assurance

Subchapter I is proposed to be repealed because its requirements were moved to Chapter 37, Subchapters S and T in a previous rulemaking.

FISCAL NOTE: COSTS TO STATE AND LOCAL GOVERNMENT

John Davis, Technical Specialist with Strategic Planning and Appropriations, has determined that for the first five-year period the proposed amendments are in effect there will be no significant fiscal

implications to units of state or local government as a result of implementation of the proposed amendments.

The proposal would incorporate rule updates adopted by the NRC between 1996 and 2000. The proposed amendments are intended to clarify existing rules, implement changes in federal respiratory protection requirements, update cross references, repeal the requirement for reports from owners and operators of affected facilities to the executive director regarding initial use of respiratory equipment, and allow more flexibility for owners and operators when choosing the type of respiratory equipment to be used at a site.

Texas is an Agreement State authorized by the NRC to administer a radiation control program under the Atomic Energy Act (AEA). To continue to administer the state's radiation control program, these NRC requirements must be incorporated in rule by the commission. Provisions in this rulemaking are procedural and administrative in nature and only affect active radioactive material burial sites.

There are four sites with radioactive materials buried on them where units of state or local government may be wholly or partially responsible for their cleanup. However, these sites are not operational disposal facilities. The commission estimates there will be no fiscal impacts to units of state or local government because the proposed amendments only apply to operational disposal facilities.

PUBLIC BENEFIT AND COSTS

Mr. Davis also has determined that for each year of the first five years the proposed rulemaking is in effect, the public benefit anticipated from enforcement of and compliance with the proposed rulemaking will be the clarification of radioactive substance rules, which is intended to facilitate increased compliance and protection of the environment and human health.

The proposed amendments would incorporate rule updates adopted by the NRC between 1996 and 2000. The proposed rulemaking is intended to clarify existing rules, implement changes in federal respiratory protection requirements, update cross-references, repeal the requirement for reports from owners and operators of affected facilities to the executive director regarding initial use of respiratory equipment, and allow more flexibility for owners and operators when choosing the type of respiratory equipment to be used at a site.

Provisions in this rulemaking are procedural and administrative in nature and will not result in significant fiscal implications for the one active privately owned and operated radioactive material burial site that would be affected by the proposed amendments.

SMALL BUSINESS AND MICRO-BUSINESS ASSESSMENT

No adverse economic effects are anticipated to any small or micro-businesses as a result of implementing the proposed changes because there are no known small or micro-businesses that own or operate radioactive material burial sites affected by the proposed amendments. The commission has identified one industrial site affected by the proposed amendments that is not considered a small or micro-business.

The proposed amendments would incorporate rule updates adopted by the NRC between 1996 and 2000. The proposed rulemaking is intended to clarify existing rules, implement changes in federal respiratory protection requirements, update cross references, repeal the requirement for reports from owners and operators of affected facilities to the executive director regarding initial use of respiratory equipment, and allow more flexibility for owners and operators when choosing the type of respiratory equipment to be used at a site.

DRAFT REGULATORY IMPACT ANALYSIS DETERMINATION

The commission reviewed the proposed rulemaking in light of the regulatory analysis requirements of Texas Government Code, §2001.0225, and determined that the rulemaking is not subject to §2001.0225 because it does not meet the definition of a “major environmental rule” as defined in the act. “Major environmental rule” means a rule, the specific intent of which, is to protect the environment or reduce risks to human health from environmental exposure and that may adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state. The proposed amendments to Chapter 336 are not anticipated to adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state because there are no significant requirements added to radioactive material disposal facilities. The proposed rulemaking maintains consistency with NRC requirements and provides clarity to existing rules by updating cross-references and deleting obsolete financial assurance provisions.

Furthermore, the proposed rulemaking does not meet any of the four applicability requirements listed in §2001.0225(a). Section 2001.0225 only applies to a major environmental rule, the result of which is to: 1.) exceed a standard set by federal law, unless the rule is specifically required by state law; 2.) exceed an express requirement of state law, unless the rule is specifically required by federal law; 3.) exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement a state and federal program; or 4.) adopt a rule solely under the general powers of the agency instead of under a specific state law. The proposed rulemaking does not exceed a standard set by federal law, an express requirement of state law, a requirement of a delegation agreement, nor adopt a rule solely under the general powers of the agency.

The Texas Health and Safety Code (THSC), Texas Radiation Control Act (TRCA), Chapter 401, authorizes the commission to regulate the disposal of most radioactive material in Texas. Sections 401.051, 401.103, and 401.104 authorize the commission to adopt rules for the control of sources of radiation and the licensing of the disposal of radioactive materials. In addition, the state of Texas is an “Agreement State,” authorized by the NRC to administer a radiation control program under the AEA. The NRC requirements must be implemented by the commission to preserve the status as an Agreement State. The commission believes that the proposed rules do not exceed the standards set by federal law. The proposed rulemaking clarifies existing rules, implements changes in federal respiratory protection requirements and modifies threshold monitoring requirements for minors and declared pregnant women.

The commission believes that the proposed rules do not exceed an express requirement of state law.

The THSC, TRCA, Chapter 401, establishes general requirements for the licensing and disposal of

radioactive materials. However, the TRCA does not provide specific requirements or technical limitations for respiratory protection or threshold monitoring requirements.

The commission has also determined that the proposed rules do not exceed a requirement of a delegation agreement or contract between the state and an agency of the federal government. The State of Texas has been designated as an Agreement State by the Nuclear Regulatory Commission under the authority of the AEA. The AEA requires that the NRC find that the state radiation control program is compatible with the NRC's requirements for the regulation of radioactive materials and is adequate to protect health and safety. The commission believes that the proposed rules do not exceed the NRC's requirements nor exceed the requirements for retaining status as an "Agreement State."

The commission also believes that these rules are proposed under specific authority of the THSC, TRCA, Chapter 401. Sections 401.051, 401.103, and 401.104 authorize the commission to adopt rules for the control of sources of radiation and the licensing of the disposal of radioactive materials.

The commission invites public comment of the draft regulatory impact analysis determination.

TAKINGS IMPACT ASSESSMENT

The commission evaluated these proposed rules and performed a preliminary assessment of whether Texas Government Code, Chapter 2007 is applicable. The commission's preliminary assessment indicates that Texas Government code, Chapter 2007 does not apply to these proposed rules because this is an action that is reasonably taken to fulfill an obligation mandated by federal law, which is

exempt under Texas Government Code, §2007.003(b)(4). The State of Texas has received authorization as an Agreement State from the NRC to administer a radiation control program under the AEA. The AEA requires the NRC to find that the state's program is compatible with NRC requirements for the regulation of radioactive materials and is adequate to protect health and safety. The proposed rulemaking will provide consistency with federal regulations.

Nevertheless, the commission further evaluated these proposed rules and performed a preliminary assessment of whether these proposed rules constitute a taking under Texas Government Code, Chapter 2007. The following is a summary of that evaluation and preliminary assessment. The primary purpose of these proposed rules is to implement changes to federal requirements for the regulation and licensing of radioactive material. The proposed rules would substantially advance this purpose by clarifying existing rules, implementing new federal requirements for respiratory protection and modifying threshold monitoring requirements for minors and declared pregnant women.

Promulgation and enforcement of these proposed rules would be neither a statutory nor a constitutional taking of private real property. The subject proposed regulations do not affect a landowner's rights in private real property because this rulemaking does not burden (constitutionally), nor restrict or limit, the owner's right to property and reduce its value by 25% or more beyond which would otherwise exist in the absence of the regulations. The proposed rules primarily implement clarifications to existing rules. In addition, the proposed rules reduce burdens on licensees for respiratory protection and threshold monitoring requirements.

COASTAL MANAGEMENT PROGRAM CONSISTENCY REVIEW

The commission has reviewed the proposed rulemaking and found that the rules are neither identified in Coastal Coordination Act Implementation Rules, 31 TAC §505.11, relating to Actions and Rules Subject to the Texas Coastal Management Program (CMP), nor will they affect any action/authorization identified in Coastal Coordination Act Implementation Rules, 31 TAC §505.11. Therefore, the proposal is not subject to the CMP.

SUBMITTAL OF COMMENTS

Comments may be submitted to Patricia Durón, Office of Environmental Policy, Analysis, and Assessment, MC 205, P.O. Box 13087, Austin, Texas 78711-3087 or faxed to (512) 239-4808. All comments should reference Rule Log Number 1999-057-336-WS. Comments must be received by 5:00 p.m., July 9, 2001. For further information or questions concerning this proposal, please contact Auburn Mitchell, Office of Environmental Policy, Analysis, and Assessment, (512) 239-1873.

STATUTORY AUTHORITY

The amendment is proposed under the THSC, TRCA, Chapter 401; THSC, §401.011, which provides the commission the authority to regulate and license the disposal of radioactive substances; §401.051, which authorizes the commission to adopt rules and guidelines relating to control of sources of radiation; §401.103, which authorizes the commission to adopt rules and guidelines that provide for licensing and registration for the control of sources of radiation; §401.104, which requires the commission to provide rules for licensing for the disposal of radioactive material; §401.201, which provides authority to the commission to regulate the disposal of low-level radioactive waste; and

§401.412, which provides authority to the commission to regulate licenses for the disposal of radioactive substances. The proposed amendment is also authorized by the TWC, §5.103, which provides the commission with the authority to adopt rules necessary to carry out its powers and duties under the TWC and other laws of the state.

The amendment implements THSC, Chapter 401, relating to Radioactive Materials and Other Sources of Radiation, including §401.011, relating to Radiation Control Agency; §401.051, relating to Adoption of Rules and Guidelines; §401.057, relating to Records; §401.059, relating to Program Development; §401.103, relating to Rules and Guidelines for Licensing and Registration; §401.104, relating to Licensing and Registration Rules; §401.151, relating to Compatibility with Federal Standards; §401.201, relating to Regulation of Low-Level Radioactive Waste Disposal; and §401.412, relating to Commission Licensing Authority.

SUBCHAPTER A: GENERAL PROVISIONS

§336.2

§336.2. Definitions.

The following words and terms, when used in this chapter, shall have the following meanings, or as described in Chapter 3 of this title (relating to Definitions), unless the context clearly indicates otherwise. Additional definitions used only in a certain subchapter will be found in that subchapter.

(1) - (7) (No change.)

(8) Air-purifying respirator - A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

(9) [(8)] Annual limit on intake (ALI) - The derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by the "reference man" that would result in a committed effective dose equivalent of 5 rems (0.05 sievert) or a committed dose equivalent of 50 rems (0.5 sievert) to any individual organ or tissue. ALI values for intake by ingestion and by inhalation of selected radionuclides are given in Table I, Columns 1 and 2, of §336.359, Appendix B, of this title.

(10) [(9)] **As low as is reasonably achievable (ALARA)** - Making every reasonable effort to maintain exposures to radiation as far below the dose limits in this chapter as is practical, consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of ionizing radiation and licensed radioactive materials in the public interest.

(11) Assigned protection factor (APF) - The expected workplace level of respiratory protection that would be provided by a properly functioning respirator or a class of respirators to properly fitted and trained users. Operationally, the inhaled concentration can be estimated by dividing the ambient airborne concentration by the APF.

(12) Atmosphere-supplying respirator - A respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

(13) [(10)] **Background radiation** - Radiation from cosmic sources; non-technologically enhanced naturally-occurring radioactive material, including radon (except as a decay product of source or special nuclear material) and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the control of the licensee. "Background radiation" does not

include radiation from radioactive materials regulated by the commission, Texas Department of Health, NRC, or an Agreement State.

(14) [(11)] **Becquerel (Bq)** - See §336.4 of this title (relating to Units of Radioactivity).

(15) [(12)] **Bioassay** - The determination of kinds, quantities, or concentrations, and, in some cases, the locations of radioactive material in the human body, whether by direct measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed from the human body. For purposes of the rules in this chapter, "radiobioassay" is an equivalent term.

(16) [(13)] **Byproduct material** -

(A) A radioactive material, other than special nuclear material, that is produced in or made radioactive by exposure to radiation incident to the process of producing or using special nuclear material; or

(B) The tailings or wastes produced by or resulting from the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes, and other tailings having similar radiological characteristics. Underground ore bodies depleted by these solution extraction processes do not constitute "byproduct material" within this definition.

(17) [(14)] **CFR** - Code of Federal Regulations.

(18) [(15)] **Class** - A classification scheme for inhaled material according to its rate of clearance from the pulmonary region of the lung. Materials are classified as D, W, or Y, which applies to a range of clearance half-times: for Class D (Days) of less than ten days, for Class W (Weeks) from 10 to 100 days, and for Class Y (Years) of greater than 100 days. For purposes of the rules in this chapter, "lung class" and "inhalation class" are equivalent terms.

(19) [(16)] **Collective dose** - The sum of the individual doses received in a given period of time by a specified population from exposure to a specified source of radiation.

(20) [(17)] **Committed dose equivalent ($H_{T,50}$) (CDE)** - The dose equivalent to organs or tissues of reference (T) that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

(21) [(18)] **Committed effective dose equivalent ($H_{E,50}$) (CEDE)** - The sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to each of these organs or tissues.

(22) **Constraint (dose constraint)** - A value above which specified licensee actions are required.

(23) [(19)] **Critical group** - The group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances.

(24) [(20)] **Curie (Ci)** - See §336.4 of this title.

(25) [(21)] **Declared pregnant woman** - A woman who has voluntarily informed the licensee [her employer], in writing, of her pregnancy and the estimated date of conception. The declaration remains in effect until the declared pregnant woman withdraws the declaration in writing or is no longer pregnant.

(26) [(22)] **Decommission** - To remove (as a facility) safely from service and reduce residual radioactivity to a level that permits:

(A) release of the property for unrestricted use and termination of license; or

(B) release of the property under restricted conditions and termination of the license.

(27) [(23)] **Deep-dose equivalent (H_d) (which applies to external whole-body exposure)** - The dose equivalent at a tissue depth of one centimeter (1,000 milligrams/square centimeter).

(28) Demand respirator - An atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

(29) [(24)] Depleted uranium - The source material uranium in which the isotope uranium-235 is less than 0.711%, by weight, of the total uranium present. Depleted uranium does not include special nuclear material.

(30) [(25)] Derived air concentration (DAC) - The concentration of a given radionuclide in air which, if breathed by the "reference man" for a working year of 2,000 hours under conditions of light work (inhalation rate of 1.2 cubic meters of air/hour), results in an intake of one ALI. DAC values are given in Table I, Column 3, of §336.359, Appendix B, of this title.

(31) [(26)] Derived air concentration-hour (DAC-hour) - The product of the concentration of radioactive material in air (expressed as a fraction or multiple of the derived air concentration for each radionuclide) and the time of exposure to that radionuclide, in hours. A licensee shall take 2,000 DAC-hours to represent one ALI, equivalent to a committed effective dose equivalent of five rems (0.05 sievert).

(32) [(27)] Disposal - With regard to low-level radioactive waste, the isolation or removal of low-level radioactive waste from mankind and mankind's environment without intent to retrieve that low-level radioactive waste later.

(33) **Disposable respirator** - A respirator for which maintenance is not intended and that is designed to be discarded after excessive breathing resistance, sorbent exhaustion, physical damage, or end-of-service-life renders it unsuitable for use. Examples of this type of respirator are a disposable half-mask respirator or a disposable escape-only self-contained breathing apparatus (SCBA).

(34) [(28)] **Distinguishable from background** - The detectable concentration of a radionuclide is statistically different from the background concentration of that radionuclide in the vicinity of the site or, in the case of structures, in similar materials using adequate measurement technology, survey, and statistical techniques.

(35) [(29)] **Dose** - A generic term that means absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, total organ dose equivalent, or total effective dose equivalent. For purposes of the rules in this chapter, "radiation dose" is an equivalent term.

(36) [(30)] **Dose equivalent (H_T)** - The product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest. The units of dose equivalent are the rem and sievert (Sv).

(37) [(31)] **Dose limits** - The permissible upper bounds of radiation doses established in accordance with the rules in this chapter. For purposes of the rules in this chapter, "limits" is an equivalent term.

(38) [(32)] **Dosimetry processor** - An individual or organization that processes and evaluates individual monitoring devices in order to determine the radiation dose delivered to the monitoring devices.

(39) [(33)] **Effective dose equivalent (H_E)** - The sum of the products of the dose equivalent to each organ or tissue (H_T) and the weighting factor (w_T) applicable to each of the body organs or tissues that are irradiated.

(40) [(34)] **Embryo/fetus** - The developing human organism from conception until the time of birth.

(41) [(35)] **Entrance or access point** - Any opening through which an individual or extremity of an individual could gain access to radiation areas or to licensed radioactive materials. This includes portals of sufficient size to permit human access, irrespective of their intended use.

(42) [(36)] **Exposure** - Being exposed to ionizing radiation or to radioactive material.

(43) [(37)] **Exposure rate** - The exposure per unit of time.

(44) [(38)] **External dose** - That portion of the dose equivalent received from any source of radiation outside the body.

(45) [(39)] **Extremity** - Hand, elbow, arm below the elbow, foot, knee, and leg below the knee. The arm above the elbow and the leg above the knee are considered part of the whole body.

[(40)] **Eye dose equivalent** - The external dose equivalent to the lens of the eye at a tissue depth of 0.3 centimeter (300 milligrams/square centimeter).]

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

(47) **Fit factor** - A quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

(48) **Fit test** - The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

(49) [(41)] **General license** - An authorization granted by an agency under its rules which is effective without the filing of an application with that agency or the issuance of a licensing document to the particular person.

(50) [(42)] **Generally applicable environmental radiation standards** - Standards issued by the EPA under the authority of the Atomic Energy Act of 1954, as amended through October 4, 1996, that impose limits on radiation exposures or levels, or concentrations or quantities of radioactive material, in the general environment outside the boundaries of locations under the control of persons possessing or using radioactive material.

(51) [(43)] **Gray (Gy)** - See §336.3 of this title (relating to Units of Radiation Exposure and Dose).

(52) **Helmet** - A rigid respiratory inlet covering that also provides head protection against impact and penetration.

(53) [(44)] **High radiation area** - An area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 0.1 rem (1 millisievert) in one hour at 30 centimeters from the radiation [any] source [of radiation] or 30 centimeters from any surface that the radiation penetrates.

(54) **Hood** - A respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

(55) [(45)] **Individual** - Any human being.

(56) [(46)] **Individual monitoring** - The assessment of:

(A) dose equivalent by the use of individual monitoring devices; or

(B) committed effective dose equivalent by bioassay or by determination of the time-weighted air concentrations to which an individual has been exposed, that is, DAC-hours; or

(C) dose equivalent by the use of survey data.

(57) [(47)] **Individual monitoring devices** - Devices designed to be worn by a single individual for the assessment of dose equivalent such as]. For purposes of the rules in this chapter, "individual monitoring equipment," "personnel dosimeter," and "dosimeter" are equivalent terms. Examples of individual monitoring devices are] film badges, thermoluminescence [thermoluminescent] dosimeters (TLDs), pocket ionization chambers, and personal ("lapel") air sampling devices.

(58) [(48)] **Inhalation class** - See "Class."

(59) [(49)] **Inspection** - An official examination and/or observation including, but not limited to, records, tests, surveys, and monitoring to determine compliance with the Texas Radiation Control Act (TRCA) and rules, orders, and license conditions of the commission.

(60) [(50)] **Internal dose** - That portion of the dose equivalent received from radioactive material taken into the body.

(61) [(51)] **Land disposal facility** - The land, buildings and structures, and equipment which are intended to be used for the disposal of low-level radioactive wastes into the subsurface of the land. For purposes of this chapter, a "geologic repository" as defined in 10 CFR §60.2 as amended through October 27, 1988 (53 FedReg 43421) (relating to Definitions - high-level radioactive wastes in geologic repositories) is not considered a "land disposal facility."

(62) **Lens dose equivalent (LDE)** - The external exposure of the lens of the eye and is taken as the dose equivalent at a tissue depth of 0.3 centimeter (300 mg/cm²).

(63) [(52)] **License** - See "Specific license."

(64) [(53)] **Licensed material** - Radioactive material received, possessed, used, processed, transferred, or disposed of under a license issued by the commission.

(65) [(54)] **Licensee** - Any person who holds a license issued by the commission in accordance with the TRCA and the rules in this chapter. For purposes of the rules in this chapter, "radioactive material licensee" is an equivalent term. Unless stated otherwise, "licensee" as used in the rules of this chapter means the holder of a "specific license."

(66) [(55)] **Licensing state** - Any state with rules equivalent to the Suggested State Regulations for Control of Radiation relating to, and having an effective program for, the regulatory control of naturally occurring or accelerator-produced radioactive material (NARM) and which has been designated as such by the Conference of Radiation Control Program Directors, Inc.

(67) **Loose-fitting facepiece** - A respiratory inlet covering that is designed to form a partial seal with the face.

(68) [(56)] **Lost or missing licensed radioactive material** - Licensed material whose location is unknown. This definition includes material that has been shipped but has not reached its planned destination and whose location cannot be readily traced in the transportation system.

(69) [(57)] **Low-level radioactive waste** -

(A) Except as provided by subparagraph (B) of this paragraph, low-level radioactive waste means radioactive material that:

(i) is discarded or unwanted and is not exempt by a Texas Department of Health rule adopted under the Texas Health and Safety Code, §401.106;

(ii) is waste, as that term is defined by 10 CFR §61.2; and

(iii) is subject to:

(I) concentration limits established under this chapter; and

(II) disposal criteria established under this chapter.

(B) Low-level radioactive waste does not include:

(i) high-level radioactive waste defined by 10 CFR §60.2;

(ii) spent nuclear fuel as defined by 10 CFR §72.3;

(iii) transuranic waste as defined by paragraph (128) [(107)] of this
section;

(iv) byproduct material as defined by paragraph (16)(B) [(13)(B)] of
this section;

(v) naturally occurring radioactive material (NORM) waste; or

(vi) oil and gas NORM waste.

(C) When used in this section, the references to 10 CFR sections mean those CFR sections as they existed on September 1, 1999, as required by Texas Health and Safety Code, §401.005.

(70) [(58)] **Lung class** - See "Class."

(71) [(59)] **Member of the public** - Any individual except when that individual is receiving an occupational dose.

(72) [(60)] **Minor** - An individual less than 18 years of age.

(73) [(61)] **Monitoring** - The measurement of radiation levels, radioactive material concentrations, surface area activities, or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses. For purposes of the rules in this chapter, "radiation monitoring" and "radiation protection monitoring" are equivalent terms.

(74) [(62)] **Naturally occurring or accelerator-produced radioactive material (NARM)** - Any naturally occurring or accelerator-produced radioactive material except source material or special nuclear material.

(75) [(63)] **Naturally occurring radioactive material (NORM) waste** - Solid, liquid, or gaseous material or combination of materials, excluding source material, special nuclear material, and byproduct material, that:

(A) in its natural physical state spontaneously emits radiation;

(B) is discarded or unwanted; and

(C) is not exempt under rules of the Texas Department of Health adopted under Texas Health and Safety Code, §401.106.

(76) [(64)] **Near-surface disposal facility** - A land disposal facility in which low-level radioactive waste is disposed of in or within the upper 30 meters of the earth's surface.

(77) **Negative pressure respirator (tight fitting)** - A respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

(78) [(65)] **Nonstochastic effect** - A health effect, the severity of which varies with the dose and for which a threshold is believed to exist. Radiation-induced cataract formation is an example of a nonstochastic effect. For purposes of the rules in this chapter, "deterministic effect" is an equivalent term.

(79) [(66)] **Occupational dose** - The dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation and/or to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee or other person. Occupational dose does not include dose received from background radiation, as a patient from medical practices, from voluntary participation in medical research programs, or as a member of the public.

(80) [(67)] **Oil and gas naturally occurring radioactive material (NORM) waste** - Naturally occurring radioactive material (NORM) waste that constitutes, is contained in, or has contaminated oil and gas waste as that term is defined in the Texas Natural Resources Code, §91.1011.

(81) [(68)] **On-site** - The same or geographically contiguous property that may be divided by public or private rights-of-way, provided the entrance and exit between the properties is at a cross-roads intersection, and access is by crossing, as opposed to going along, the right-of-way. Noncontiguous properties owned by the same person but connected by a right-of-way that the property owner controls and to which the public does not have access, is also considered on-site property.

(82) [(69)] **Personnel monitoring equipment** - See "Individual monitoring devices."

(83) [(70)] **Planned special exposure** - An infrequent exposure to radiation, separate from and in addition to the annual occupational dose limits.

(84) **Positive pressure respirator** - A respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

(85) **Powered air-purifying respirator (PAPR)** - An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

(86) **Pressure demand respirator** - A positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

(87) [(71)] **Principal activities** - Activities authorized by the license which are essential to achieving the purpose(s) for which the license is issued or amended. Storage during which no licensed material is accessed for use or disposal and activities incidental to decontamination or decommissioning are not principal activities.

(88) [(72)] **Public dose** - The dose received by a member of the public from exposure to radiation and/or radioactive material released by a licensee, or to any other source of radiation under the control of the licensee. It does not include occupational dose or doses received from background radiation, as a patient from medical practices, or from voluntary participation in medical research programs.

(89) **Qualitative fit test (QLFT)** - A pass/fail test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

(90) [(73)] **Quality factor (Q)** - The modifying factor listed in Table I or II of §336.3 of this title that is used to derive dose equivalent from absorbed dose.

(91) **Quantitative fit test (QNFT)** - An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

(92) [(74)] **Quarter (Calendar quarter)** - A period of time equal to one-fourth of the year observed by the licensee (approximately 13 consecutive weeks), providing that the beginning of the first quarter in a year coincides with the starting date of the year and that no day is omitted or duplicated in consecutive quarters.

(93) [(75)] **Rad** - See §336.3 of this title.

(94) [(76)] **Radiation** - Alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. For purposes of the rules in this chapter, "ionizing radiation" is an equivalent term. Radiation, as used in this chapter, does not include non-ionizing radiation, such as radio- or microwaves or visible, infrared, or ultraviolet light.

(95) [(77)] **Radiation and Perpetual Care Fund** - A fund established in the treasury of the State of Texas for the purposes set forth in the TRCA, §401.305.

(96) [(78)] **Radiation area** - Any area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.005 rem (0.05 millisievert) in one hour at 30 centimeters from the source of radiation or from any surface that the radiation penetrates.

(97) [(79)] **Radiation machine** - Any device capable of producing ionizing radiation except those devices with radioactive material as the only source of radiation.

(98) [(80)] **Radioactive material** - A naturally-occurring or artificially-produced solid, liquid, or gas that emits radiation spontaneously.

(99) [(81)] **Radioactive substance** - Includes byproduct material, radioactive material, low-level radioactive waste, source material, special nuclear material, source of radiation, and NORM waste, excluding oil and gas NORM waste.

(100) [(82)] **Radioactivity** - The disintegration of unstable atomic nuclei with the emission of radiation.

(101) [(83)] **Radiobioassay** - See "Bioassay."

(102) [(84)] **Reference man** - A hypothetical aggregation of human physical and physiological characteristics determined by international consensus. These characteristics shall be used by researchers and public health workers to standardize results of experiments and to relate biological insult to a common base. A description of "reference man" is contained in the International Commission on Radiological Protection report, ICRP Publication 23, "Report of the Task Group on Reference Man."

(103) [(85)] **Rem** - See §336.3 of this title.

(104) [(86)] **Residual radioactivity** - 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 10 CFR Part 20.

(105) [(87)] **Respiratory protection equipment** - An apparatus, such as a respirator, used to reduce an individual's intake of airborne radioactive materials. For purposes of the rules in this chapter, "respiratory protective device" is an equivalent term.

(106) [(88)] **Restricted area** - An area, access to which is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive

materials. Restricted area does not include areas used as residential quarters, but separate rooms in a residential building shall be set apart as a restricted area.

(107) [(89)] **Roentgen (R)** - See §336.3 of this title.

(108) [(90)] **Sanitary sewerage** - A system of public sewers for carrying off waste water and refuse, but excluding sewage treatment facilities, septic tanks, and leach fields owned or operated by the licensee.

(109) [(91)] **Sealed source** - Radioactive material that is permanently bonded or fixed in a capsule or matrix designed to prevent release and dispersal of the radioactive material under the most severe conditions that are likely to be encountered in normal use and handling.

(110) **Self-contained breathing apparatus (SCBA)** - An atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

(111) [(92)] **Shallow-dose equivalent (H_s) (which applies to the external exposure of the skin or an extremity)** - The dose equivalent at a tissue depth of 0.007 centimeter (seven milligrams/square centimeter) averaged over an area of one square centimeter.

(112) [(93)] **SI** - The abbreviation for the International System of Units.

(113) [(94)] **Sievert (Sv)** - See §336.3 of this title.

(114) [(95)] **Site boundary** - That line beyond which the land or property is not owned, leased, or otherwise controlled by the licensee.

(115) [(96)] **Source material** -

(A) Uranium or thorium, or any combination thereof, in any physical or chemical form; or

(B) ores that contain, by weight, 0.05% or more of uranium, thorium, or any combination thereof. Source material does not include special nuclear material.

(116) [(97)] **Special form radioactive material** - Radioactive material which is either a single solid piece or is contained in a sealed capsule that can be opened only by destroying the capsule and which has at least one dimension not less than five millimeters and which satisfies the test requirements of 10 CFR §71.75 [§71.75] as amended through September 28, 1995 (60 FedReg 50264) (Transportation of License Material).

(117) [(98)] **Special nuclear material** -

(A) Plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the NRC, under the provisions of the Atomic Energy Act of 1954, §51, as amended through November 2, 1994 (Public Law 103-437), determines to be special nuclear material, but does not include source material; or

(B) any material artificially enriched by any of the foregoing, but does not include source material.

(118) [(99)] **Special nuclear material in quantities not sufficient to form a critical mass** - Uranium enriched in the isotope 235 in quantities not exceeding 350 grams of contained uranium-235; uranium-233 in quantities not exceeding 200 grams; plutonium in quantities not exceeding 200 grams; or any combination of these in accordance with the following formula: For each kind of special nuclear material, determine the ratio between the quantity of that special nuclear material and the quantity specified above for the same kind of special nuclear material. The sum of such ratios for all of the kinds of special nuclear material in combination shall not exceed 1. For example, the following quantities in combination would not exceed the limitation: (175 grams contained U-235/350 grams) + (50 grams U-233/200 grams) + (50 grams Pu/200 grams) = 1.

(119) [(100)] **Specific license** - A licensing document issued by an agency upon an application filed under its rules. For purposes of the rules in this chapter, "radioactive material license" is an equivalent term. Unless stated otherwise, "license" as used in this chapter means a "specific license."

(120) [(101)] **State** - The State of Texas.

(121) [(102)] **Stochastic effect** - A health effect that occurs randomly and for which the probability of the effect occurring, rather than its severity, is assumed to be a linear function of dose without threshold. Hereditary effects and cancer incidence are examples of stochastic effects. For purposes of the rules in this chapter, "probabilistic effect" is an equivalent term.

(122) **Supplied-air respirator (SAR) or airline respirator** - An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

(123) [(103)] **Survey** - An evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, and/or presence of radioactive materials or other sources of radiation. When appropriate, this evaluation includes, but is not limited to, physical examination of the location of radioactive material and measurements or calculations of levels of radiation or concentrations or quantities of radioactive material present.

(124) [(104)] **Termination** - As applied to a license, a release by the commission of the obligations and authorizations of the licensee under the terms of the license. It does not relieve a person of duties and responsibilities imposed by law.

(125) **Tight-fitting facepiece** - A respiratory inlet covering that forms a complete seal with the face.

(126) [(105)] **Total effective dose equivalent (TEDE)** - The sum of the deep-dose equivalent for external exposures and the committed effective dose equivalent for internal exposures.

(127) [(106)] **Total organ dose equivalent (TODE)** - The sum of the deep-dose equivalent and the committed dose equivalent to the organ receiving the highest dose as described in §336.346(a)(6) of this title (relating to Records of Individual Monitoring Results).

(128) [(107)] **Transuranic waste** - For the purposes of this chapter, wastes containing alpha emitting transuranic radionuclides with a half-life greater than five years at concentrations greater than 100 nanocuries/gram.

(129) [(108)] **Type A quantity (for packaging)** - A quantity of radioactive material, the aggregate radioactivity of which does not exceed A_1 for special form radioactive material or A_2 for normal form radioactive material, where A_1 and A_2 are given in or shall be determined by procedures in Appendix A to 10 CFR Part 71 as amended through September 28, 1995 (60 FedReg 50264) (Packaging and Transportation of Radioactive Material).

(130) [(109)] **Type B quantity (for packaging)** - A quantity of radioactive material greater than a Type A quantity.

(131) [(110)] **Unrefined and unprocessed ore** - Ore in its natural form before any processing, such as grinding, roasting, beneficiating, or refining.

(132) [(111)] **Unrestricted area** - Any area that is not a restricted area.

(133) **User seal check (fit check)** - An action conducted by the respirator user to determine if the respirator is properly seated to the face. Examples include negative pressure check, positive pressure check, irritant smoke check, or isoamyl acetate check.

(134) [(112)] **Very high radiation area** - An area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of 500 rads (five grays) in one hour at one meter from a source of radiation or one meter from any surface that the radiation penetrates. [(At very high doses received at high dose rates, units of absorbed dose (rad and gray) are appropriate, rather than units of dose equivalent (rem and sievert).)]

(135) [(113)] **Violation** - An infringement of any provision of the TRCA or of any rule, order, or license condition of the commission issued under the TRCA or this chapter.

(136) [(114)] **Week** - Seven consecutive days starting on Sunday.

(137) [(115)] **Weighting factor (w_T) for an organ or tissue (T)** - The proportion of the risk of stochastic effects resulting from irradiation of that organ or tissue to the total risk of stochastic effects when the whole body is irradiated uniformly. For calculating the effective dose equivalent, the values of w_T are:

Figure: 30 TAC §336.2(137)

[Figure 1: 30 TAC §336.2(115)]

Organ Dose Weighting Factors	
<u>Organ or Tissue</u>	<u>W_T</u>
Gonads	0.25
Breast	0.15
Red bone marrow	0.12
Lung	0.12
Thyroid	0.03
Bone surfaces	0.03
Remainder	0.30 ¹
<hr/>	
Whole body	1.00 ²

1. The value 0.30 results from 0.06 for each of five remainder organs, excluding the skin and the lens of the eye, that receive the highest doses.

2. For the purpose of weighting the external whole body dose (for adding it to the internal dose) a single weighting factor, $w_T = 1.0$, has been specified. The use of other weighting factors for external exposure will be approved on a case-by-case basis until such time as specific guidance is issued.

(138) [(116)] **Whole body** - For purposes of external exposure, head, trunk including male gonads, arms above the elbow, or legs above the knee.

(139) [(117)] **Worker** - An individual engaged in activities under a license issued by the commission and controlled by a licensee, but does not include the licensee.

(140) [(118)] **Working level (WL)** - Any combination of short-lived radon daughters in one liter of air that will result in the ultimate emission of 1.3×10^5 million electron volts (MeV) of

potential alpha particle energy. The short-lived radon daughters are: for radon-222: polonium-218, lead-214, bismuth-214, and polonium-214; and for radon-220: polonium-216, lead-212, bismuth-212, and polonium-212.

(141) [(119)] **Working level month (WLM)** - An exposure to one working level for 170 hours (2,000 working hours per year divided by 12 months per year is approximately equal to 170 hours per month).

(142) [(120)] **Year** - The period of time beginning in January used to determine compliance with the provisions of the rules in this chapter. The licensee shall change the starting date of the year used to determine compliance by the licensee provided that the change is made at the beginning of the year and that no day is omitted or duplicated in consecutive years.

SUBCHAPTER D: STANDARDS FOR PROTECTION AGAINST RADIATION

**§§336.305, 336.307, 336.310, 336.312, 336.315, 336.316, 336.319 - 336.322, 336.335, 336.341,
336.346, 336.358, 336.359**

STATUTORY AUTHORITY

The amendments are proposed under the THSC, TRCA, Chapter 401; THSC, §401.011, which provides the commission the authority to regulate and license the disposal of radioactive substances; §401.051, which authorizes the commission to adopt rules and guidelines relating to control of sources of radiation; §401.103, which authorizes the commission to adopt rules and guidelines that provide for licensing and registration for the control of sources of radiation; §401.104, which requires the commission to provide rules for licensing for the disposal of radioactive material; §401.201, which provides authority to the commission to regulate the disposal of low-level radioactive waste; and §401.412, which provides authority to the commission to regulate licenses for the disposal of radioactive substances. The proposed amendments are also authorized by the TWC, §5.103, which provides the commission with the authority to adopt rules necessary to carry out its powers and duties under the TWC and other laws of the state.

The amendments implement THSC, Chapter 401, relating to Radioactive Materials and Other Sources of Radiation, including §401.011, relating to Radiation Control Agency; §401.051, relating to Adoption of Rules and Guidelines; §401.057, relating to Records; §401.059, relating to Program Development; §401.103, relating to Rules and Guidelines for Licensing and Registration; §401.104, relating to Licensing and Registration Rules; §401.151, relating to Compatibility with Federal Standards;

§401.201, relating to Regulation of Low-Level Radioactive Waste Disposal; and §401.412, relating to Commission Licensing Authority.

§336.305. Occupational Dose Limits for Adults.

(a) The licensee shall control the occupational dose to individual adults, except for planned special exposures under §336.310 of this title (relating to Planned Special Exposures), to the following dose limits:

(1) (No change.)

(2) the annual limits to the lens of the eye, to the skin, and to the extremities which are:

(A) a lens [an eye] dose equivalent of 15 rems (0.15 sievert), and

(B) (No change.)

(b) (No change.)

(c) The assigned deep-dose equivalent and shallow-dose equivalent must [shall] be for the part of the body receiving the highest exposure. The deep-dose equivalent, lens [eye] dose equivalent, and shallow-dose equivalent may be assessed from surveys or other radiation measurements for the purpose

of demonstrating compliance with the occupational dose limits, if the individual monitoring device was not in the region of highest potential exposure or the results of individual monitoring are unavailable.

(d) - (f) (No change.)

§336.307. Determination of External Dose from Airborne Radioactive Material.

(a) Licensees shall, when determining the dose from airborne radioactive material, include the contribution to the deep-dose equivalent, lens [eye] dose equivalent, and shallow-dose equivalent from external exposure to the radioactive cloud. See notes 1 and 2 of §336.359, Appendix B, of this title (relating to Annual Limits on Intake (ALI) and Derived Air Concentrations (DAC) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sanitary Sewerage).

(b) (No change.)

§336.310. Planned Special Exposures.

A licensee may authorize an adult worker to receive doses in addition to and accounted for separately from the doses received under the limits specified in §336.305 of this title (relating to Occupational Dose Limits for Adults) provided that each of the following conditions is satisfied:

(1) The licensee authorizes a planned special exposure only in an exceptional situation when alternatives that might avoid the dose estimated to result from the planned special [higher] exposure are unavailable or impractical.

(2) - (7) (No change.)

§336.312. Dose Equivalent to an Embryo/Fetus.

(a) - (b) (No change.)

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

(1) (No change.)

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

(d) If [by the time the woman declares pregnancy to the licensee] the dose equivalent to the embryo/fetus is found to have [has] exceeded 0.5 rem (5 millisieverts) or is within 0.05 rem (0.5 millisievert) of this dose, by the time the woman declares the pregnancy to the licensee, the licensee shall be deemed to be in compliance with subsection (a) of this section if the additional dose equivalent to the embryo/fetus does not exceed 0.05 rem (0.5 millisievert) during the remainder of the pregnancy.

§336.315. General Requirements for Surveys and Monitoring.

(a) Each licensee shall make, or cause to be made, surveys that:

(1) (No change.)

(2) are reasonable under the circumstances to evaluate:

(A) the magnitude and extent of radiation levels;

(B) (No change.)

(C) the potential radiological hazards [that could be present].

(b) - (d) (No change.)

§336.316. Conditions Requiring Individual Monitoring of External and Internal Occupational Dose.

Each licensee shall monitor exposures to radiation and radioactive material at levels sufficient to demonstrate compliance with the occupational dose limits of this subchapter. As a minimum, the following monitoring is required:

(1) Each licensee shall monitor occupational exposure to radiation from licensed and unlicensed radiation sources under the control of the licensee and shall supply and require the use of individual monitoring devices by:

(A) (No change.)

(B) minors [and declared pregnant women] likely to receive, in one year [1 year] from sources external to the body, a deep dose equivalent in excess of 0.1 rem (one millisievert), a lens dose equivalent in excess of 0.15 rem(1.5 millisievert), [10% of any of the applicable limits in §336.311 of this title (relating to Occupational Dose Limits for Minors)] or a shallow dose equivalent to the skin or to the extremities in excess of 0.5 rem (five millisievert) [§336.312 of this title (relating to Dose to an Embryo/Fetus)]; [and]

(C) declared pregnant women likely to receive during the entire pregnancy, from radiation sources external to the body, a deep dose equivalent in excess of 0.1 rem (one millisievert); and

(D) [(C)] individuals entering a high or very high radiation area.

(2) Each licensee shall monitor (see §336.308 of this title (relating to Determination of Internal Exposure)) the occupational intake of radioactive material by and assess the committed effective dose equivalent to:

(A) (No change.)

(B) minors [and declared pregnant women] likely to receive, in one year [1 year], a committed effective dose equivalent in excess of 0.1 [0.05] rem (one [0.5] millisievert); and[.]

(C) declared pregnant women likely to receive, during the entire pregnancy, a committed effective dose equivalent in excess of 0.1 rem (one millisievert).

§336.319. Use of Process or Other Engineering Controls.

The licensee shall use, to the extent practical, process or other engineering controls (e.g., containment, decontamination, or ventilation) to control the concentrations of radioactive material in air.

§336.320. Use of Other Controls.

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

- (1) control of access;
- (2) limitation of exposure times;
- (3) use of respiratory protection equipment; or
- (4) other controls.

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

§336.321. Use of Individual Respiratory Protection Equipment.

(a) If the licensee assigns or permits the use of [uses] respiratory protection equipment to limit the intake of radioactive material [intakes under §336.320 of this title (relating to Use of Other Controls)]:

(1) The licensee shall use only respiratory protection equipment that is tested and certified [or had certification extended] by the National Institute for Occupational Safety and Health (NIOSH) [and the Mine Safety and Health Administration (NIOSH/MSHA)], except as provided in paragraph (2) of this subsection.

(2) If the licensee wishes to use equipment that has not been tested or certified by NIOSH [NIOSH/MSHA, or has not had certification extended by NIOSH/MSHA], or for which there is no schedule for testing or certification, the licensee shall submit an application for authorized use of this [that] equipment, except as provided in this section [including a demonstration by testing, or a demonstration on the basis of reliable test information, that the material and performance characteristics of the equipment are capable of providing the proposed degree of protection under anticipated conditions of use]. The application must include evidence that the material and performance characteristics of the equipment are capable of providing the proposed degree of protection under anticipated conditions of use. This must be demonstrated either by licensee testing or on the basis of reliable test information.

(3) The licensee shall implement and maintain a respiratory protection program that includes:

(A) air sampling sufficient to identify the potential hazard, permit proper equipment selection, and estimate doses [exposures];

(B) surveys and bioassays, as necessary [appropriate], to evaluate actual intakes;

(C) testing of respirators for operability (user seal check for face sealing devices and functional check for others) immediately before each use;

(D) written procedures regarding [selection, fitting, issuance, maintenance, and testing of respirators, including testing for operability immediately before each use; supervision and training of personnel; monitoring, including air sampling and bioassays; and record keeping; and] :

(i) monitoring, including air sampling and bioassays;

(ii) supervision and training of respirator users;

(iii) fit testing;

(iv) respirator selection;

(v) breathing air quality;

(vi) inventory and control;

(vii) storage, issuance, maintenance, repair, testing, and quality assurance of respiratory protection equipment;

(viii) recordkeeping; and

(ix) limitations on periods of respirator use and relief from respirator use;

(E) determination by a physician [before initial fitting of respirators, and at least every 12 months thereafter or periodically at a frequency determined by a physician,] that the individual user is medically fit to use [the] respiratory protection equipment before: [.]

(i) the initial fitting of a face sealing respirator;

(ii) the first field use of non-face sealing respirators; and

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

(F) fit testing, with fit factor greater than or equal to ten times the assigned protection factor for negative pressure devices, and a fit factor greater than or equal to 500 for any positive pressure, continuous flow, and pressure-demand devices, before the first field use of tight fitting, face-sealing respirators and periodically thereafter at a frequency not to exceed one year. Fit testing must be performed with the facepiece operating in the negative pressure mode.

[(4) The licensee shall issue a written policy statement on respirator usage covering:]

[(A) the use of process or other engineering controls, instead of respirators;]

[(B) the routine, nonroutine, and emergency use of respirators; and]

[(C) the length of periods of respirator use and relief from respirator use.]

(4) [(5)] The licensee shall advise each respirator user that the user may leave the area at any time for relief from respirator use in the event of equipment malfunction, physical or psychological distress, procedural or communication failure, significant deterioration of operating conditions, or any other conditions that might require this relief.

(5) [(6)] The licensee shall also consider limitations appropriate to the [use respiratory protection equipment within limitations for] type and mode of use [and shall provide proper visual, communication, and other special capabilities, such as adequate skin protection, when needed]. When selecting respiratory devices, the licensee shall provide for vision correction, adequate communication, low-temperature work environments, and the concurrent use of other safety or radiological protection equipment. The licensee shall use equipment in such a way as not to interfere with the proper operation of the respirator.

(b) Standby rescue persons are required whenever one-piece atmosphere-supplying suits, or any combination of supplied air respiratory protection device and personnel protective equipment are used from which an unaided individual would have difficulty extricating himself or herself. The

standby persons must be equipped with respiratory protection devices or other apparatus appropriate for the potential hazards. The standby rescue persons shall observe or otherwise maintain continuous communication with the workers (visual, voice, signal line, telephone, radio or other suitable means), and be immediately available to assist them in case of a failure of the air supply or for any other reason that requires relief from distress. A sufficient number of standby rescue persons must be immediately available to assist all users of this type of equipment and to provide effective emergency rescue if needed. [When estimating exposure of individuals to airborne radioactive materials, the licensee may make allowance for respiratory protection equipment used to limit intakes under §336.320 of this title, provided that the following conditions, in addition to those in subsection (a) of this section, are satisfied:]

[(1) The licensee selects respiratory protection equipment that provides a protection factor (see §336.358, Appendix A, of this title (relating to Protection Factors for Respirators)) greater than the multiple by which peak concentrations of airborne radioactive materials in the working area are expected to exceed the values specified in §336.359, Appendix B, Table I, Column 3, of this title (relating to Annual Limits on Intake (ALI) and Derived Air Concentrations (DAC) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sanitary Sewerage). However, if the selection of respiratory protection equipment with a protection factor greater than the multiple defined in the preceding sentence is inconsistent with the goal specified in §336.320 of this title of keeping the total effective dose equivalent as low as is reasonably achievable (ALARA), the licensee may select respiratory protection equipment with a lower protection factor only if such a selection would result in keeping the total effective dose equivalent ALARA. The concentration of radioactive

material in the air that is inhaled when respirators are worn may be initially estimated by dividing the average concentration in air, during each period of uninterrupted use, by the protection factor. If the exposure is later found to be greater than initially estimated, the corrected value shall be used; if the exposure is later found to be less than initially estimated, the corrected value may be used.]

[(2) The licensee shall obtain authorization from the commission by license amendment before assigning respiratory protection factors in excess of those specified in §336.358, Appendix A, of this title. The commission may authorize a licensee to use higher protection factors on receipt of an application that:]

[(A) describes the situation for which a need exists for higher protection factors; and]

[(B) demonstrates that the respiratory protection equipment provides these higher protection factors under the proposed conditions of use.]

(c) Atmosphere-supplying respirators must be supplied with respirable air of Grade D quality or better as defined by the Compressed Gas Association in publication G-7.1, "Commodity Specification for Air," 1997 and included in the regulations of the Occupational Safety and Health Administration (Title 29 Code of Federal Regulations §1910.134(i)(1)(ii)(A) - (E)). Grade D quality air criteria include: [In an emergency, the licensee shall use as emergency equipment only respiratory

protection equipment that has been specifically certified or had certification extended for emergency use by the NIOSH/MSHA.]

(1) oxygen content (v/v) of 19.5-23.5%;

(2) hydrocarbon (condensed) content of five milligrams per cubic meter of air or less;

(3) carbon monoxide (CO) content of ten parts per million (ppm) or less;

(4) carbon dioxide content of 1,000 ppm or less; and

(5) lack of noticeable odor.

(d) The licensee shall ensure that no objects, materials, or substances, such as facial hair, or any conditions that interfere with the face-facepiece seal or valve function, and that are under the control of the respirator wearer, are present between the skin of the wearer's face and the sealing surface of a tight-fitting respirator facepiece. [The licensee shall notify the executive director in writing at least 30 days before the date that respiratory protection equipment is first used under the provisions of either subsection (a) or (b) of this section.]

(e) In estimating the dose to individuals from intake of airborne radioactive materials, the concentration of radioactive material in the air that is inhaled when respirators are worn is initially

assumed to be the ambient concentration in air without respiratory protection, divided by the assigned protection factor specified in §336.358 of this title (relating to Appendix A. Assigned Protection Factors for Respirators). If the dose is later found to be greater than the estimated dose, the corrected value must be used. If the dose is later found to be less than the estimated dose, the corrected value may be used.

(f) The licensee shall obtain authorization from the executive director before using assigned protection factors in excess of those specified in §336.358 of this title (relating to Appendix A. Assigned Protection Factors for Respirators). The executive director may authorize a licensee to use higher assigned protection factors on receipt of an application that:

(1) describes the situation for which a need exists for higher protection factors; and

(2) demonstrates that the respiratory protection equipment provides these higher protection factors under the proposed conditions of use.

§336.322. Further Restrictions on the Use of Respiratory Protection Equipment.

The commission may impose restrictions in addition to those in §336.320 of this title (relating to Use of Other Controls), §336.321 of this title (relating to Use of Individual Respiratory Protection Equipment), and §336.358, Appendix A, of this title (relating to Protection Factors for Respirators) to:

(1) ensure that the respiratory protection program of the licensee is adequate to limit doses to [exposures of] individuals from intakes of [to] airborne radioactive materials consistent with maintaining the total effective dose equivalent as low as reasonably achievable; and

(2) (No change.)

§336.335. Reporting Requirements for Incidents.

(a) Immediate notification. Each licensee shall notify the executive director as soon as possible, but not later than four hours after the discovery of an event that prevents immediate protective actions necessary to avoid exposures to radiation or radioactive materials that could exceed regulatory limits or releases of radioactive materials that could exceed limits (e.g., events may include fires, explosions, toxic gas releases, etc.). Notwithstanding any other requirements for notification, each licensee shall immediately report to the executive director each event involving licensed radioactive material possessed by the licensee that may have caused or threatens to cause any of the following conditions:

(1) an individual to receive:

(A) (No change.)

(B) a lens [an eye] dose equivalent of 75 rems (0.75 sievert) or more; or

(C) (No change.)

(2) (No change.)

(b) Twenty-four hour notification. Each licensee shall, within 24 hours of discovery of the event, report to the executive director any event involving loss of control of licensed material possessed by the licensee that may have caused, or threatens to cause, any of the following conditions:

(1) an individual to receive, in a period of 24 hours:

(A) (No change.)

(B) a lens [an eye] dose equivalent exceeding 15 rems (0.15 sievert); or

(C) (No change.)

(2) - (6) (No change.)

(c) - (e) (No change.)

§336.341. General Recordkeeping Requirements for Licensees.

(a) (No change.)

(b) In the records required by this chapter, the licensee may record quantities in International System of Units (SI) units in parentheses following each of the units specified in subsection (a) of this section. However, all quantities must be recorded as stated in subsection (a) of this section.

(c) [(b)] Notwithstanding the requirements of subsection (a) of this section, information on shipment manifests for wastes received at a licensed land disposal facility, as required by §336.331(h) of this title (relating to Transfer of Radioactive Material), shall be recorded in SI [International System of Units (SI)] units (becquerel, gray, and sievert) or in SI and units as specified in subsection (a) of this section.

(d) [(c)] The licensee shall make a clear distinction among the quantities entered on the records required by this subchapter, such as total effective dose equivalent, shallow-dose equivalent, lens [eye] dose equivalent, deep-dose equivalent, and committed effective dose equivalent.

(e) [(d)] Each licensee shall maintain records showing the receipt, transfer, and disposal of all source material, byproduct material, or other licensed radioactive material. Each licensee shall also maintain any records and make any reports as may be required by the conditions of the license, by the rules in this chapter, or by orders of the commission. Copies of any records or reports required by the

license, rules, or orders shall be submitted to the executive director or commission on request. All records and reports required by the license, rules, or orders shall be complete and accurate.

(f) [(e)] The licensee shall retain each record that is required by the rules in this chapter or by license conditions for the period specified by the appropriate rule or license condition. If a retention period is not otherwise specified, each record shall be maintained until the commission terminates each pertinent license requiring the record.

(g) [(f)] If there is a conflict between the commission's rules, license condition, or other written approval or authorization from the executive director pertaining to the retention period for the same type of record, the longest retention period specified takes precedence.

(h) [(g)] The executive director may require the licensee to provide the commission with copies of all records prior to termination of the license.

§336.346. Records of Individual Monitoring Results.

(a) Record keeping requirement. Each licensee shall maintain records of doses received by all individuals for whom monitoring was required under §336.316 of this title (relating to Conditions Requiring Individual Monitoring of External and Internal Occupational Dose) and records of doses received during planned special exposures, accidents, and emergency conditions. Assessments of dose

equivalent and records made using units in effect before January 1, 1994, need not be changed. These records shall include, when applicable:

(1) the deep-dose equivalent to the whole body, lens [eye] dose equivalent, shallow-dose equivalent to the skin, and shallow-dose equivalent to the extremities;

(2) the estimated intake [or body burden] of radionuclides (see §336.306 of this title (relating to Compliance with Requirements for Summation of External and Internal Doses));

(3) the committed effective dose equivalent assigned to the intake [or body burden] of radionuclides;

(4) the specific information used to assess [calculate] the committed effective dose equivalent under §336.308(a) and (c) [§336.308(c)] of this title (relating to Determination of Internal Exposure), and when required by §336.316 of this title (relating to Conditions Requiring Individual Monitoring of External and Internal Occupational Dose);

(5) - (6) (No change.)

(b) - (e) (No change.)

§336.358. Appendix A. Assigned Protection Factors for Respirators.

Assigned Protection factors are as follows.

Figure: 30 TAC §336.358

[Figure 1: 30 TAC §336.358, Appendix A]

	Operating Mode	Assigned Protection Factors (APFs) ^a
I. Air Purifying Respirators (Particulate ^b only) ^c :		
Filtering facepiece disposable	Negative Pressure	(d)
Facepiece, half ^e	Negative Pressure	10
Facepiece, full	Negative Pressure	100
Facepiece, half	Powered air-purifying respirators	50
Facepiece, full	Powered air-purifying respirators	1000
Helmet/hood	Powered air-purifying respirators	1000
Facepiece, loose-fitting	Powered air-purifying respirators	25
II. Atmosphere supplying respirators (particulate, gases, and vapors ^f)		
1. Air-line respirator:		
Facepiece, half	Demand	10
Facepiece, half	Continuous Flow	50
Facepiece, half	Pressure Demand	50
Facepiece, full	Demand	100
Facepiece, full	Continuous Flow	1000
Facepiece, full	Pressure Demand	1000
Helmet/hood	Continuous Flow	1000

Facepiece, loose-fitting	Continuous Flow	25
Suit	Continuous Flow	^(g)
2. Self-contained breathing apparatus (SCBA):		
Facepiece, full	Demand	^h 100
Facepiece, full	Pressure Demand	ⁱ 10,000
Facepiece, full	Demand, Recirculating	^h 100
Facepiece, full	Positive Pressure Recirculating	ⁱ 10,000
III. Combination Respirators:		
Any combination of air-purifying and atmosphere-supplying respirators.	Assigned protection factor for type and mode of operation as listed above.	

^a These assigned protection factors apply only in a respiratory protection program that meets the requirements of this subchapter. They are applicable only to airborne radiological hazards and may not be appropriate to circumstances when chemical or other respiratory hazards exist instead of, or in addition to, radioactive hazards. Selection and use of respirators for such circumstances must also comply with Department of Labor regulations.

Radioactive contaminants for which the concentration values in §336.359 of this title (relating to Appendix B Annual Limits on Intake (ALI) and Derived Air Concentrations (DAC) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sanitary Sewerage) are based on internal dose due to inhalation may, in addition, present external exposure hazards at higher concentrations. Under these circumstances, limitations on occupancy may have to be governed by external dose limits.

^b Air purifying respirators with APF < 100 must be equipped with particulate filters that are at least 95% efficient. Air purifying respirators with APF = 100 must be equipped with particulate filters that are at least 99% efficient. Air purifying respirators with APFs > 100 must be equipped with particulate filters that are at least 99.97% efficient.

^c The licensee may apply to the executive director for the use of an APF greater than one for sorbent cartridges as protection against airborne radioactive gases and vapors (e.g., radioiodine).

^d Licensees may permit individuals to use this type of respirator who have not been medically screened or fit tested on the device provided that no credit be taken for their use in estimating intake or dose. It is also recognized that it is difficult to perform an effective positive or negative pressure pre-

use user seal check on this type of device. All other respiratory protection program requirements listed in §336.321 of this title (relating to Use of Individual Respiratory Protection Equipment) apply. An assigned protection factor has not been assigned for these devices. However, an APF equal to 10 may be used if the licensee can demonstrate a fit factor of at least 100 by use of a validated or evaluated, qualitative or quantitative fit test.

^e Under-chin type only. No distinction is made in this Appendix between elastomeric half-masks with replaceable cartridges and those designed with the filter medium as an integral part of the facepiece (e.g., disposable or reusable disposable). Both types are acceptable so long as the seal area of the latter contains some substantial type of seal-enhancing material such as rubber or plastic, the two or more suspension straps are adjustable, the filter medium is at least 95% efficient and all other requirements of this subchapter are met.

^f The assigned protection factors for gases and vapors are not applicable to radioactive contaminants that present an absorption or submersion hazard. For tritium oxide vapor, approximately one-third of the intake occurs by absorption through the skin so that an overall protection factor of three is appropriate when atmosphere-supplying respirators are used to protect against tritium oxide. Exposure to radioactive noble gases is not considered a significant respiratory hazard, and protective actions for these contaminants should be based on external (submersion) dose considerations.

^g No NIOSH approval schedule is currently available for atmosphere supplying suits. This equipment may be used in an acceptable respiratory protection program as long as all the other minimum program requirements, with the exception of fit testing, are met (i.e., §336.321 of this title (relating to Use of Individual Respiratory Protection Equipment)).

^h The licensee should implement institutional controls to assure that these devices are not used in areas immediately dangerous to life or health.

ⁱ This type of respirator may be used as an emergency device in unknown concentrations for protection against inhalation hazards. External radiation hazards and other limitations to permitted exposure such as skin absorption shall be taken into account in these circumstances. This device may not be used by any individual who experiences perceptible outward leakage of breathing gas while wearing the device.

§336.359. Appendix B. Annual Limits on Intake (ALI) and Derived Air Concentrations (DAC) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sanitary Sewerage.

(a) - (c) (No change.)

(d) Table III, “releases to sewers.” The monthly average concentrations for release to sanitary sewerage are applicable to the provisions in §336.215 [§336.333] of this title (relating to Disposal by Release into Sanitary Sewerage). The concentration values were derived by taking the most restrictive occupational stochastic oral ingestion ALI and dividing by 7.3×10^6 ml. The factor of 7.3×10^6 ml is composed of a factor of 7.3×10^5 ml, the annual water intake by “reference man,” and a factor of 10, such that the concentrations, if the sewage released by the licensee were the only source of water ingested by a “reference man” during a year, would result in a committed effective dose equivalent of 0.5 rem (5 millisieverts).

Figure: 30 TAC §336.359(d) (No change.)

SUBCHAPTER G: DECOMMISSIONING STANDARDS

§336.611

STATUTORY AUTHORITY

The amendment is proposed under the THSC, TRCA, Chapter 401; THSC, §401.011, which provides the commission the authority to regulate and license the disposal of radioactive substances; §401.051, which authorizes the commission to adopt rules and guidelines relating to control of sources of radiation; §401.103, which authorizes the commission to adopt rules and guidelines that provide for licensing and registration for the control of sources of radiation; §401.104, which requires the commission to provide rules for licensing for the disposal of radioactive material; §401.201, which provides authority to the commission to regulate the disposal of low-level radioactive waste; and §401.412, which provides authority to the commission to regulate licenses for the disposal of radioactive substances. The proposed amendment is also authorized by the TWC, §5.103, which provides the commission with the authority to adopt rules necessary to carry out its powers and duties under the TWC and other laws of the state.

The amendment implements THSC, Chapter 401, relating to Radioactive Materials and Other Sources of Radiation, including §401.011, relating to Radiation Control Agency; §401.051, relating to Adoption of Rules and Guidelines; §401.057, relating to Records; §401.059, relating to Program Development; §401.103, relating to Rules and Guidelines for Licensing and Registration; §401.104, relating to Licensing and Registration Rules; §401.151, relating to Compatibility with Federal Standards; §401.201, relating to Regulation of Low-Level Radioactive Waste Disposal; and §401.412, relating to Commission Licensing Authority.

§336.611. Public Notification and Public Participation.

Upon the receipt of a decommissioning plan from the licensee, or a proposal by the licensee for release of a site under §336.607 of this title (relating to Criteria for License Termination under Restricted Conditions) or §336.609 of this title (relating to Alternate Criteria for License Termination), or whenever the commission deems notice to be in the public interest, the commission shall publish notice in accordance with §39.713 [§39.313] of this title (relating to Public Notification and Public Participation).

SUBCHAPTER I: FINANCIAL ASSURANCE

§§336.801 - 336.807

STATUTORY AUTHORITY

The repeals are proposed under the THSC, TRCA; §§401.011, 401.051, 501.057, 501.101, 401.103(b) and (c), 401.104(b) - (e), 401.106(b) and (c), 401.201 - 401.203, 401.303, 401.412, and 401.413; Texas Government Code, §2001.004(1); and TWC, §5.103.

There are no other statutes, articles, or codes affected/implemented by the repeals.

§336.801. Purpose and Scope.

§336.802. Definitions.

§336.803. Financial Assurance Requirements.

§336.804. Financial Assurance Mechanisms.

§336.805. Long-Term Care Requirements.

§336.806. Wording of Financial Assurance Mechanisms.

§336.807. Appendix A. Wording of Financial Assurance Instruments.