

NEW YORK
state department of
HEALTH

Nirav R. Shah, M.D., M.P.H.
Commissioner

Sue Kelly
Executive Deputy Commissioner

January 2, 2014

Terrence Reis, Deputy Director
Division Materials Safety and State Agreements
Office of Federal and State Materials and
Environmental Management Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Mr. Reis:

A copy of a license addendum and a key that identifies the equivalent addendum sections to specific sections of NRC regulations identified in the RATS ID documents is enclosed for review.

<u>RATS ID</u>	<u>Title</u>
1996-3	Termination of Licensed Activities
1997-6	Radiological Criteria for License Termination
2003-1	Financial Assurance for Materials Licensees

We believe that the requirements in the license addendum satisfy the compatibility and health and safety categories established in the Office of Federal and State Materials and Environmental Programs (FSME) Procedure SA-200. Following your review, the addendum will be added to all applicable current active licenses and any new applicable licenses. The Department does not permit restricted release of facilities (i.e., buildings) therefore the proposed regulations do not include that provision. Please note that the release of outdoor property and regulations for waste disposal are under the jurisdiction of the NYS Department of Environmental Conservation.

If you have any questions, please feel free to contact me at 518-402-7550 or Robert Dansereau at 518-402-7550 or red07@health.state.ny.us.

Sincerely,



Stephen M. Gavitt, CHP, Director
Bureau of Environmental Radiation Protection
New York State Department of Health

RATS ID 1996-3

NRC Section

30.35(g), 40.36(f), 70.25(g)
30.36(k)(4), 40.42(k), 70.38(k)(4)
30.51(d), (e), (f), 40.61(d), (e), (f), 70.51(b)

61.30(a)(3) & 61.31(c)(3)

RATS ID 1997-6

NRC Section

20.1003

20.1401(a)

20.1401(b)

20.1401(c)

20.1401(d)

20.1402

20.1403, 20.1404 & 20.1405

20.1406

30.35(g)(3)(iv)

30.36(j)(2)

30.36(k)(3)(i)

30.36(k)(3)(ii)

30.4

40.36(f)

40.4

40.42(j)(2) & (k)(3)

70.4

70.25(g)(3)

70.38(j) & (k)

RATS ID 2003-1

NRC Section

30.35(a), Part 30 Appendix B

30.35(e)

40.36(b)(2)

40.36(d)

70.25(e)

NYS DOH Addendum Section

16.114(g)

16.113(g)(2)(iii)

16.113(g)(2)(ii) Note that the Department is more restrictive – records for any disposal, not just for licensed material with a half-life greater than 120 days in unsealed form are required.

NA for NYS DOH. The NYS Department of Environmental Conservation has jurisdiction for waste disposal in NY

NYS DOH Section

Note that NYS DOH is more restrictive in that we do not allow restricted release. Therefore the definition for “Decommission” differs from 20.1003 but it meets compatibility “C” designation.

NA. The regulations in Part 16 apply to all NYS DOH licensees, and there are no uranium or thorium recovery facilities, nor are any anticipated, in NYS DOH jurisdiction. Therefore an exemption for such facilities is not needed. Currently there are no decommissioning plans submitted and pending NYSDOH action. Therefore this section is not applicable.

16.113(h)

16.113(g)(1)

16.113(g)

NA. NYSDOH is more restrictive in that restricted release is not allowed, nor do we accept alternate dose criteria.

16.103

16.114(g)(3)(iv)

16.113(f)(4)

16.113(g)(2)(iii)(a)

16.113(g)(2)(iii)(b)

16.2 (Please note that 30.4 is a Category “A” “however 20.1003 is Category “C” for the exact same definition.)

16.113(g)(3)(iv)

16.2 (Please note that 40.4 is a Category “A” “however 20.1003 is Category “C” for the exact same definition.)

16.113(f)(4) and 16.113(g)(2)(iii)(a) & (b)

16.2 (Please note that 70.4 is a Category “A” “however 20.1003 is Category “C” for the exact same definition.)

16.114(g)(3)(iv)

16.113(f)(4) and 16.113(g)(2)(iii)(a) & (b)

NYS DOH Section

16.114(a)(1) & (2), Table 10

16.14(e)

16.114(b)

16.114(e)

16.114(e)

XX License Condition No. XX is added to read as follows:

The licensee shall implement the requirements in New York State Department of Health LICENSE ADDENDUM – Decommissioning and Financial Assurance Requirements, dated 01/02/14, on or before 03/31/14, with the exception of 16.114(d) which is due by 12/31/14.

License Addendum – Decommissioning and Financial Assurance, January 2, 2014.

16.103

The licensee shall demonstrate how facility design and procedures for operation will 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 waste.

The licensee shall, to the extent practical, conduct operations to minimize the introduction of residual radioactivity into the site, including the subsurface, in accordance with the existing radiation protection requirements and radiological criteria for license termination in 10 NYCRR 16 and conditions of the license.

The following terms as used in this License Addendum are defined as follows:

"Background radiation" means radiation from cosmic sources; naturally occurring radioactive materials (which have not been technologically enhanced) including radon (except as a decay product of regulated material); and global radioactive 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 (source, byproduct or special nuclear material) regulated by the Department, an Agreement State or the United States Nuclear Regulatory Commission.

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

"Decommission" means to remove a facility or site safely from service and reduce residual radioactivity to a level that permits release of the property for unrestricted use and termination of the license.

"Distinguishable from background" means that 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.

"Residual radioactivity" means radioactivity in structures, materials, soils, groundwater, and other media at a site resulting from activities under the licensee's control. This includes all 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 materials at the site and previous burials at the site, even if those burials were made in accordance with the provisions of this Part.

16.113 Decommissioning.

(a) Decommissioning Plan.

(1) A licensee must submit a decommissioning plan: if otherwise required by 10 NYCRR 16 or 12 NYCRR 38; if required by license condition; or if the procedures and activities necessary to carry out decommissioning of the site or separate building or outdoor area have not been previously approved by the Department and these procedures could increase potential health and safety impacts to workers or to the public, such as in any of the following cases:

- (i) Procedures would involve techniques not applied routinely during cleanup or maintenance operations;
- (ii) Workers would be entering areas not normally occupied where surface contamination and radiation levels are significantly higher than routinely encountered during the operation for which the license was issued;
- (iii) Procedures could result in significantly greater airborne concentrations of radioactive materials than are present during operation; or,
- (iv) Procedures could result in significantly greater releases of radioactive material to the environment than those associated with the operation for which the license was issued.

(2) Procedures with potential health and safety impacts may not be carried out prior to approval of the decommissioning plan.

(3) The proposed decommissioning plan for the facility or site (or separate building or outdoor area) must include:

- (i) A description of the conditions of the facility or site sufficient to evaluate the acceptability of the plan;
- (ii) A description of planned decommissioning activities;
- (iii) A description of methods used to ensure protection of workers and the environment against radiation hazards during decommissioning;
- (iv) A description of the radiation survey planned to demonstrate compliance with paragraphs (f)(4) and (g)(1) of this section; and,
- (v) 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.

(4) For decommissioning plans calling for completion of decommissioning later than 24 months after plan approval, the plan shall include a justification for the delay. The proposed decommissioning plan will be approved by the Department if the information therein demonstrates that the decommissioning will be completed as soon as practicable and that the health and safety of workers and the public will be adequately protected.

(b) Timeliness of Decommissioning.

(1) Each licensee or person in possession of a non-exempt source of radioactive material who decides to terminate all activities involving that source of radiation shall notify the Department immediately in writing.

(2) Each licensee or person responsible for a facility or site which includes a non-exempt source of radioactive material or which may be contaminated by residual radioactivity shall, no less than 30 days before vacating or relinquishing possession or control of a restricted area, the facility or site, notify the department, in writing, of the intent to vacate.

(3) The licensee shall notify the Department in writing within 60 days of the occurrence of any of the following:

(i) 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 release in accordance with these regulations; or,

(ii) No principal activities under the license have been conducted for a period of 24 months; or,

(iii) 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 these regulations.

(c) From the date of notification of the Department required in subdivision (a), the licensee shall either:

(1) Begin decommissioning activities; or

(2) Within 12 months of notification submit a decommissioning plan, if required by subdivision (a), and begin decommissioning upon department approval of that plan.

(d) Coincident with the notification of the Department required in subdivision (b), the licensee shall maintain in effect all decommissioning financial assurances established by the licensee in conjunction with a license issuance or renewal or as required by this Part. The amount of the financial assurance must be increased, or may be decreased, as appropriate, to cover the detailed cost estimate for decommissioning established pursuant to 16.113(a)(3)(v).

(e) The Department may approve an alternate schedule for the submission of plans and for the completion of decommissioning as required pursuant to subdivisions (a) and (c) if the Department determines that the alternate schedule (1) is necessary to effectively conduct decommissioning, (2) presents no undue risks to public health and safety, and (3) is otherwise in the public interest. The request must be submitted no later than 30 days before notification pursuant to subdivision (b). The schedule for decommissioning may not commence until the Department has made a determination on the request.

(f) Completion of Decommissioning.

(1) The licensee shall complete decommissioning of the facility or site as soon as practicable but no later than 24 months following the initiation of decommissioning, unless an alternate schedule addressing the factors in paragraph (3) of this subdivision is requested with written justification and approved by the Department.

(2) When decommissioning involves the entire site, the licensee shall request license termination upon completion of decommissioning activities.

(3) For decommissioning plans calling for completion of decommissioning later than 24 months after plan approval, the plan shall include a justification for the decommissioning schedule warranted by consideration of the following:

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

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

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

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

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

(4) As the final step in decommissioning, the licensee shall:

(i) 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 manner. The licensee shall, as appropriate:

(a) Report levels of gamma radiation in units of millisieverts (or microroentgens) per hour at one meter from surfaces, and report levels of radioactivity, including alpha and beta, in units of megabecquerels (or disintegrations per minute or microcuries) per 100 square centimeters - removable and fixed - for surfaces, megabecquerels (or microcuries) per milliliter for water, and becquerels (or picocuries) 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.

(ii) Certify the disposition of all licensed material including accumulated wastes, by submitting a completed department Form GEN 322 or equivalent information.

(g) Termination of a License and Release of a Site Without Restriction.

(1) A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 0.25 millisievert (25 mrem) per year, 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). When calculating TEDE to the average member of the critical group the licensee shall determine the peak annual TEDE dose expected within the first 1000 years after decommissioning. Determination of the levels which are ALARA must take into account consideration of any detriments from transportation accidents, expected to potentially results from decontamination and waste disposal.

(2) Specific licenses, including expired licenses, will be terminated upon written notice to the licensee when the Department determines that:

- (i) Radioactive material has been properly disposed;
- (ii) Reasonable effort has been made to eliminate residual radioactive contamination, if present; and;
- (iii) Documentation is provided to the Department that:
 - (a) A radiation survey has been performed which demonstrates that the premises are suitable for release in accordance with Department requirements; or
 - (b) Other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release in accordance with Department requirements.
- (iv) The licensee has complied with applicable sections of the New York State Environmental Conservation Law regarding radiological decommissioning.

(h) Applicability of Decommissioning Criteria Following License Termination. After a site has been decommissioned and the license terminated in accordance with the criteria in this Part, the Department will require additional cleanup only if, based on new information, it determines that the criteria of this Part were not met and residual radioactivity remaining at the site could result in significant threat to public health and safety.

16.114 Financial assurance and record keeping for decommissioning.

(a) (1) Each applicant for a specific license authorizing the possession and use of unsealed radioactive material of half-life greater than 120 days and in quantities exceeding 10^5 times the applicable quantities set forth in Table 10 of this Addendum shall submit a decommissioning funding plan as described in subdivision (e) of this section. The decommissioning funding plan shall also be submitted when a combination of isotopes is involved, if R divided by 10^5 is greater than 1 (unity rule), where R is defined here as the sum of the ratios of the quantity of each isotope to the applicable value in Table 10 of this addendum.

(2) Each holder of, or applicant for, any specific license authorizing the possession and use of sealed sources or plated foils of half-life greater than 120 days and in quantities exceeding 10^{12} times the applicable quantities set forth in Table 10 of this addendum (or when a combination of isotopes is involved if R , as defined in subdivision (a) of this

section, divided by 10^{12} is greater than 1), shall submit a decommissioning funding plan as described in subdivision (e) of this section.

(3) Each holder of, or applicant for, a specific license authorizing the possession and use of more than 100 mCi of source material in a readily dispersible form shall submit a decommissioning funding plan as described in paragraph (e) of this section.

(b) Each holder of, or applicant for, a specific license authorizing possession and use of radioactive material of half-life greater than 120 days and in quantities specified in subdivision (d) of this section, or quantities of source material greater than 10 mCi but less than or equal to 100 mCi in a readily dispersible form, shall either —

(1) Submit a decommissioning funding plan as described in subdivision (e) of this section; or

(2) Submit a certification that financial assurance for decommissioning has been provided in the amount prescribed by subdivision (d) of this section using one of the methods described in subdivision (f) of this section. For an applicant, this certification may state that the appropriate assurance will be obtained after the application has been approved and the license issued but before the receipt of licensed material. If the applicant defers execution of the financial instrument until after the license has been issued, a signed original of the financial instrument obtained to satisfy the requirements of subdivision (f) of this section shall be submitted to the department before receipt of licensed material. If the applicant does not defer execution of the financial instrument, the applicant shall submit to the department, as part of the certification, a signed original of the financial instrument obtained to satisfy the requirements of subdivision (f) of this section.

(c) Waste collectors and waste processors, shall provide financial assurance in an amount based on a decommissioning funding plan as described in subdivision (e) of this section. The decommissioning funding plan shall include the cost of disposal of the maximum amount (curies) of radioactive material permitted by the license, and the cost of disposal of the maximum quantity, by volume, of radioactive material which could be present at the licensee's facility at any time, in addition to the cost to remediate the licensee's site to meet the license termination criteria of this Part.

(d) Table of required amounts of financial assurance for decommissioning by quantity of material. Licensees required to submit the \$1,125,000 amount shall do so by December 31, 2014. Licensees required to submit the \$113,000 or \$225,000 amount shall do so by December 31, 2014. Licensees having possession limits exceeding the upper bounds of this table shall base financial assurance on a decommissioning funding plan.

Greater than 10^4 but less than or equal to 10^5 times the applicable quantities of Table 9 of Appendix 16-A in unsealed form. (For a combination of isotopes, if R, as defined in paragraph (a)(1), divided by 10^4 is greater than 1 but R divided by 10^5 is less than or equal to 1.) Greater than 100 mCi (3.7 GBq) of source material in a readily dispersible form.	\$1,125,000
Greater than 10^3 but less than or equal to 10^4 times the applicable quantities of Table 9 of Appendix 16-A in unsealed form. (For a combination of isotopes, if R, as defined in paragraph (a)(1), divided by 10^3 is greater than 1 but R divided by 10^4 is less than or equal to 1.) Quantities of source material greater than 10 (0.37 GBq) mCi but less than or equal to 100 mCi (3.7 GBq) in a readily dispersible form.	\$225,000
Greater than 10^{10} but less than or equal to 10^{12} times the applicable quantities of Table 9 of Appendix 16-A in sealed sources or plated foils. (For a combination of isotopes, if R, as defined in paragraph (a)(1), divided by 10^{10} is greater than, 1, but R divided by 10^{12} is less than or equal to 1)	\$113,000

(e) Each decommissioning funding plan shall be submitted to the Department for review and approval.

- (1) The decommissioning funding plan shall contain:
 - (i) A detailed cost estimate for decommissioning, in an amount reflecting:
 - (a) The cost of an independent contractor to perform all decommissioning activities;
 - (b) The cost of meeting the 16.114(g) criteria for unrestricted use;
 - (c) The volume of onsite subsurface material containing residual radioactivity that will require remediation to meet the criteria for license termination;
 - (d) An adequate contingency factor.
 - (ii) Identification of using the key assumption contained in the detailed cost estimate;
 - (iii) A description of the method of assuring funds for decommissioning from paragraph (f) of this Section including means for adjusting cost estimates and associated funding levels periodically over the life of the facility;
 - (iv) A certification by the licensee that financial assurance for decommissioning has been provided in the amount of the cost estimate for decommissioning; and

(v) A signed original of the financial instrument obtained to satisfy the requirements of paragraph (f) of this section (unless a previously submitted and accepted financial instrument continues to cover the cost estimate for decommissioning).

(2) At the time of license renewal and at intervals not to exceed 3 years, the decommissioning funding plan must be resubmitted with adjustments as necessary to account for changes in costs and the extent of contamination. If the amount of financial assurance will be adjusted downward, this can not be done until the updated decommissioning funding plan is approved. The decommissioning funding plan must update the information submitted with the original or prior approved plan, and must specifically consider the effect of the following events on decommissioning costs:

- (i) Spills of radioactive material producing additional residual radioactivity in onsite subsurface material;
- (ii) Waste inventory increasing above the amount previously estimated;
- (iii) Waste disposal costs increasing above the amount previously estimated;
- (iv) Facility modifications;
- (v) Changes in authorized possession limits; and
- (vi) Actual remediation costs that exceed the previous cost estimate.

(f) Financial assurance for decommissioning shall be provided by one or more of the following methods:

(1) Prepayment. Prepayment is the deposit prior to the start of operation into an account segregated from licensee assets and outside the licensee's administrative control of cash or liquid assets such that the amount of funds would be sufficient to pay decommissioning costs. Prepayment may be in the form of a trust, escrow account, government fund, certificate of deposit, or deposit of government securities.

(2) A surety method, insurance, or other guarantee method. These methods guarantee that decommissioning costs will be paid. A surety method may be in the form of a surety bond, letter of credit, or line of credit. A parent company guarantee of funds for decommissioning costs based on a financial test may be used if the guarantee and test are as contained in Appendix 16-D of this license addendum. A parent company guarantee may not be used in combination with other financial methods to satisfy the requirements of this section. For commercial corporations that issue bonds, a guarantee of funds by the applicant or licensee for decommissioning costs based on a financial test may be used if the guarantee and test are as contained in Appendix 16-E of this license addendum. For commercial companies that do not issue bonds, a guarantee of funds by the applicant or licensee for decommissioning costs may be used if the guarantee and test are as contained in Appendix 16-F of this license addendum. For nonprofit entities, such as colleges, universities, and nonprofit hospitals, a guarantee of funds by the applicant or licensee may be used if the guarantee and test are as contained in Appendix 16-G of this license addendum. A guarantee by the applicant or licensee may not be used in combination with any other financial methods used to satisfy the requirements of this section or in any situation where the applicant or licensee has a parent company holding majority control of the voting stock of the company. Any surety method or insurance used to provide financial assurance for decommissioning shall contain the following conditions:

- (i) The surety method or insurance shall be open-ended or, if written for a specified term, such as five years, shall be renewed automatically unless 90 days

or more prior to the renewal date, the issuer notifies the department, the beneficiary, and the licensee of its intention not to renew. The surety method or insurance shall also provide that the full face amount be paid to the beneficiary automatically prior to the expiration without proof of forfeiture if the licensee fails to provide a replacement acceptable to the department within 30 days after receipt of notification of cancellation.

(ii) The surety method or insurance shall be payable to a trust established for decommissioning costs. The trustee and trust shall be acceptable to the Department. An acceptable trustee includes an appropriate State or Federal government agency or an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a Federal or State agency.

(iii) The surety method or insurance shall remain in effect until the Department has terminated the license.

(3) An external sinking fund in which deposits are made at least annually, coupled with a surety method or insurance, the value of which may decrease by the amount being accumulated in the sinking fund. An external sinking fund is a fund established and maintained by setting aside funds periodically in an account segregated from licensee assets and outside the licensee's administrative control in which the total amount of funds would be sufficient to pay decommissioning costs at the time termination of operation is expected. An external sinking fund may be in the form of a trust, escrow account, government fund, certificate of deposit, or deposit of government securities. The surety or insurance provisions shall be as stated in paragraph (f)(2) of this section.

(4) In the case of State or local government licensees, a statement of intent containing a cost estimate for decommissioning or an amount based on the Table in subdivision (d) of this section, and indicating that funds for decommissioning will be obtained when necessary.

(5) When a governmental entity is assuming custody and ownership of a site, an arrangement that is deemed acceptable by such governmental entity.

(g) Each person licensed under this part shall keep records of information important to the decommissioning of a facility in an identified location until the site is released for unrestricted use. Before licensed activities are transferred or assigned in accordance with section 16.104(a)(2), licensees shall transfer all records described in this paragraph to the new licensee. In this case, the new licensee will be responsible for maintaining these records until the license is terminated. If records important to the decommissioning of a facility are kept for other purposes, reference to these records and their locations may be used. Information the Department considers important to decommissioning consists of—

(1) Records of spills or other unusual occurrences involving the spread of contamination in and around the facility, equipment, or site. These records may be limited to instances when contamination remains after any cleanup procedures or when there is reasonable likelihood that contaminants may have spread to inaccessible areas as in the case of possible seepage into porous materials such as concrete. These records shall 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 used and/or stored, and of locations of possible inaccessible contamination such as buried pipes which may be subject to contamination.

If required drawings are referenced, each relevant document need not be indexed individually. If drawings are not available, the licensee shall substitute appropriate records of available information concerning these areas and locations.

(3) Except for areas containing only sealed sources (provided the sources have not leaked or no contamination remains after any leak) or radioactive materials having only half-lives of less than 65 days, a list contained in a single document and updated every 2 years, of the following:

(i) All areas designated and formerly designated restricted or controlled areas;

(ii) All areas outside of restricted areas that require documentation under paragraph (g)(1) of this section.

(iii) All areas outside of restricted areas where previous radioactive wastes have been buried; and

(iv) All areas outside of restricted areas that contain material such that, if the license expired, the licensee would be required to decontaminate the area to meet the criteria for decommissioning in Section 16.113.

(4) Records of the cost estimate performed for the decommissioning funding plan or of the amount certified for decommissioning, and records of the funding method used for assuring funds if either a funding plan or certification is used.

Appendix 16-D

Criteria Relating to Use of Financial Tests and Parent Company Guarantees for Providing Reasonable Assurance of Funds for Decommissioning

I. Introduction

An applicant or licensee may provide reasonable assurance of the availability of funds for decommissioning, based on obtaining a parent company guarantee that funds will be available for decommissioning costs, and on a demonstration that the parent company passes a financial test. This appendix establishes criteria for passing the financial test and for obtaining the parent company guarantee.

II. Financial Test

A. To pass the financial test, the parent company shall meet the criteria of either paragraph A.1 or A.2 of this section:

1. The parent company shall have:

- (i) Two of the following three ratios: A ratio of total liabilities to net worth less than 2.0; a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; and a ratio of current assets to current liabilities greater than 1.5; and
- (ii) Net working capital and tangible net worth, each at least six times the current decommissioning cost estimates for the total of all facilities or parts thereof (or prescribed amount if a certification is used); and
- (iii) Tangible net worth of at least \$10 million; and
- (iv) Assets located in the United States amounting to at least 90 percent of the total assets or at least six times the current decommissioning cost estimates for the total of all facilities or parts thereof (or prescribed amount if a certification is used).

2. The parent company shall have:

- (i) A current rating for its most recent bond issuance of AAA, AA, A, or BBB as issued by Standard and Poor's or Aaa, Aa, A, or Baa as issued by Moody's; and
- (ii) Tangible net worth each at least six times the current decommissioning cost estimates for the total of all facilities or parts thereof (or prescribed amount if a certification is used); and
- (iii) Tangible net worth of at least \$10 million; and
- (iv) Assets located in the United States amounting to at least 90 percent of the total assets or at least six times the current decommissioning cost estimates for the total of all facilities or parts thereof (or prescribed amount if a certification is used).

B. The parent company's independent certified public accountant shall have compared the data used by the parent company in the financial test, which is derived from the independently audited, year end financial statements for the latest fiscal year, with the amounts in such financial statement. In connection with that procedure the licensee shall inform the department within 90 days of any matters coming to the auditor's attention which cause the auditor to believe that the data specified in the financial test should be adjusted and that the company no longer passes the test.

C. 1. After the initial financial test, the parent company shall repeat the passage of the test within 90 days after the close of each succeeding fiscal year.

2. If the parent company no longer meets the requirements of paragraph A of this section, the licensee shall send notice to the Department of intent to establish alternate financial assurance as specified in the Department's regulations. The notice shall be sent by certified mail within 90 days after the end of the fiscal year for which the year end financial data show that the parent company no longer meets the financial test requirements. The licensee shall provide alternate financial assurance within 120 days after the end of such fiscal year.

III. Parent Company Guarantee

The terms of a parent company guarantee which an applicant or licensee obtains shall provide that:

A. The parent company guarantee will remain in force unless the guarantor sends notice of cancellation by certified mail to the licensee and the Department. Cancellation may not occur, however, during the 120 days beginning on the date of receipt of the notice of cancellation by both the licensee and the Department, as evidenced by the return receipts.

B. If the licensee fails to provide alternate financial assurance as specified in Department regulations within 90 days after receipt by the licensee and the Department of a notice of cancellation of the parent company guarantee from the guarantor, the guarantor will provide such alternative financial assurance in the name of the licensee.

C. The parent company guarantee and financial test provisions shall remain in effect until the Department has terminated the license.

D. If a trust is established for decommissioning costs, the trustee and trust shall be acceptable to the Department. An acceptable trustee includes an appropriate State or Federal Government agency or an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a Federal or State agency.

Appendix 16-E

Criteria Relating to Use of Financial Tests and Self Guarantees for Providing Reasonable Assurance of Funds for Decommissioning

I. Introduction

An applicant or licensee may provide reasonable assurance of the availability of funds for decommissioning based on furnishing its own guarantee that funds will be available for decommissioning costs and on a demonstration that the company passes the financial test of Section II of this appendix. The terms of the self-guarantee are in Section III of this appendix. This appendix establishes criteria for passing the financial test for the self-guarantee and establishes the terms for a self-guarantee.

II. Financial Test

A. To pass the financial test, a company shall meet all of the following criteria:

- (1) Tangible net worth at least 10 times the total current decommissioning cost estimate for the total of all facilities or parts thereof (or the current amount required if certification is used).
- (2) Assets located in the United States amounting to at least 90 percent of total assets or at least 10 times the total current decommissioning cost estimate for the total of all facilities or parts thereof (or the current amount required if certification is used).
- (3) A current rating for its most recent bond issuance of AAA, AA, or A as issued by Standard and Poor's (S&P), or Aaa, Aa, or A as issued by Moody's.

B. To pass the financial test, a company shall meet all of the following additional requirements:

- (1) The company shall have at least one class of equity securities registered under the Securities Exchange Act of 1934.
- (2) The company's independent certified public accountant shall have compared the data used by the company in the financial test which is derived from the independently audited, year-end financial statements for the latest fiscal year, with the amounts in such financial statement. In connection with that procedure, the licensee shall inform the Department within 90 days of any matters coming to the attention of the auditor that cause the auditor to believe that the data specified in the financial test should be adjusted and that the company no longer passes the test.
- (3) After the initial financial test, the company shall repeat passage of the test within 90 days after the close of each succeeding fiscal year.

C. If the licensee no longer meets the requirements of Section II.A. of this appendix, the licensee shall send immediate notice to the Department of its intent to establish alternate financial assurance as specified in the Department's regulations within 120 days of such notice.

III. Company Self-Guarantee

The terms of a self-guarantee which an applicant or licensee furnishes shall provide that:

A. The guarantee will remain in force unless the licensee sends notice of cancellation by certified mail to the Department. Cancellation may not occur, however, during the 120 days beginning on the date of receipt of the notice of cancellation by the Department, as evidenced by the return receipt.

B. The licensee shall provide alternative financial assurance as specified in the Department's regulations within 90 days following receipt by the Department of a notice of cancellation of the guarantee.

C. The guarantee and financial test provisions shall remain in effect until the Department has terminated the license or until another financial assurance method acceptable to the Department has been put in effect by the licensee.

D. The licensee will promptly forward to the Department and the licensee's independent auditor all reports covering the latest fiscal year filed by the licensee with the Securities and Exchange Commission pursuant to the requirements of section 13 of the Securities and Exchange Act of 1934.

E. If, at any time, the licensee's most recent bond issuance ceases to be rated in any category of "A" or above by either Standard and Poor's or Moody's, the licensee will provide notice in writing of such fact to the Department within 20 days after publication of the change by the rating service. If the licensee's most recent bond issuance ceases to be rated in any category of A or above by both Standard and Poor's and Moody's, the licensee no longer meets the requirements of Section II.A. of this appendix.

F. The applicant or licensee shall provide to the Department a written guarantee (a written commitment by a corporate officer) which states that the licensee will fund and carry out the required decommissioning activities or, upon issuance of an order by the Commissioner of Health, the licensee will set up and fund a trust in the amount of the current cost estimates for decommissioning.

Appendix 16-F

Criteria Relating to Use of Financial Tests and Self-Guarantee for Providing Reasonable Assurance of Funds for Decommissioning by Commercial Companies that Have no Outstanding Rated Bonds

I. Introduction

An applicant or licensee may provide reasonable assurance of the availability of funds for decommissioning based on furnishing its own guarantee that funds will be available for decommissioning costs, and on a demonstration that the company passes the financial test of Section II of this appendix. The terms of the self-guarantee are in Section III of this appendix. This appendix establishes criteria for passing the financial test for the self-guarantee and establishes the terms for a self-guarantee.

II. Financial Test

A. To pass the financial test a company shall meet the following criteria:

(1) Tangible net worth greater than \$10 million, or at least 10 times the total current decommissioning cost estimate (or the current amount required if certification is used),

whichever is greater, for all decommissioning activities for which the company is responsible as self-guaranteeing licensee and as parent-guarantor.

(2) Assets located in the United States amounting to at least 90 percent of total assets or at least 10 times the total current decommissioning cost estimate (or the current amount required if certification is used) for all decommissioning activities for which the company is responsible as self-guaranteeing licensee and as parent-guarantor.

(3) A ratio of cash flow divided by total liabilities greater than 0.15 and a ratio of total liabilities divided by net worth less than 1.5.

B. In addition, to pass the financial test, a company shall meet all of the following requirements:

(1) The company's independent certified public accountant shall have compared the data used by the company in the financial test, which is required to be derived from the independently audited year-end financial statement, based on United States generally accepted accounting practices for the latest fiscal year, with the amounts in such financial statement. In connection with that procedure, the licensee shall inform the Department within 90 days of any matters that may cause the auditor to believe that the data specified in the financial test should be adjusted and that the company no longer passes the test.

(2) After the initial financial test, the company shall repeat passage of the test within 90 days after the close of each succeeding fiscal year.

(3) If the licensee no longer meets the requirements of paragraph II.A of this appendix, the licensee shall send notice to the Department of its intent to establish alternative financial assurance as specified in Department regulations. The notice shall be sent by certified mail, return receipt requested, within 90 days after the end of the fiscal year for which the year end financial data show that the licensee no longer meets the financial test requirements. The licensee shall provide alternative financial assurance within 120 days after the end of such fiscal year.

III. Company Self-Guarantee

The terms of a self-guarantee which an applicant or licensee furnishes shall provide that:

A. The guarantee shall remain in force unless the licensee sends notice of cancellation by certified mail, return receipt requested, to the Department. Cancellation may not occur until an alternative financial assurance mechanism is in place.

B. The licensee shall provide alternative financial assurance as specified in the regulations within 90 days following receipt by the Department of a notice of cancellation of the guarantee.

C. The guarantee and financial test provisions shall remain in effect until the Department has terminated the license or until another financial assurance method acceptable to the Department has been put in effect by the licensee.

D. The applicant or licensee shall provide to the Department a written guarantee (a written commitment by a corporate officer) which states that the licensee will fund and carry out the required decommissioning activities or, upon issuance of an order by the Commissioner of Health, the licensee will set up and fund a trust in the amount of the current cost estimates for decommissioning.

Appendix 16-G

Criteria Relating to Use of Financial Tests and Self-Guarantee For Providing Reasonable Assurance of Funds for Decommissioning by Nonprofit Colleges, Universities, and Hospitals

I. Introduction

An applicant or licensee may provide reasonable assurance of the availability of funds for decommissioning based on furnishing its own guarantee that funds will be available for decommissioning costs and on a demonstration that the applicant or licensee passes the financial test of Section II of this appendix. The terms of the self-guarantee are in Section III of this appendix. This appendix establishes criteria for passing the financial test for the self-guarantee and establishes the terms for a self-guarantee.

II. Financial Test

A. For colleges and universities, to pass the financial test a college or university shall meet either the criteria in Paragraph II.A. (1) or the criteria in Paragraph II.A. (2) of this appendix.

(1) For applicants or licensees that issue bonds, a current rating for its most recent uninsured, uncollateralized, and unencumbered bond issuance of AAA, AA, or A as issued by Standard and Poor's (S&P) or Aaa, Aa, or A as issued by Moody's.

(2) For applicants or licensees that do not issue bonds, unrestricted endowment consisting of assets located in the United States of at least \$50 million, or at least 30 times the total current decommissioning cost estimate (or the current amount required if certification is used), whichever is greater, for all decommissioning activities for which the college or university is responsible as a self-guaranteeing licensee.

B. For hospitals, to pass the financial test a hospital shall meet either the criteria in Paragraph II.B. (1) or the criteria in Paragraph II.B. (2) of this appendix:

(1) For applicants or licensees that issue bonds, a current rating for its most recent uninsured, uncollateralized, and unencumbered bond issuance of AAA, AA, or A as issued by Standard and Poor's (S&P) or Aaa, Aa, or A as issued by Moody's.

(2) For applicants or licensees that do not issue bonds, all the following tests shall be met:

(a) $(\text{Total Revenues less total expenditures}) / \text{total revenues}$ shall be equal to or greater than 0.04.

(b) $\text{Long term debt} / \text{net fixed assets}$ shall be less than or equal to 0.67.

(c) $(\text{Current assets and depreciation fund}) / \text{current liabilities}$ shall be greater than or equal to 2.55.

(d) Operating revenues shall be at least 100 times the total current decommissioning cost estimate (or the current amount required if certification is used) for all decommissioning activities for which the hospital is responsible as a self-guaranteeing license.

C. In addition, to pass the financial test, a licensee shall meet all the following requirements:

(1) The licensee's independent certified public accountant shall have compared the data used by the licensee in the financial test, which is required to be derived from the independently audited year-end financial statements, based on United States generally accepted accounting practices, for the latest fiscal year, with the amounts in such financial statement. In connection with that procedure, the licensee shall inform the Department within 90 days of any matters coming to the attention of the auditor that cause the auditor to believe that the data specified in the financial test should be adjusted and that the licensee no longer passes the test.

(2) After the initial financial test, the licensee shall repeat passage of the test within 90 days after the close of each succeeding fiscal year.

(3) If the licensee no longer meets the requirements of Section I of this appendix, the licensee shall send notice to the Department of its intent to establish alternative financial assurance as specified in Department regulations. The notice shall be sent by certified mail, return receipt requested, within 90 days after the end of the fiscal year for which the yearend financial data show that the licensee no longer meets the financial test requirements. The licensee shall provide alternate financial assurance within 120 days after the end of such fiscal year.

III. Self-Guarantee

The terms of a self-guarantee which an applicant or licensee furnishes shall provide that—

A. The guarantee shall remain in force unless the licensee sends notice of cancellation by certified mail, and/or return receipt requested, to the Department. Cancellation may not occur unless an alternative financial assurance mechanism is in place.

B. The licensee shall provide alternative financial assurance as specified in the Department's regulations within 90 days following receipt by the Department of a notice of cancellation of the guarantee.

C. The guarantee and financial test provisions shall remain in effect until the Department has terminated the license or until another financial assurance method acceptable to the Department has been put in effect by the licensee.

D. The applicant or licensee shall provide to the Department a written guarantee (a written commitment by a corporate officer or officer of the institution) which states that the licensee will fund and carry out the required decommissioning activities or, upon issuance of an order by the Commissioner of Health, the licensee will set up and fund a trust in the amount of the current cost estimates for decommissioning.

E. If, at any time, the licensee's most recent bond issuance ceases to be rated in any category of "A" or above by either Standard and Poor's or Moody's, the licensee shall provide notice in writing of such fact to the Department within 20 days after publication of the change by the rating service.

Table 10

Quantities of Licensed Material for Financial Assurance Determination

Materials	Microcuries
Americium-241	.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 9.2h	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	.01
Polonium-210	0.1
Potassium-42	10
Praseodymium-142	100
Praseodymium-143	100
Promethium-147	10

Promethium-149	10
Radium-226	.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	0.10
Strontium-91	10
Strontium-92	10
Sulphur-35	100
Tantalum-182	10
Technetium-96	10
Technetium-97m	100
Technetium-97	100
Technetium-99m	100
Technetium-99	10
Tellurium-125m	10
Tellurium127m	10
Tellurium-127	100
Tellurium129m	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) ¹	100

Thulium-170	10
Thulium-171	10
Tin-113	10
Tin-125	10
Tungsten-181	10
Tungsten-185	10
Tungsten-187	100
Uranium (natural) ²	100
Uranium-233	.01
Uranium-234—Uranium-235	.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	.01
Any radionuclide other than alpha emitting radionuclides, not listed above or mixtures of beta emitters of unknown composition	.1

¹Based on alpha disintegration rate of Th-232, Th-230 and their daughter cts.

²Based on alpha disintegration rate of U-238, U-234, and U-235.

Note: Where there is a combination of isotopes in known amounts, the limit for the combination should be derived as follows: Determine, for each isotope in the combination, the ratio between the quantity present in the combination and the limit otherwise established for the specific isotope when not in combination. The sum of such ratios for all the isotopes in the combination may not exceed "1" (i.e., "unity").

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