

**SUBCHAPTER G: DECOMMISSIONING STANDARDS**

**§§336.601 - 336.603, 336.605, 336.607, 336.609, 336.611, 336.613, 336.615, 336.617, 336.619, 336.621, 336.623, 336.625, 336.627**  
**Effective February 28, 2008**

**§336.601. Applicability.**

(a) The criteria in this subchapter apply to the decommissioning of facilities regulated under Subchapter F of this chapter (relating to Licensing of Alternative Methods of Disposal of Radioactive Material), the inactive disposal sites regulated under this subchapter, the ancillary surface facilities that support low-level radioactive waste disposal activities at facilities licensed under Subchapter H of this chapter (relating to Licensing Requirements for Near-Surface Land Disposal of Low-Level Radioactive Waste), naturally occurring radioactive material waste disposal facilities licensed under Subchapter K of this chapter (relating to Commercial Disposal of Naturally Occurring Radioactive Material Waste from Public Water Systems), and to radioactive substances processing and storage facilities licensed under Subchapter M of this chapter (relating to Licensing of Radioactive Substances Processing and Storage Facilities).

(b) This subchapter also establishes the criteria under which a facility may be licensed for decommissioning.

(c) After a site has been decommissioned and the license terminated in accordance with the criteria in this subchapter, the commission may require additional cleanup only if, based on new information, it determines that the criteria of this subchapter have not been met and residual radioactivity remaining at the site could result in significant threat to public health and safety.

(d) When calculating the total effective dose equivalent (TEDE) to the average member of the critical group, the licensee shall determine the peak annual TEDE expected within the first 1,000 years after decommissioning.

Adopted January 30, 2008

Effective February 28, 2008

**§336.602. Definitions.**

General agency terms used in several chapters are defined in Chapter 3 of this title (relating to Definitions). Terms used in this chapter are defined in §336.2 of this title (relating to Definitions). Additional terms used in this subchapter have the following definitions.

(1) **Control and maintenance** - Only for licenses that have been terminated under restricted conditions, control and maintenance is the period of time, and the activities that occur within that period of time, that begins upon license termination and continues until the level of contamination at the site reaches the level required under §336.603(a) of this title (relating to Radiological Criteria for Unrestricted Use) for unrestricted use without institutional controls.

(2) **Inactive disposal site** - A site or facility that:

(A) contains radioactive material disposed of below the surface, or soils or structures contaminated with radioactive material; and

(B) no longer disposes or will dispose of, or accepts or will accept for the purpose of disposal, additional radioactive material.

(3) **Institutional control** - Restrictions placed upon a facility or site that are:

(A) proprietary institutional controls which are put in place by the property owner, such as deed restrictions;

(B) governmental institutional controls, which are based on a government's sovereign or police powers, such as zoning, water well-use restrictions, and building permit requirements; and

(C) physical controls such as fences, markers, earthen covers, and radiological monitoring and maintenance for those controls. Physical controls must be used in combination with some type of legal instrument.

(4) **Funding plan** - A plan, equivalent to the decommissioning funding plan of 10 Code of Federal Regulations §30.35 (Financial Assurance and Recordkeeping for Decommissioning) and §40.36 (Financial Assurance and Recordkeeping for Decommissioning), submitted by the holder of an existing license before the development of a detailed decommissioning plan. The funding plan includes:

(A) an initial cost estimate for decommissioning;

(B) a description of the financial mechanism(s) utilized; and

(C) a certification by the licensee that a signed original of the financial assurance mechanism for decommissioning was submitted to the executive director.

Adopted August 23, 2000

Effective September 14, 2000

**§336.603. Radiological Criteria for Unrestricted Use.**

(a) A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a total effective dose equivalent (TEDE) to an average member of the critical group that does not exceed 25 mrem (0.25 mSv) per year (excluding radium and its decay products), including that from groundwater sources of drinking water, and the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA). The concentration for radium in soil shall be equivalent to or below the limits set forth in §336.356(a) of this title (relating to Soil and Vegetation Contamination Limits).

(b) Determination of the levels which are ALARA must take into account consideration of any detriments expected to potentially result from decontamination and waste disposal (e.g. deaths from transportation accidents).

(c) The licensee shall conduct all necessary radiation surveys and modeling, and shall provide reports and documentation to demonstrate that the requirements for release for unrestricted use have been met.

Adopted July 29, 1998

Effective September 3, 1998

**§336.605. Surface Contamination Limits for Facilities, Equipment, and Materials.**

(a) Before vacating any facility or releasing any facility, equipment, or materials for unrestricted use, each licensee shall ensure that radioactive contamination has been removed to levels as low as is reasonably achievable.

(b) No licensee may vacate a facility or release a facility, equipment, or materials for unrestricted use until radioactive surface contamination levels are below the limits specified in §336.364, Appendix G, of this title (relating to Acceptable Surface Contamination Levels). The licensee shall conduct radiation surveys and provide reports and documentation to demonstrate that the requirements for release have been met. The executive director may also require the licensee to provide other information as may be necessary to demonstrate that the facilities and equipment are suitable for release.

(c) In addition to meeting the surface contamination limits of subsection (b) of this section, porous materials (e.g., concrete), which are to be released for unrestricted use, shall be evaluated to determine whether radioactive materials have penetrated to the interior of the material. If radioactive contamination has penetrated into the material, analysis of the average concentration, in picocuries per gram, shall be made. The material may be released for unrestricted use if the radionuclide concentrations do not exceed the limits specified for soil in §336.356(a) of this title (relating to Soil and Vegetation Contamination Limits) and §336.603 of this title (relating to Radiological Criteria for Unrestricted Use).

Adopted July 29, 1998

Effective September 3, 1998

**§336.607. Criteria for License Termination under Restricted Conditions.**

A site will be considered acceptable for license termination under restricted conditions if all of the following conditions are met:

(1) The licensee can demonstrate that further reductions in residual radioactivity would result in net public or environmental harm or were not being made because the residual levels associated with restricted conditions are as low as reasonably achievable (ALARA). Determination of the levels which are ALARA must take into account consideration of any detriments expected to potentially result from decontamination and waste disposal (e.g. traffic accidents);

(2) The licensee has made provisions for legally enforceable institutional controls that provide reasonable assurance that the total effective dose equivalent (TEDE) from residual radioactivity

distinguishable from background to the average member of the critical group will not exceed 25 mrem (0.25mSv) per year;

(3) The licensee has provided sufficient financial assurance to enable an independent third party, including a governmental custodian of a site, to assume and carry out responsibilities for any necessary control and maintenance of the site. Acceptable financial assurance mechanisms are those in Chapter 37, Subchapter S of this title (relating to Financial Assurance for Radioactive Material), or Chapter 37, Subchapter T of this title (relating to Financial Assurance for Near-Surface Land Disposal of Low-Level Radioactive Waste);

(4) The licensee has submitted a decommissioning plan to the commission indicating the licensee's intent to decommission and specifying that the licensee intends to decommission by restricting use of the site. The licensee shall document in the decommissioning plan how the advice of individuals and institutions in the community who may be affected by the decommissioning has been sought and incorporated, as appropriate, following analysis of that advice.

(A) Licensees proposing to decommission by restricting use of the site shall seek advice from affected parties regarding the following matters concerning the proposed decommissioning.

(i) Whether provisions for institutional controls proposed by the licensee:

(I) will provide reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group will not exceed 25 mrem (0.25 mSv) TEDE per year;

(II) will be enforceable; and

(III) will not impose undue burdens on the local community or other affected parties.

(ii) Whether the licensee has provided sufficient financial assurance to enable an independent third party, including a governmental custodian of a site, to assume control and maintenance of the site.

(B) In seeking advice on the issues identified in subparagraph (A) of this paragraph, the licensee shall provide for:

(i) participation by representatives of a broad cross section of community interests who may be affected by the decommissioning;

(ii) an opportunity for a comprehensive, collective discussion on the issues by the participants represented; and

(iii) a publicly available summary of the results of all discussions, including a description of the individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants on the issues; and

(5) Residual radioactivity at the site has been reduced so that if the institution controls were no longer in effect, there is reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group is ALARA and would not exceed either:

(A) 100 mrem (1 mSv) per year; or

(B) 500 mrem (5 mSv) per year provided the licensee:

(i) demonstrates that further reductions in residual radioactivity necessary to comply with the 100 mrem/y (1 mSv/y) value of subparagraph (A) of this paragraph are not technically achievable, would be prohibitively expensive, or would result in net public or environmental harm;

(ii) makes provisions for durable institutional controls; and

(iii) provides sufficient financial assurance to enable a responsible government entity or independent third party, including a governmental custodian of a site, both to carry out periodic rechecks of the site no less frequently than every five years to assure that the criteria of §336.603(a) of this title (relating to Radiological Criteria for Unrestricted Use) are met and to assume and carry out responsibilities for any necessary control and maintenance of those controls. Acceptable financial assurance mechanisms are those in Chapter 37, Subchapter S of this title, or Chapter 37, Subchapter T of this title.

Adopted August 23, 2000

Effective September 14, 2000

**§336.609. Alternate Criteria for License Termination.**

(a) The commission may terminate a license using alternate criteria greater than the dose criterion of §336.603 of this title (relating to Radiological Criteria for Unrestricted Use) and §336.607(2) and (4)(A)(i)(I) of this title (relating to Criteria for License Termination under Restricted Conditions), if the licensee:

(1) provides assurance that public health and safety would continue to be protected, and that it is unlikely that the dose from all manmade sources combined, other than medical, would be more than the 1 mSv/y (100 mrem/y) limit of §§336.314-336.315 of this title (relating to Compliance with Dose Limits for Individual Members of the Public and General Requirements for Surveys and Monitoring, respectively), by submitting an analysis of possible sources of exposure;

(2) has employed, to the extent practical, restrictions on site use according to the provisions of §336.607 of this title in minimizing exposures at the site;

(3) reduces doses to ALARA levels, taking into consideration any detriments such as traffic accidents expected to potentially result from decontamination and waste disposal; and

(4) has submitted a decommissioning plan to the commission indicating the licensee's intent to decommission the facility, and specifying that the licensee proposes to decommission by use of alternate criteria. The licensee shall document in the decommissioning plan how the advice of individuals and institutions in the community who may be affected by the decommissioning has been sought and addressed, as appropriate, following analysis of that advice. In seeking such advice, the licensee shall provide for:

(A) participation by representatives of a broad cross section of community interests who may be affected by the decommissioning;

(B) an opportunity for a comprehensive, collective discussion on the issues by the participants represented; and

(C) a publicly available summary of the results of all discussions, including a description of the individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants on the issues.

(b) The use of alternate criteria to terminate a license requires approval of the commission after consideration of the executive director's recommendations that will address any comments provided by the Environmental Protection Agency and any other public comments submitted under §336.611 of this title (relating to Public Notification and Public Participation).

Adopted July 29, 1998

Effective September 3, 1998

**§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 of this title (relating to Public Notification and Public Participation).

Adopted August 8, 2001

Effective August 30, 2001

**§336.613. Additional Requirements.**

(a) The requirements of this section do not apply to licenses issued under Subchapter H of this chapter (relating to Licensing Requirements for Near-Surface Land Disposal of Low-Level Radioactive Waste).

(b) A decommissioning plan shall be submitted with the license application required by §336.615 of this title (relating to Inactive Disposal Sites) and §336.1211 of this title (relating to Filing Application for a Special License). Holders of licenses of inactive disposal sites shall submit a decommissioning plan with the renewal application. Holders of licenses of active disposal sites shall submit a decommissioning plan no later than the date specified in §336.625(e)(2) of this title (relating to Expiration and Termination of Licenses).

(c) The executive director may approve an alternate schedule for submittal of a decommissioning plan required under §336.625(e)(2) of this title if the executive director determines that:

(1) the alternative schedule is necessary for the effective conduct of decommissioning operations; and

(2) presents no undue risk from radiation to the public health and safety and is otherwise in the public interest.

(d) A licensee shall request a license amendment to amend a decommissioning plan if revised procedures could increase potential health and safety impacts to workers or to the public. Examples of procedures that require a license amendment include, but are not limited to:

(1) procedures that involve techniques not applied routinely during cleanup or maintenance operations;

(2) workers entering areas not normally occupied where surface contamination and radiation levels are significantly higher than routinely encountered during operation;

(3) procedures that could result in significantly greater airborne concentrations of radioactive materials than are present during operation; or

(4) procedures that could result in significantly greater releases of radioactive material to the environment than those associated with operation.

(e) Procedures with potential health and safety impacts, such as those listed in subsection (d) of this section, may not be carried out prior to approval by the commission of the decommissioning plan.

(f) The proposed decommissioning plan for the site or separate building or outdoor area shall include:

(1) a description of the conditions of the site or separate building or outdoor area sufficient to evaluate the acceptability of the plan;

(2) a description of planned decommissioning activities;

(3) a description of methods used to ensure protection of workers and the environment against radiation hazards during decommissioning;

(4) a description of the planned final radiation survey;

(5) an updated detailed cost estimate for decommissioning, comparison of that estimate with present funds set aside for decommissioning, and a plan for assuring the availability of adequate funds for completion of decommissioning;

(6) for decommissioning plans calling for completion of decommissioning later than 24 months after plan approval, a justification for the delay based on the criteria in subsection (h) of this section; and

(7) a description of the quality assurance/quality control program.

(g) The proposed decommissioning plan may be approved by the commission by license amendment if the information demonstrates that the decommissioning will be completed as soon as practicable and that the health and safety of workers and the public will be protected.

(h) Except as provided in subsection (j) of this section, the licensee shall complete decommissioning of the site or separate building or outdoor area as soon as practicable but no later than 24 months following the initiation of decommissioning.

(i) Except as provided in subsection (j) of this section, when decommissioning involves the entire site, the licensee shall request license termination as the final step in decommissioning, which shall be as soon as practicable but no later than 24 months following the initiation of decommissioning.

(j) The commission may approve by license amendment a request for an alternate schedule for completion of decommissioning of the site or separate building or outdoor area, and license termination if appropriate, if the commission determines that the alternative is warranted by consideration of the following:

(1) whether it is technically feasible to complete decommissioning within the allotted 24-month period;

(2) whether sufficient waste disposal capacity is available to allow completion of decommissioning within the allotted 24-month period;

(3) whether a significant volume reduction in wastes requiring disposal will be achieved by allowing short-lived radionuclides to decay;

(4) whether a significant reduction in radiation exposure to workers can be achieved by allowing short-lived radionuclides to decay; and

(5) other site-specific factors which the commission may consider appropriate on a case-by-case basis, such as the regulatory requirements of other government agencies, lawsuits, groundwater treatment activities, monitored natural groundwater restoration, actions that could result in more environmental harm than deferred cleanup, and other factors beyond the control of the licensee.

(k) As the final steps in decommissioning, the licensee shall:

(1) certify the disposition of all licensed material, including accumulated wastes;

(2) conduct a radiation survey of the premises where the licensed activities were carried out and submit a report of the results of this survey unless the licensee demonstrates that the premises are suitable for release in some other commission approved manner. The licensee shall, as appropriate:

(A) report levels of gamma radiation in units of microroentgens (millisieverts) per hour at 1 meter from surfaces, and report levels of radioactivity (removable and fixed), including alpha and beta, in units of disintegrations per minute or microcuries (megabecquerels) per 100 square centimeters for surfaces, microcuries (megabecquerels) per milliliter for water, and picocuries (becquerels) per gram for solids such as soils or concrete; and

(B) specify the survey instrument(s) used and certify that each instrument is properly calibrated and tested; and

(3) submit a request for license termination, which includes, but is not limited to, the information required by paragraphs (1) and (2) of this subsection.

(l) The executive director may require the licensee to provide any other information necessary to demonstrate that the facilities and land are suitable for release.

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#### **§336.615. Inactive Disposal Sites.**

Any person who owns, operates, controls, or possesses an inactive disposal site and who does not hold a current radioactive material license for the inactive disposal site shall apply for a license to decommission by January 1, 2000. This subchapter does not apply to diffuse naturally occurring radioactive material (NORM) waste having concentrations of radium-226 or radium-228 of less than 2,000 pCi/g. Any decommissioning performed to fulfill this provision shall be performed by an individual who is qualified and licensed to perform the activities, ensuring that all appropriate radiation protection standards for workers and the public are met, including the maintenance of records.

(1) If the site meets the requirements for unrestricted use of §336.603 of this title, (relating to Radiological Criteria for Unrestricted Use), the owner shall submit to the executive director the information required by §336.603(c) of this title before January 1, 2000. Once the executive director verifies that the criteria have been met, the executive director will certify in writing that the owner is in compliance with the regulations and will not require any further cleanup, unless there is new evidence that the decommissioning standards for unrestricted use were not met and that residual radioactivity remaining at the site could result in significant threat to public health and safety.

(2) If a site is decommissioned for unrestricted use under §336.603 of this title before January 1, 2000, a license is not required. If decommissioning is completed before January 1, 2000, proof of decommissioning must be submitted to the agency before January 1, 2000, or the owner shall submit an application for license by that date. Once the executive director verifies that the criteria have been met, the executive director will certify in writing that the owner is in compliance with the regulations and will not require any further cleanup, unless there is new evidence that the decommissioning standards for unrestricted use were not met and that residual radioactivity remaining at the site could result in significant threat to public health and safety.

(3) If a site does not meet the requirements for unrestricted use and the owner does not decommission before January 1, 2000, or if the owner plans to decommission 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), the owner shall apply for a license to decommission by January 1, 2000. The applicant shall provide the information required by this subchapter using a form provided by the agency.

Adopted August 23, 2000

Effective September 14, 2000

**§336.617. Technical Requirements for Inactive Disposal Sites.**

(a) Content of license application. An applicant for a license to authorize possession of disposed radioactive material and subsequent decommissioning of an inactive disposal site shall submit the information required in Chapter 305 of this title (relating to Consolidated Permits), and the following, using the application form provided by the agency:

(1) information on the concentration and total activity of each radionuclide disposed of, packaging of the wastes, the characteristics of the disposal site (e.g., geological, hydrological, and topographical), as-built disposal trench or landfill construction, final cover construction, and depth of burial of wastes. This information shall be as complete and accurate as possible based on the full extent of information available to the applicant about the previous disposal activities;

(2) a description of any radiological monitoring performed at the site and the resulting data;

(3) the technical qualifications and identity of personnel responsible for radiation safety functions at the site;

(4) a description of the methods of restricting access to the site (e.g., fencing) and any permanent site markers;

(5) information on land ownership and any covenants on land use imposed by recorded title documents;

(6) a decommissioning plan that meets the standards in this subchapter including an evaluation of the alternative of disposing of the radioactive material at a licensed disposal facility;

(7) information regarding financial assurance for decommissioning as provided for in §336.619 of this title (relating to Financial Assurance for Decommissioning); and

(8) for license applications other than renewals, a description of how facility design and procedures for operation minimize, to the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive wastes.

(b) Content of application for renewal of license.

(1) An applicant for renewal of a license authorizing possession of disposed radioactive material in an inactive disposal site or to decommission an inactive disposal site shall submit information using the application form provided by the agency on:

(A) the current conditions of the site (e.g., site stability and any maintenance performed at the site);

(B) any radiological monitoring performed at the site by the licensee and the resulting data;

(C) the methods of restricting access to the site;

(D) any changes in or additions to the procedures or information contained in previous applications;

(E) the technical qualifications and identity of personnel responsible for radiation safety functions at the site;

(F) a decommissioning plan that meets the standards in this subchapter, if not previously submitted, including an evaluation of the alternative of disposing of the radioactive material at a licensed disposal facility; and

(G) financial assurance for decommissioning as provided for in §336.619 of this title.

(2) The executive director may request additional information, such as that required by subsection (a) of this section, if this information was not previously provided for the site or is not current.

(c) Performance objectives. The applicant's submittal shall include sufficient information to enable the executive director to assess the potential hazard to public health and safety and to determine whether the disposal site will have a significant impact on the environment. The executive director shall evaluate existing inactive disposal sites on a case-by-case basis and shall consider the following general criteria and performance objectives in making the evaluation.

(1) Radiation exposure and release of radioactive materials from a disposal site shall be maintained as low as is reasonably achievable. Reasonable assurance must be provided that the potential dose to an individual on or near the site will be within acceptable limits. The estimated committed effective dose equivalent resulting from a radiological assessment of a site will usually be the determining factor in the granting of authorization for a disposal site. If the projected dose to a member of the public exceeds 25 millirems per year, the executive director shall consider other factors in determining whether to grant authorization for the site, including, but not limited to, the use of institutional controls to restrict access for a specified period of time.

(2) The location and characteristics of a site shall be such as to preclude potential offsite migration or transport of radioactive materials or ready access to critical exposure pathways.

(3) The general topography of the disposal site shall be compatible with its use for waste burial. As an example, surface features shall direct surface water drainage away from the disposal site. Wastes must not be buried in locations which, once covered, would tend to collect surface water. The characteristics of the site shall minimize, to the extent practicable, the potential for erosion and contact of percolating or standing water with wastes.

(4) Water-bearing strata shall be a minimum of ten feet below the depth at which waste is buried.

(5) Waste shall be emplaced in a manner that minimizes the void spaces between packages and permits the void spaces to be filled.

(6) Void spaces between waste packages shall be filled with earth or other material to reduce future subsidence within the fill.

(7) Cover design shall minimize water infiltration to the extent practicable, direct percolating or surface water away from the disposed waste, and resist degradation by surface geologic processes and biotic activity.

(8) In general, a site authorized under this subchapter shall be located, designed, operated, and closed so that long-term isolation and custodial care for long-term stability would not be required beyond the time the licensee can reasonably be expected to occupy the site. If a site does not meet this objective, requirements for long-term care shall be evaluated.

(9) The location of a disposal site shall be compatible with the uses of surrounding environs (both the applicant's and adjacent properties).

Adopted August 23, 2000

Effective September 14, 2000

**§336.619. Financial Assurance for Decommissioning.**

(a) A financial assurance mechanism or combination of mechanisms in accordance with Chapter 37 of this title (relating to Financial Assurance) is required for all entities currently licensed or proposed to be licensed, except that licenses and applicants under Subchapter M are subject to the financial assurance requirements of §336.1235 of this title (relating to Financial Assurance for Storage and Processing Facilities).

(b) Applicants for a new license to decommission an inactive disposal site and applicants for a license under Subchapters K of this chapter (relating to Commercial Disposal of Naturally Occurring Radioactive Material Waste from Public Water Systems) shall submit with the application a signed statement regarding how the applicant will provide financial assurance for decommissioning using one or more of the mechanisms specified in Chapter 37 of this title. The amount of financial assurance shall be based upon the detailed cost estimate included in the decommissioning plan submitted with the application.

(c) Holders of licenses for inactive disposal sites issued before January 1, 1998 shall submit a funding plan before January 1, 1998. Each funding plan must contain:

(1) a cost estimate for decommissioning;

(A) Each holder of a license authorizing the disposal of unsealed radioactive material with a half-life greater than 120 days and in quantities exceeding 105 times the applicable quantities set forth in §336.627 of this title (relating to Radionuclide Quantities for Use in Determining Financial Assurance for Decommissioning) or when a combination of isotopes is involved if  $R$  divided by 105 is greater than 1 (unity rule), where  $R$  is defined as the sum of the ratios of the quantity of each isotope to the applicable value in §336.627 of this title, shall submit a certification of financial assurance for decommissioning in an amount at least equal to \$750,000, in accordance with the criteria set forth in this subchapter and Chapter 37 of this title; or

(B) Each holder of a license authorizing disposal of radioactive material with a half-life greater than 120 days shall provide certification of financial assurance for decommissioning based on the quantity of material as follows:

(i) \$750,000--greater than 104 but less than or equal to 105 times the applicable quantities in §336.627 of this title, in unsealed form. (For a combination of isotopes, if  $R$ , as defined in subparagraph (A) of this paragraph, divided by 104 is greater than 1 but  $R$  divided by 105 is less than or equal to 1.); or

(ii) \$150,000--greater than 103 but less than or equal to 104 times the applicable quantities in §336.627 of this title in unsealed form. (For a combination of isotopes, if  $R$ , as defined in subparagraph (A) of this paragraph, divided by 103 is greater than 1 but  $R$  divided by 104 is less than or equal to 1.).

(C) Notwithstanding the requirements of subparagraphs (A) and (B) of this paragraph:

(i) each holder for a license authorizing the disposal of more than 100 millicuries of source material in a readily dispersible form shall submit certification that financial assurance has been provided in the amount of \$750,000;

(ii) each holder for a license authorizing the disposal of quantities of source material greater than ten millicuries but less than or equal to 100 millicuries in a readily dispersible form shall submit certification that financial assurance has been provided in the amount of \$150,000;

(2) a description of the financial assurance mechanism of assuring funds for decommissioning as specified in Chapter 37 of this title, including means for adjusting cost estimates and associated funding levels annually over the life of the facility; and

(3) a certification by the licensee that a signed original of the financial assurance mechanism for decommissioning, in accordance with criteria set forth in this section and Chapter 37 of this title, has been submitted to and approved by the executive director in the amount specified in paragraph (1) of this subsection.

(d) Holders of existing licenses for inactive disposal sites shall, as part of the license renewal process, submit a signed statement adjusting the amount of financial assurance based upon the detailed cost estimate included in the decommissioning plan submitted with the renewal application. The adjusted amount of financial assurance for decommissioning shall be effective upon license renewal.

(e) Holders of licenses for active disposal sites shall submit a signed statement adjusting the amount of financial assurance based upon the detailed cost estimate included in the decommissioning plan submitted no later than the date specified in §336.625(e) of this title (relating to Expiration and Termination of Licenses).

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### **§336.621. Recordkeeping for Decommissioning.**

Each person licensed under this subchapter shall keep records of information important to the safe and effective decommissioning of the facility in an identified location until the license is terminated by the commission. If records of relevant information are kept for other purposes, reference to these records and their locations may be used. Information important to decommissioning consists of:

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

(2) as-built drawings and modifications of structures and equipment in restricted areas where radioactive materials are disposed of and of locations of possible inaccessible contamination (e.g., buried pipes) that may be subject to contamination. If required drawings are referenced, each relevant document need not be indexed individually. If drawings are not available, the licensee shall substitute appropriate records of available information concerning these areas and locations;

(3) except for areas containing only radioactive materials having half-lives of less than 65 days, a list contained in a single document and updated every two years of the following:

(A) all areas designated as restricted areas, as defined in §336.2 of this title (relating to Definitions), and all areas formerly designated as restricted areas under rules in effect before January 1, 1994;

(B) all areas outside of restricted areas that require documentation under paragraph (1) of this section;

(C) all areas outside of restricted areas where current and previous wastes have been buried as documented under §336.338 of this title (relating to General Recordkeeping Requirements for Disposal); and

(D) all areas outside of restricted areas which contain material such that, if the license expired, the licensee must be required to decontaminate the area to unrestricted release levels; and

(4) records of the cost estimate performed for the funding plan or of the amount certified for decommissioning, and records of the financial assurance mechanism used for assuring funds.

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Effective September 14, 2000

**§336.623. Financial Assurance for Control and Maintenance.**

(a) An applicant or licensee required to demonstrate financial assurance for control and maintenance of a site shall maintain financial assurance for control and maintenance upon license issuance and during the decommissioning period. The applicant or licensee shall provide sufficient financial assurance to enable an independent third party, including a governmental custodian of a site, to assume and carry out responsibilities for any necessary control and maintenance of the site. The financial assurance mechanism(s) for control and maintenance shall comply with Chapter 37 of this title (relating to Financial Assurance) including increasing annually the financial assurance amount for inflation or whenever modifications to the control and maintenance activities or changes to the amount being demonstrated causes the amounts for control and maintenance to increase.

(b) Prior to license termination, the licensee shall deposit a sum of cash acceptable to the executive director into the Texas Treasury Safekeeping Control and Maintenance account to assume and carry out responsibilities for any necessary surveillance, monitoring, control, maintenance, and other care of the decommissioned disposal site on a continual basis during the institutional control period. Upon receipt of the deposit, the executive director shall release the existing financial assurance mechanism(s) for control and maintenance. If a deposit is not made into the Control and Maintenance account, the executive director shall draw on the existing financial assurance mechanism(s) and deposit the cash into the Texas Safekeeping Treasury Control and Maintenance account.

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**§336.625. Expiration and Termination of Licenses.**

(a) Each license expires at the end of the day on the expiration date stated in the license unless the licensee has filed an application for renewal not less than 30 days before the expiration date stated in the existing license. If an application for renewal in proper form has been filed at least 30 days before the expiration date stated in the existing license, the existing license shall not expire until the application has been finally determined by the commission. For the purposes of this section, "proper form" shall mean that the application includes the information required by §336.617 of this title (relating to Technical Requirements for Inactive Disposal Sites) or §336.513 of this title (relating to Technical Requirements for Active Disposal Sites). The existing license expires at the end of the day on which the commission makes a final determination to deny the renewal application or, if the determination states an expiration date, the expiration date stated in the determination.

(b) Each license revoked by the commission expires at the end of the day on the date of the commission's final determination to revoke the license, or on the expiration date stated in the determination, or as otherwise provided by commission order.

(c) Each license continues in effect, beyond the expiration date if necessary, with respect to possession of source material, byproduct material, or other radioactive material until the commission notifies the licensee in writing that the license is terminated. During this time, the licensee shall:

(1) limit actions involving source material, byproduct material, or other radioactive material to those related to decommissioning; and

(2) continue to control entry to restricted areas until they are suitable for release in accordance with commission requirements.

(d) Within 60 days of the occurrence of any of the following, each licensee of an active disposal site shall provide written notification to the executive director:

(1) the license has expired under subsection (a) or (b) of this section; or

(2) the licensee has decided to permanently cease principal activities at the entire site or in any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for unrestricted release in accordance with commission requirements; or

(3) no principal activities under the license have been conducted for a period of 24 months; or

(4) no principal activities have been conducted for a period of 24 months in any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for release in accordance with commission requirements.

(e) The licensee of an active disposal site shall either:

(1) within 60 days of the occurrence for which notification is required by subsection (d) of this section, begin decommissioning its site or any separate building or outdoor area that contains residual radioactivity, according to an approved decommissioning plan, so that the building or outdoor area is suitable for release in accordance with commission requirements; or

(2) if no decommissioning plan has been submitted, submit a decommissioning plan to the executive director, including a signed statement adjusting the amount of financial assurance based upon the detailed cost estimate included in the decommissioning plan, within 12 months of the notification required by subsection (d) of this section and request an amendment of the license to incorporate the plan into the license; and

(3) begin decommissioning within 60 days of the approval of that plan by the commission.

(f) The licensee of an inactive disposal site licensed under §336.615 of this title (relating to Inactive Disposal Sites), shall provide notice of and begin decommissioning within 90 days of license renewal. The owner or operator of an unlicensed inactive disposal site must apply for a license to decommission the site and begin decommissioning within 90 days of license approval.

(g) All licensees shall follow a commission-approved closure plan for decontamination, decommissioning, restoration, and reclamation of buildings and the site.

(1) Coincident with the notification required by subsections (d) or (f) of this section, the licensee shall continue to maintain in effect all decommissioning financial assurance until the license is terminated by the commission.

(2) The amount of the financial assurance must be increased, or may be decreased, as appropriate, to cover the detailed cost estimate for decommissioning established under §336.613(f)(5) of this title (relating to Additional Requirements).

(3) Any licensee who has not provided financial assurance to cover the detailed cost estimate submitted with the decommissioning plan shall do so on or before January 1, 1998.

(4) Following approval of the decommissioning plan, with the approval of the executive director, a licensee may reduce the amount of the financial assurance as decommissioning proceeds and radiological contamination is reduced at the site.

(h) The executive director may grant in writing a request to extend the time periods established in subsections (d), (e), or (f) of this section, or to delay or postpone the decommissioning process, if the executive director determines that this relief is not detrimental to the public health and safety and is otherwise in the public interest. The request must be submitted in writing no later than 30 days before notification under subsection (d) or (f) of this section. The schedule for decommissioning set forth in subsection (e) or (f) of this section may not commence until the executive director has made a determination on the request.

(i) Licenses, including expired licenses, will be terminated by the commission by written notice to the licensee when the executive director determines that:

(1) source material, byproduct material, and other radioactive material has been properly disposed;

(2) reasonable effort has been made to eliminate residual radioactive contamination, if present;

(3) the site is suitable for release;

(A) a radiation survey has been performed which demonstrates that the premises are suitable for release in accordance with commission requirements; or

(B) other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release in accordance with commission requirements;

(4) the licensee has paid any outstanding fees required by Subchapter B of this chapter (relating to Radioactive Substance Fees) and has resolved any outstanding notice(s) of violation issued to the licensee; and

(5) the licensee has complied with all other applicable decommissioning criteria required by this subchapter.

(j) A licensee may request that a subsite or a portion of a licensed area be released for unrestricted use before full license termination as long as release of the area of concern will not adversely impact the remaining unaffected areas and will not be recontaminated by ongoing authorized activities. When the licensee is confident that the area of concern will be acceptable to the state for release for unrestricted use, a written request for release for unrestricted use and agency confirmation of close-out work performed must be submitted to the executive director. The request should include a comprehensive report, accompanied by survey and sample results which show contamination is less than the limits specified in §336.603 of this title (relating to Radiological Criteria for Unrestricted Use), and an explanation of how ongoing authorized activities will not adversely affect the area proposed to be released. Upon confirmation by the executive director that the area of concern is indeed releasable for unrestricted use, the licensee may apply for a license amendment, if required.

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**§336.627. Appendix A. Radionuclide Quantities for Use in Determining Financial Assurance for Decommissioning.**

The following table is to be used in the calculation of financial assurance for decommissioning.

Radionuclide Quantities  
for Use in Determining Financial  
Assurance for Decommissioning

Radioactive Material	Microcuries
Americium-241	0.01
Antimony-122	100
Antimony-124	10
Antimony-125	10
Arsenic-73	100
Arsenic-74	10
Arsenic-76	10
Arsenic-77	100
Barium-131	10
Barium-133	10
Barium-140	10
Bismuth-210	1

Bromine-82	10
Cadmium-109	10
Cadmium-115m	10
Cadmium-115	100
Calcium-45	10
Calcium-47	10
Carbon-14	100
Cerium-141	100
Cerium-143	100
Cerium-144	1
Cesium-131	1,000
Cesium-134m	100
Cesium-134	1
Cesium-135	10
Cesium-136	10
Cesium-137	10
Chlorine-36	10
Chlorine-38	10
Chromium-51	1,000
Cobalt-58m	10
Cobalt-58	10
Cobalt-60	1
Copper-64	100
Dysprosium-165	10
Dysprosium-166	100
Erbium-169	100
Erbium-171	100
Europium-152 (9.2 hr)	100
Europium-152 (13 yr)	1
Europium-154	1
Europium-155	10
Fluorine-18	1,000
Gadolinium-153	10
Gadolinium-159	100
Gallium-72	10
Germanium-71	100
Gold-198	100
Gold-199	100

Hafnium-181	10
Holmium-166	100
Hydrogen-3	1,000
Indium-113m	100
Indium-114m	10
Indium-115m	100
Indium-115	10
Iodine-125	1
Iodine-126	1
Iodine-129	0.1
Iodine-131	1
Iodine-132	10
Iodine-133	1
Iodine-134	10
Iodine-135	10
Iridium-192	10
Iridium-194	100
Iron-55	100
Iron-59	10
Krypton-85	100
Krypton-87	10
Lanthanum-140	10
Lutetium-177	100
Manganese-52	10
Manganese-54	10
Manganese-56	10
Mercury-197m	100
Mercury-197	100
Mercury-203	10
Molybdenum-99	100
Neodymium-147	100
Neodymium-149	100
Nickel-59	100
Nickel-63	10
Nickel-65	100
Niobium-93m	10
Niobium-95	10
Niobium-97	10

Osmium-185	10
Osmium-191m	100
Osmium-191	100
Osmium-193	100
Palladium-103	100
Palladium-109	100
Phosphorus-32	10
Platinum-191	100
Platinum-193m	100
Platinum-193	100
Platinum-197m	100
Platinum-197	100
Plutonium-239	0.01
Polonium-210	0.01
Potassium-42	10
Praseodymium-142	100
Praseodymium-143	100
Promethium-147	10
Promethium-149	10
Radium-226	0.01
Rhenium-186	100
Rhenium-188	100
Rhodium-103m	100
Rhodium-105	100
Rubidium-86	10
Rubidium-87	10
Ruthenium-97	100
Ruthenium-103	10
Ruthenium-105	10
Ruthenium-106	1
Samarium-151	10
Samarium-153	100
Scandium-46	10
Scandium-47	100
Scandium-48	10
Selenium-75	10
Silicon-31	100
Silver-105	10

Silver-110m	1
Silver-111	100
Sodium-24	10
Strontium-85	10
Strontium-89	1
Strontium-90	0.1
Strontium-91	10
Strontium-92	10
Sulfur-35	100
Tantalum-182	10
Technetium-96	10
Technetium-97m	100
Technetium-97	100
Technetium-99m	100
Technetium-99	10
Tellurium-125m	10
Tellurium-127m	10
Tellurium-127	100
Tellurium-129m	10
Tellurium-129	100
Tellurium-131m	10
Tellurium-132	10
Terbium-160	10
Thallium-200	100
Thallium-201	100
Thallium-202	100
Thallium-204	10
Thorium (natural) <sup>1</sup>	100
Thulium-170	10
Thulium-171	10
Tin-113	10
Tin-125	10
Tungsten-181	10
Tungsten-185	10
Tungsten-187	100
Uranium (natural) <sup>2</sup>	100
Uranium-233	0.01
Uranium-234, uranium-235	0.01

Vanadium-48	10
Xenon-131m	1,000
Xenon-133	100
Xenon-135	100
Ytterbium-175	100
Yttrium-90	10
Yttrium-91	10
Yttrium-92	100
Yttrium-93	100
Zinc-65	10
Zinc-69m	100
Zinc-69	1,000
Zirconium-93	10
Zirconium-95	10
Zirconium-97	10
Any alpha-emitting radionuclide not listed above or mixtures of alpha emitters of unknown composition	0.01
Any radionuclide other than alpha-emitting radionuclides not listed above or mixtures of beta emitters of unknown composition	0.1

Notes:

1. Based on alpha disintegration rate of thorium-232, thorium-230, and their daughter products.
2. Based on alpha disintegration rate of uranium-238, uranium-234, and uranium-235.

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