

902 KAR 100:042. Decommissioning and financial surety.

RELATES TO: KRS 211.842-211.852, 211.990(4), 10 C.F.R. 20.1401-20.1406, 30, Appendices A-E, 30.35, 30.36, 40.36, 70.25, 15 U.S.C. 2B, 78m

STATUTORY AUTHORITY: KRS 194A.050, 211.090(3), 211.844

NECESSITY, FUNCTION, AND CONFORMITY: KRS 211.844 requires the Cabinet for Health and Family Services to regulate the possession or use of sources of ionizing or electronic product radiation and the handling and disposal of radioactive waste. This administrative regulation establishes requirements for decommissioning and financial assurance of radioactive material licensees.

Section 1. General Provisions and Scope. (1) This administrative regulation shall apply to the decommissioning and financial assurance requirements of a facility licensed under 902 KAR 100:040 or 100:022, as well as other facilities subject to the cabinet's jurisdiction under KRS 211.842 to 211.852. For a low-level waste disposal facility licensed pursuant to 902 KAR 100:022, the criteria for decommissioning shall apply to only an ancillary surface facility that supports radioactive waste disposal activities.

(2) This administrative regulation shall not apply to a site that has:

- (a) Been decommissioned prior to the effective date of this administrative regulation;
- (b) Previously submitted and received cabinet approval on a license termination or decommissioning plan prior to the effective date of this administrative regulation; or
- (c) Submitted a license termination or decommissioning plan with an application, as required by 902 KAR 100:040, Section 7.

(3) After a site has been decommissioned and the license terminated in accordance with this administrative regulation, the cabinet shall require additional cleanup if, based on new information, it determines that necessary criteria were not met and residual radioactivity at the site may result in significant threat to public health and safety.

(4) To calculate Total Effective Dose Equivalent (TEDE) to the average member of the critical group, the licensee shall determine the peak annual TEDE dose expected within the first 1,000 years after decommissioning.

Section 2. Radiological Criteria for Unrestricted Use. (1) A site shall be considered acceptable for unrestricted use if:

- (a) 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 twenty-five (25) millirem (0.25 mSv) per year, including radioactivity from groundwater sources of drinking water; and
- (b) The residual radioactivity has been reduced to As Low as Reasonably Achievable (ALARA) levels.

(2) Determination of ALARA levels shall take into account every foreseeable potential detriment that may result from decontamination and waste disposal.

Section 3. Criteria for License Termination Under Restricted Conditions. The cabinet shall terminate a license under restricted conditions if one (1) or more of the following circumstances exist at the site:

- (1) The licensee demonstrates that further reductions in residual radioactivity necessary to comply with Section 2 of this administrative regulation:
 - (a) May result in net public or environmental harm; or

(b) The residual levels associated with restricted conditions are ALARA. Determination of ALARA levels shall take into account every foreseeable potential detriment that may result from decontamination and waste disposal;

(2) The licensee has made provisions for legally enforceable institutional controls that provide reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group will not exceed twenty-five (25) mrem (0.25 mSv) 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 necessary control and maintenance of the site. Acceptable financial assurance mechanisms shall include:

(a) Funds placed into an account segregated from the licensee's assets and outside the licensee's administrative control, as established in Section 15(2)(a) of this administrative regulation;

(b) Surety method, insurance, or other guarantee method as described in Section 15(2)(b) of this administrative regulation;

(c) For a federal, state, or local government licensee, a statement of intent as described in Section 15(2)(d) of this administrative regulation; or

(d) For a governmental entity assuming custody and ownership of a site, an arrangement deemed acceptable by the governmental entity.

(4) The licensee has submitted a decommissioning or license termination plan to the cabinet indicating the licensee's intent to decommission in accordance with Section 14(1) of this administrative regulation and specifying that the licensee intends to decommission by restricting use of the site. The licensee shall document in the plan how the advice of potentially affected individuals and institutions in the community has been sought, analyzed, and incorporated, as appropriate.

(a) A licensee proposing to decommission by restricting use of the site shall seek advice from potentially-affected parties if:

1. Institutional controls proposed by the licensee:

a. Provide reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group will not exceed twenty-five (25) mrem (0.25 mSv) TEDE per year;

b. Are enforceable; and

c. Will not impose undue burdens on the local community or other affected parties; and

2. 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 necessary control and maintenance of the site;

(b) In seeking advice on the issues identified in paragraph (a) of this subsection, the licensee shall provide for:

1. Participation by representatives of a broad cross section of potentially-affected community interests;

2. An opportunity for a comprehensive, collective discussion on the issues by the participants; and

3. A publicly available summary of the results of the discussions, including a description of the participants' viewpoints and the extent of agreement and disagreement among the participants; and

(5) Residual radioactivity at the site has been reduced so that if the institutional controls were no longer in effect, there is reasonable assurance that the TEDE from residual radioactiv-

ity distinguishable from background to the average member of the critical group is ALARA and shall not exceed:

- (a) 100 mrem (1 mSv) per year; or
- (b) 500 mrem (5 mSv) per year, if the licensee:

1. Demonstrates that further reductions in residual radioactivity necessary to comply with the value in subsection (5)(a) of this section are not technically achievable, are prohibitively expensive, or may result in net public or environmental harm;

2. Makes provisions for durable institutional controls;

3. Provides sufficient financial assurance to enable a responsible government entity or independent third party, including a governmental custodian of a site, to:

a. Carry out periodic rechecks of the site at least every five (5) years to assure that the institutional controls remain in place as necessary to meet the criteria established in subsection (2) of this section; and

b. Assume and carry out responsibilities for necessary control and maintenance of the institutional controls. Acceptable financial assurance mechanisms shall be as established in subsection (3) of this section.

Section 4. Alternate Criteria for License Termination. (1) The cabinet may terminate a license using alternate criteria greater than the dose criterion established in Sections 2 and 3(2) or (4)(a)1a of this administrative regulation, if the licensee:

(a) Submits an analysis of possible sources of exposure in support of assurance that:

1. Public health and safety continues to be protected; and

2. It is unlikely that the dose from manmade sources combined, other than medical, are more than the 100 mrem/year (1 mSv/y) limit of 902 KAR 100:019, Section 10(1)(a);

(b) Has employed restrictions on site use, to the extent practical, according to the provisions of Section 3 of this administrative regulation;

(c) Reduces doses to ALARA levels, taking into consideration potential detriments expected to result from decontamination and waste disposal; and

(d) Has submitted a decommissioning or license termination plan to the cabinet indicating the licensee's intent to decommission in accordance with Section 14(1) of this administrative regulation, and specifying that the licensee proposes to decommission by use of alternate criteria.

1. The licensee shall document in the plan how the advice of potentially-affected individuals and institutions in the community has been sought, analyzed, and addressed, as appropriate.

2. In seeking advice, the licensee shall provide for:

a. Participation by representatives of a broad cross section of potentially-affected community interests;

b. An opportunity for a comprehensive, collective discussion on the issues by the participants; and

c. A publicly available summary of the results of discussions, including a description of the participant's viewpoints and the extent of agreement and disagreement among the participants.

(2) The use of alternate criteria to terminate a license requires the approval of the cabinet, after consideration of recommendations that address comments provided by state and federal agencies and public comments submitted pursuant to Section 5 of this administrative regulation.

Section 5. Public Notification and Public Participation. Upon receipt of a license termination or decommissioning plan from the licensee, or a proposal by the licensee for release of a site

pursuant to Section 3 or 4 of this administrative regulation, or if the cabinet determines a notice to be in the public interest, the cabinet shall:

- (1) Notify and solicit comments from:
 - (a) Local and state governments in the vicinity of the site; and
 - (b) Other state and federal agencies, if the licensee proposes to release a site pursuant to Section 4 of this administrative regulation.
- (2) Publish a notice to solicit comments from potentially affected parties. Publication shall be in a medium readily accessible to individuals in the vicinity of the site, and may be:
 - (a) Local newspaper;
 - (b) Letters to state and local organizations; or
 - (c) Other appropriate media.

Section 6. Minimization of Contamination. An applicant for a license or for an amendment in its entirety shall:

- (1) Describe in the application how facility design and procedures for operation shall minimize contamination of the facility and the environment to the extent practicable;
- (2) Facilitate eventual decommissioning; and
- (3) Minimize the generation of radioactive waste, to the extent practicable.

Section 7. Criteria Relating to Use of Financial Tests and Parent Company Guarantees for Providing Reasonable Assurance of Funds for Decommissioning. (1) An applicant or licensee shall provide reasonable assurance of the availability of funds for decommissioning based upon:

- (a) Obtaining a parent company to guarantee the availability of funds for decommissioning costs; and
 - (b) A demonstration that the parent company meets financial requirements.
- (2) Financial test.
- (a) To pass the financial test, the parent company shall meet one (1) of the following criteria:
 1. The parent company shall have:
 - a. Two (2) of the following three (3) ratios:
 - (i) A ratio of total liabilities to net worth less than two (2);
 - (ii) A ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than one-tenth (0.1); or
 - (iii) A ratio of current assets to current liabilities greater than one and five-tenths (1.5);
 - b. Net working capital and tangible net worth each at least six (6) times the current decommissioning cost estimates for the total of facilities or parts of the facilities, or prescribed amount if a certification is used;
 - c. Tangible net worth of at least \$10,000,000; and
 - d. Assets located in the United States amounting to at least ninety (90) percent of the total assets or at least six (6) times the current decommissioning cost estimates for the total of facilities or parts of the facilities, or prescribed amount if a certification is used; or
 2. The parent company shall have:
 - a. 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;
 - b. Tangible net worth each at least six (6) times the current decommissioning cost estimates for the total of facilities or parts of the facilities, or prescribed amount if a certification is used;
 - c. Tangible net worth of at least \$10,000,000; and

d. Assets located in the United States amounting to at least ninety (90) percent of the total assets or at least six (6) times the current decommissioning cost estimates for the total of facilities or parts of the facilities, or prescribed amount if a certification is used; or

(b) The parent company's independent certified public accountant shall compare the data used by the parent company in the financial test, which shall be derived from the independently audited, year-end financial statements for the latest fiscal year, with the amounts in the financial statement. The licensee shall inform the cabinet, within ninety (90) days, of matters coming to the auditor's attention that cause the auditor to believe that:

1. The data specified in the financial test requires adjustment; and
2. 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 ninety (90) days after the close of each succeeding fiscal year.

2.a. If the parent company no longer meets the requirements of subsection (2)(a) of this section, the licensee shall notify the cabinet of its intent to establish alternate financial assurance.

b. The notice shall be sent by certified mail within ninety (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.

c. The licensee shall provide alternate financial assurance within 120 days after the end of a fiscal year.

(3) Parent company guarantee. The terms of a parent company guarantee that an applicant or licensee obtains shall provide that:

(a) The parent company guarantee shall remain in force unless the guarantor notifies the licensee and the cabinet, by certified mail, return receipt requested, of cancellation. Cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation as evidenced by the return receipts.

(b) If the licensee fails to provide sufficient alternate financial assurance within ninety (90) days after receipt by the licensee and cabinet of a notice of cancellation of the parent company guarantee from the guarantor, the guarantor shall provide an alternative financial assurance in the name of the licensee.

(c) The parent company guarantee and financial test provisions shall remain in effect until the cabinet has terminated the license.

(d) If a trust is established for decommissioning costs, the trustee and trust shall be acceptable to the cabinet. An acceptable trustee shall include an appropriate state or federal government agency or an entity that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency.

Section 8. Criteria Relating to Use of Financial Tests and Self-guarantees for Providing Reasonable Assurance of Funds for Decommissioning. (1) An applicant or licensee may provide reasonable assurance of the availability of funds for decommissioning based upon:

(a) Furnishing its own guarantee of funds available for decommissioning costs pursuant to subsection (3) of this section; and

(b) A demonstration that the company passes the financial test established in subsection (2) of this section.

(2) Financial test.

(a) To pass the financial test, a company shall meet the following criteria:

1. Tangible net worth shall be at least ten (10) times the total current decommissioning cost estimate for the total of facilities or parts of the facilities or the current amount required if certification is used.

2. Assets located in the United States shall amount to at least ninety (90) percent of total assets or at least ten (10) times the total current decommissioning cost estimate for the total of facilities or parts of the facilities 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, or Aaa, Aa, or A as issued by Moody's.

(b) To pass the financial test, a company shall meet the following additional requirements:

1. The company shall have at least one (1) class of equity securities registered pursuant to 15 U.S.C. 2B.

2. The company's independent certified public accountant shall compare the data used by the company in the financial test, which shall be derived from the independently audited, year-end financial statements for the latest fiscal year, with the amounts in the financial statement. The licensee shall inform the cabinet, within ninety (90) days, of matters coming to the attention of the auditor that cause the auditor to believe that:

a. The data specified in the financial test requires adjustment; and

b. The company no longer passes the test.

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

(c) If the licensee no longer meets the requirements of paragraph (a) of this subsection, the licensee shall notify the cabinet immediately of the licensee's intent to establish alternate financial assurance within 120 days of the notice.

(3) Company self-guarantee. The terms of a self-guarantee that 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 cabinet. Cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation by the cabinet, as evidenced by the return receipt.

(b) The licensee shall provide alternative financial assurance as specified in 902 KAR Chapter 100 within ninety (90) days following receipt by the cabinet of a notice of cancellation of the guarantee.

(c) The guarantee and financial test provisions shall remain in effect until the cabinet has terminated the license or until another financial assurance method acceptable to the cabinet has been put into effect by the licensee.

(d) The licensee shall promptly forward to the cabinet and the licensee's independent auditor the reports covering the latest fiscal year filed by the licensee with the Securities and Exchange Commission pursuant to the requirements of 15 U.S.C. 78m.

(e) If the licensee's most recent bond issuance ceases to be rated "A" or above by either Standard and Poor's or Moody's, the licensee shall notify to the cabinet, in writing, within twenty (20) days after publication of the change by the rating service. If the licensee's most recent bond issuance ceases to be rated "A" or above by both Standard and Poor's and Moody's, the licensee shall no longer meet the requirements of subsection (2)(a) of this section.

(f) An applicant or licensee shall provide to the cabinet a written commitment by a corporate officer stating that the licensee shall fund and carry out the required decommissioning activities or, upon issuance of an order by the cabinet, the licensee shall set up and fund a trust in the amount of the current cost estimates for decommissioning.

Section 9. 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. (1) An applicant or licensee may provide reasonable assurance of the availability of funds for decommissioning based upon:

(a) Furnishing its own guarantee of the availability of funds for decommissioning costs pursuant to subsection (3) of this section; and

(b) A demonstration that the company passes the financial test established in subsection (2) of this section.

(2) Financial test.

(a) To pass the financial test a company shall meet the following criteria:

1. Tangible net worth greater than \$10,000,000, or at least ten (10) times the total current decommissioning cost estimate, or the current amount required if certification is used, whichever is greater, for 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 ninety (90) percent of total assets or at least ten (10) times the total current decommissioning cost estimate, or the current amount required if certification is used for 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 one and five-tenths (1.5).

(b) A company shall also meet the following financial requirements:

1. The company's independent certified public accountant shall compare the data used by the company in the financial test, which shall 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 the financial statement. The licensee shall inform the cabinet within ninety (90) days of matters that cause the auditor to believe that:

a. The data specified in the financial test requires adjustment; and

b. The company no longer passes the test.

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

3.a. If the licensee no longer meets the requirements of paragraph (a) of this subsection, the licensee shall notify the cabinet of intent to establish alternative financial assurance.

b. The notice shall be sent by certified mail, return receipt requested, within ninety (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.

c. The licensee shall provide alternative financial assurance within 120 days after the end of the fiscal year.

(3) 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 cabinet. Cancellation shall not occur until an alternative financial assurance mechanism is in place;

(b) The licensee shall provide alternative financial assurance, as specified in this administrative regulation, within ninety (90) days following receipt by the cabinet of a notice of cancellation of the guarantee;

(c) The guarantee and financial test provisions shall remain in effect until the cabinet has terminated the license or until another financial assurance method acceptable to the cabinet has been put into effect by the licensee; and

(d) An applicant or licensee shall provide to the cabinet a written commitment by a corporate officer stating that the licensee shall fund and carry out the required decommissioning activities or, upon issuance of an order by the cabinet, the licensee shall set up and fund a trust in the amount of the current cost estimates for decommissioning.

Section 10. Criteria Relating to Use of Financial Tests and Self-guarantee for Providing Reasonable Assurance of Funds for Decommissioning by Nonprofit Colleges, Universities, and Hospitals. (1) An applicant or licensee may provide reasonable assurance of the availability of funds for decommissioning based upon:

- (a) Furnishing its own guarantee of the availability of funds for decommissioning costs; and
- (b) A demonstration that the applicant or licensee passes the financial test established in subsection (2) of this section.

(2) Financial test.

(a) A college or university shall meet either of the following criteria:

1. For an applicant or licensee that issues 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, or Aaa, Aa, or A as issued by Moody's; or

2. For an applicant or licensee that does not issue bonds, unrestricted endowment consisting of assets located in the United States of at least \$50,000,000, or at least thirty (30) times the total current decommissioning cost estimate, or the current amount required if certification is used, whichever is greater, for decommissioning activities for which the college or university is responsible as a self-guaranteeing licensee.

(b) A hospital shall meet the following criteria:

1. For an applicant or licensee that issues 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, or Aaa, Aa, or A as issued by Moody's; or

2. For an applicant or licensee that does not issue bonds:

a. The result of total revenues minus total expenditures divided by total revenues shall be equal to or greater than 0.04;

b. Long term debt divided by net fixed assets shall be less than or equal to 0.67;

c. The sum of current assets plus depreciation funds, divided by current liabilities, shall be greater than or equal to 2.55; and

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 decommissioning activities for which the hospital is responsible as a self-guaranteeing license.

(c) A licensee shall meet the requirements established in subparagraphs 1. through 3. of this paragraph.

1. A licensee's independent certified public accountant shall compare the data used by the licensee in the financial test, which shall 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 the financial statement. The licensee shall inform the cabinet, within ninety (90) days, of matters coming to the attention of the auditor that cause the auditor to believe that:

a. The data specified in the financial test requires adjustment; and

b. The licensee no longer passes the test.

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

3. If a licensee no longer meets the requirements of subsection (1) of this section, the licensee shall notify the cabinet of its intent to establish alternative financial assurance. The notice shall be sent by certified mail, return receipt requested, within ninety (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 alternate financial assurance within 120 days after the end of the fiscal year.

(3) Self-guarantee. The terms of a self-guarantee that 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 cabinet. Cancellation shall not occur unless an alternative financial assurance mechanism is in place.

(b) The licensee shall provide alternative financial assurance, as specified in this administrative regulation, within ninety (90) days following receipt by the cabinet of a notice of cancellation of the guarantee.

(c) The guarantee and financial test provisions shall remain in effect until the cabinet has terminated the license or until another financial assurance method acceptable to the cabinet has been put into effect by the licensee.

(d) An applicant or licensee shall provide to the cabinet a written commitment by a corporate officer or officer of the institution stating that the licensee shall:

1. Fund and carry out the required decommissioning activities; or
2. Upon issuance of an order by the cabinet, set up and fund a trust in the amount of current cost estimates for decommissioning.

(e) If the licensee's most recent bond issuance ceases to be rated "A" or above by either Standard and Poor's or Moody's, the licensee shall notify the cabinet, in writing, within twenty (20) days after publication of the change by the rating service.

Section 11. Financial Assurance and Recordkeeping for Decommissioning for Radioactive Material. (1)(a) An 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 in Section 16 of this administrative regulation shall submit a decommissioning funding plan as established in Section 15(1) of this administrative regulation.

(b) A decommissioning funding plan shall also be submitted if a combination of isotopes is involved, and if R divided by 10^5 is greater than one (1) (known as the "unity rule"), where R is defined as the sum of the ratios of the quantity of an isotope to the applicable value in Section 16 of this administrative regulation.

(c) A holder of, or applicant for, a 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 in Section 16, or if a combination of isotopes is involved if R , divided by 10^{12} is greater than one (1) (known as the "unity rule"), where R is defined as the sum or the ratios of the quantity of an isotope to the applicable value in Section 16 of this administrative regulation, shall submit a decommissioning funding plan as described in Section 15(1) of this administrative regulation.

(2) An applicant for a specific license authorizing possession and use of radioactive material of half-life greater than 120 days and in quantities specified in subsection (4) of this section shall:

(a) Submit a decommissioning funding plan as established in Section 15(1) of this administrative regulation; or

(b) Submit a certification that financial assurance for decommissioning has been provided in the amount established by subsection (4) of this section, using one (1) of the methods established in Section 15 of this administrative regulation. For an applicant, the certification may state that the appropriate assurance shall be obtained after the application has been approved and the license issued, but before the receipt of licensed material. If an 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 Section 15 of this administrative regulation shall be submitted to the cabinet before receipt of licensed material. If an applicant

does not defer execution of the financial instrument, the applicant shall submit to the cabinet, as part of the certification, a signed original of the financial instrument obtained to satisfy the requirements of Section 15 of this administrative regulation.

(3)(a) A holder of a specific license of a type described in subsection (1) or (2) of this section, shall provide financial assurance for decommissioning in accordance with the criteria established in this section.

(b) A holder of a specific license of a type described in subsection (1) of this section shall submit a decommissioning funding plan as established in Section 15(1) of this administrative regulation or a certification of financial assurance for decommissioning in an amount at least equal to \$1,125,000 in accordance with the criteria established in this section. If a licensee submits a certification of financial assurance rather than a decommissioning funding plan, the licensee shall include a decommissioning funding plan in an application for license renewal.

(c) A holder of a specific license of a type described in subsection (2) of this section shall submit a decommissioning funding plan as described in Section 15 of this administrative regulation, or a certification of financial assurance for decommissioning in accordance with the criteria established in this section.

(d) A waste collector or waste processor, as defined in 902 KAR 100:010, shall provide financial assurance in an amount based on a decommissioning funding plan as established in Section 15 of this administrative regulation. 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 that 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 902 KAR 100:019. The decommissioning funding plan shall be submitted by December 3, 2006.

(4) The following is a list of required amounts of financial assurance for decommissioning, listed by quantity of radioactive material:

(a) Greater than 10^4 but less than or equal to 10^5 times the applicable quantities established in Section 16 of this administrative regulation, in unsealed form. For a combination of isotopes, if R, as defined in subsection (1) of this section, divided by 10^4 is greater than one (1) but R divided by 10^5 is less than or equal to one (1), the amount shall be \$1,125,000.

(b) Greater than 10^3 but less than or equal to 10^4 times the applicable quantities established in Section 16 of this administrative regulation, in unsealed form. For a combination of isotopes, if R, as defined in subsection (1) of this section, divided by 10^3 is greater than one (1) but R divided by 10^4 is less than or equal to one (1), the amount shall be \$225,000.

(c) Greater than 10^{10} but less than or equal to 10^{12} times the applicable quantities established in Section 16 of this administrative regulation, in sealed sources or plated foils. For a combination of isotopes, if R, as defined in subsection (1) of this section, divided by 10^{10} is greater than one (1), the amount shall be \$113,000.

(d)1. A licensee required to submit the \$1,125,000 amount shall do so by June 30, 2010.

2. A licensee required to submit the \$113,000 or \$225,000 amount shall do so by June 30, 2010.

3. A licensee having possession limits exceeding the upper bounds of this list shall base financial assurance on a decommissioning funding plan.

Section 12. Financial Assurance and Recordkeeping for Decommissioning for Source Material. Criteria for providing financial assurance for decommissioning, except for licenses authorizing the receipt, possession, and use of source material for uranium or thorium milling, or radioactive material at sites formerly associated with such milling, shall be as established in subsections (1) and (2) of this section.

(1) An applicant for a specific license authorizing the possession and use of more than 100 millicuries (mCi) of source material in a readily dispersible form shall submit a decommissioning funding plan as described in Section 15(1) of this administrative regulation.

(2) An applicant for a specific license authorizing possession and use of quantities of source material greater than ten (10) millicuries (mCi) but less than or equal to 100 millicuries (mCi) in a readily dispersible form shall submit:

(a) A decommissioning funding plan as established in Section 15(1) of this administrative regulation; or

(b) A certification that financial assurance for decommissioning has been provided in the amount of \$225,000 using one (1) of the methods described in Section 15 of this administrative regulation.

1. The certification may state that the appropriate assurance shall be obtained after the application has been approved and the license issued, but before the receipt of licensed material.

2. If an 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 Section 15 of this administrative regulation shall be submitted to the cabinet prior to receipt of licensed material.

3. If an applicant does not defer execution of the financial instrument, the applicant shall submit to the cabinet, as part of the certification, a signed original of the financial instrument obtained to satisfy the requirements of Section 15 of this administrative regulation.

(c)1. A holder of a specific license covered by subsection (1) of this section or by this subsection, shall provide financial assurance for decommissioning in accordance with the criteria established in this section.

2. A holder of a specific license of a type described in subsection (1) of this section shall submit a decommissioning funding plan as established in Section 15(1) of this administrative regulation, or a certification of financial assurance for decommissioning in an amount at least equal to \$1,125,000, in accordance with the criteria in this section. If the licensee submits the certification of financial assurance rather than a decommissioning funding plan, the licensee shall include a decommissioning funding plan in an application for license renewal.

3. A holder of a specific license of a type established in this subsection shall submit a decommissioning funding plan, as described in Section 15(1) of this administrative regulation, or a certification of financial assurance for decommissioning in accordance with the criteria established in this section.

Section 13. Financial Assurance and Recordkeeping for Decommissioning for Special Nuclear Material. (1)(a) An applicant for a specific license of the type authorizing the possession and use of unsealed nuclear material in quantities exceeding 10^5 times the applicable quantity established in Section 16 of this administrative regulation shall submit a decommissioning funding plan as established in Section 15(1) of this administrative regulation.

(b) A decommissioning funding plan shall be submitted if a combination of isotopes is involved, and if R divided by 10^5 is greater than one (1) (known as the "unity rule"), where R is the sum of the ratios of the quantity of each isotope to the applicable value in Section 16 of this administrative regulation.

(2) An applicant for a specific license authorizing possession and use of unsealed special nuclear material in quantities specified in subsection (4) of this section, shall submit:

(a) A decommissioning funding plan as described in Section 15(1) of this administrative regulation; or

(b) A certification that financial assurance for decommissioning has been provided in an amount established in subsection (4) of this section, using one (1) of the methods established in Section 15 of this administrative regulation.

1. The certification may state that the appropriate assurance shall be obtained after the application has been approved and the license issued, but before the receipt of licensed material.

2. If an 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 Section 15 of this administrative regulation shall be submitted to the cabinet before receipt of licensed material.

3. If an applicant does not defer execution of the financial instrument, the applicant shall submit to the cabinet, as part of the certification, a signed original of the financial instrument obtained to satisfy the requirements of Section 15 of this administrative regulation.

(3)(a) A holder of a specific license that is of a type established in subsection (1) of this section, shall provide financial assurance for decommissioning in accordance with the criteria established in this section.

(b) A holder of a specific license of a type established in subsection (1) of this section shall submit a decommissioning funding plan as established in Section 15(1) of this administrative regulation, or a certification of financial assurance for decommissioning in an amount at least equal to \$1,125,000, in accordance with the criteria established in this section. If the licensee submits the certification of financial assurance rather than a decommissioning funding plan, the licensee shall include a decommissioning funding plan in an application for license renewal.

(c) Each holder of a specific license of a type established in subsection (1) of this section shall submit:

1. A decommissioning funding plan, established in Section 15(1) of this administrative regulation; or

2. A certification of financial assurance for decommissioning, in accordance with the criteria established in this section.

(4) Required amounts of financial assurance for decommissioning, listed by quantity of material:

(a) Greater than 10^4 but less than or equal to 10^5 times the applicable quantities established in Section 16 of this administrative regulation. For a combination of isotopes, if R, as defined in subsection (1) of this section, divided by 10^4 is greater than one (1) but R divided by 10^5 is less than or equal to one (1), the amount shall be \$1,125,000.

(b) Greater than 10^3 but less than or equal to 10^4 times the applicable quantities established in Section 16 of this administrative regulation. For a combination of isotopes, if R, as defined in subsection (1) of this section, divided by 10^3 is greater than one (1) but R divided by 10^4 is less than or equal to one (1), the amount shall be \$225,000.

(c) A licensee having possession limits exceeding the upper bounds of this section shall base financial assurance on a decommissioning funding plan.

Section 14. Expiration and Termination of Licenses and Decommissioning of Sites and Separate Buildings or Outdoor Areas. (1) Within sixty (60) days of the occurrence one (1) of the following events, a licensee shall notify the cabinet in writing and shall either begin decommissioning the licensee's site, separate building, or outdoor area containing residual radioactivity, so that the building or outdoor area is suitable for release in accordance with cabinet requirements established in this administrative regulation, or shall submit within twelve (12)

months of notification a decommissioning plan, if required by subsection (4)(a) of this section, and shall begin decommissioning upon approval of that plan if:

(a) The license has expired pursuant to 902 KAR 100:040, Section 7;

(b) The licensee has decided to permanently cease principal activities, as established in this section, at the entire site, in a separate building or outdoor area that contains residual radioactivity, so that the building or outdoor area is unsuitable for release in accordance with cabinet requirements established in this administrative regulation;

(c) Principal activities under the license have not been conducted for a period of twenty-four (24) months; or

(d) Principal activities have not been conducted for a period of twenty-four (24) months in a separate building or outdoor area that contains residual radioactivity, so that the building or outdoor area is unsuitable for release in accordance with cabinet requirements.

(2) Coincident with the notification required by subsection (1) of this section, the licensee shall maintain in effect all decommissioning financial assurances established by the licensee pursuant to Sections 11, 12, and 13 of this administrative regulation in conjunction with a license issuance or renewal or as required by this section. The amount of the financial assurance shall be increased or decreased, as appropriate, to cover the detailed cost estimate for decommissioning established pursuant to subsection (4)(d)5 of this section.

(a) A licensee who has not provided financial assurance to cover the detailed cost estimate submitted with the decommissioning plan shall do so within one year (1) after the effective date of this administrative regulation.

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

(3)(a) The cabinet may grant a request to extend the time periods established in this section if the cabinet determines that an extension is not detrimental to public health or safety and is in the public interest.

(b) The request shall be submitted at least thirty (30) days before the notification required by subsection (1) of this section.

(c) The schedule for decommissioning established in subsection (1) of this section shall not commence until the cabinet has made a determination on the request.

(4)(a) A decommissioning plan shall be submitted if required by a license condition or if the procedures and activities necessary to carry out decommissioning of the site, a separate building, or outdoor area have not been approved by the cabinet previously, and the decommissioning procedures may increase potential risk to the health or safety of workers or to the public, as in:

1. Procedures involving 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 potentially resulting in significantly greater airborne concentrations of radioactive materials than are present during operation; or

4. Procedures potentially resulting in significantly greater releases of radioactive material to the environment than those associated with operation.

(b) The cabinet may approve an alternate schedule for submittal of a decommissioning plan required pursuant to subsection (1) of this section if the cabinet determines that the alternative schedule is necessary to the effective conduct of decommissioning operations and presents no undue risk from radiation to public health or safety, and is in the public interest.

(c) A procedure with a potential health or safety impact, including a procedure listed in paragraph (a) of this subsection, shall not be carried out prior to approval of the decommissioning plan.

(d) A proposed decommissioning plan for a site, separate building, or outdoor area shall include:

1. A description of the conditions of the site, 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; and
6. For decommissioning plans calling for completion of decommissioning later than twenty-four (24) months after plan approval, a justification for the delay based on the criteria in subsection (6) of this section.

(e) The proposed decommissioning plan shall be approved by the cabinet if the information demonstrates completion as soon as practicable and adequate protection for the health and safety of workers and the public.

(5)(a) A licensee shall complete decommissioning of the site, separate building, or outdoor area as soon as practicable, but within twenty-four (24) months following the initiation of decommissioning, except as provided in subsection (6) of this section.

(b) If decommissioning involves the entire site, the licensee shall request license termination as soon as practicable, but within twenty-four (24) months following the initiation of decommissioning, except as provided in subsection (6) of this section.

(6) The cabinet shall approve a request for an alternative schedule for completion of decommissioning of the site, separate building, or outdoor area, and license termination if appropriate, if the cabinet determines that the alternative is warranted by consideration of:

(a) If it is technically feasible to complete decommissioning within the allotted twenty-four (24) month period;

(b) If sufficient waste disposal capacity is available to allow completion of decommissioning within the allotted twenty-four (24) month period;

(c) If a significant volume reduction in wastes requiring disposal can be achieved by allowing short-lived radionuclides to decay;

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

(e) Other site-specific factors, such as the regulatory requirements of other government agencies, lawsuits, groundwater treatment activities, monitored natural groundwater restoration, actions that may result in more environmental harm than deferred cleanup, and other factors beyond the control of the licensee.

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

(a) Certify the disposition of all licensed material, including accumulated wastes, by submitting a completed cabinet Form RPS-10, incorporated by reference in 902 KAR 100:040, or equivalent information; and

(b) 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 in some other manner that the premises are suitable for release in accordance with the criteria for de-

commissioning established in Sections 1 through 6 of this administrative regulation. The licensee shall, as appropriate:

1. Report levels:

a. Of gamma radiation in units of microroentgen (μR) (millisieverts, mSv) per hour at one (1) meter from surfaces;

b. Of radioactivity, including alpha and beta, in units of disintegrations per minute, microcuries (megabecquerels) per 100 square centimeters removable and fixed radiation for surfaces;

c. Microcuries (megabecquerels) per milliliter for water; and

d. Picocuries (Becquerels) per gram for solids such as soils or concrete; and

2. Specify the survey instruments used and certify that each instrument is properly calibrated and tested.

(8) Specific licenses, including expired licenses, shall be terminated by written notice to the licensee if the cabinet determines that:

(a)1. Radioactive material has been properly disposed of;

2. Reasonable effort has been made to eliminate residual radioactive contamination, if present; and

3.a. A radiation survey has been performed that demonstrates that the premises are suitable for release in accordance with the criteria for decommissioning established in Sections 1 through 6 of this administrative regulation; or

b. Other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release in accordance with the criteria for decommissioning established in Sections 1 through 6 of this administrative regulation; or

(b) Records required by 902 KAR 100:040, Section 7(3)(e), and Section 15(3) of this administrative regulation have been received.

Section 15. Financial Assurance Methods. (1) A decommissioning funding plan shall contain a cost estimate for decommissioning and a description of the method of assuring funds for decommissioning from subsection (2) of this section, including means for adjusting cost estimates and associated funding levels periodically over the life of the facility. Cost estimates shall be adjusted at intervals not to exceed three (3) years. The decommissioning funding plan shall also contain:

(a) A certification by the licensee that financial assurance for decommissioning has been provided in the amount of the cost estimate for decommissioning; and

(b) A signed original of the financial instrument obtained to satisfy the requirements of subsection (2) of this section.

(2) Financial assurance for decommissioning shall be provided by one (1) or more of the following methods:

(a) A prepayment deposited 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 so that the amount of funds may be sufficient to pay decommissioning costs. Prepayment shall be in the form of a trust, escrow account, government fund, certificate of deposit, or deposit of government securities.

(b) A surety method, insurance, or other guarantee method.

1. These methods guarantee that decommissioning costs shall be paid.

2. A surety method shall be in the form of a surety bond, letter of credit, or line of credit.

3. 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 Section 7 of this administrative regulation.

4. A parent company guarantee shall not be used in combination with another financial method to satisfy the requirements of this section.

5. 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 used, the guarantee and test shall be in accordance with Section 8 of this administrative regulation.

6. 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 in accordance with Section 9 of this administrative regulation.

7. 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 in accordance with Section 10 of this administrative regulation.

8. A guarantee by the applicant or licensee shall not be used in combination with another financial method used to satisfy the requirements of this section, or in a situation in which the applicant or licensee has a parent company holding majority control of the voting stock of the company.

9. A surety method, or insurance used to provide financial assurance for decommissioning, shall contain the following conditions:

a. The surety method or insurance shall be open-ended or, if written for a specified term, shall be renewed automatically unless the issuer notifies the cabinet, the beneficiary, and the licensee at least ninety (90) days prior to the renewal date of its intention not to renew. The surety method or insurance shall provide that the full face amount be paid to the beneficiary automatically, prior to expiration, without proof of forfeiture, if the licensee fails to provide a replacement acceptable to the cabinet within thirty (30) days after receipt of notification of cancellation.

b. The surety method or insurance shall be payable to a trust established for decommissioning costs. The trustee and trust shall be acceptable to the cabinet. An acceptable trustee shall include an appropriate state or federal government agency or an entity that has the authority to act as a trustee, and whose trust operations are regulated and examined by a federal or state agency.

c. The surety method or insurance shall remain in effect until the cabinet has terminated the license.

(c) 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.

1. An external sinking fund shall be 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 may be sufficient to pay decommissioning costs at the time termination of operation is expected.

2. An external sinking fund shall be in the form of a trust, escrow account, government fund, certificate of deposit, or deposit of government securities.

3. The surety or insurance provisions shall be as stated in subsection (2)(b) of this section.

(d) For a federal, state, or local government licensee, a statement of intent containing a cost estimate for decommissioning or an amount based on the tables in Sections 11, 12, and 13 of this administrative regulation and indicating that funds for decommissioning shall be obtained as necessary.

(e) If a governmental entity is assuming custody and ownership of a site, an arrangement that is deemed acceptable by the governmental entity.

(3)(a) Each person licensed pursuant to 902 KAR 100:040 shall keep records of information pertinent to the decommissioning of a facility in an identified location until the site is released for unrestricted use.

(b) Before licensed activities shall be transferred or assigned in accordance with 902 KAR 100:040, Section 6, a licensee shall transfer the records established in this subsection to the new licensee.

(c) The new licensee shall be responsible for maintaining these records until the license is terminated.

(d) If records pertinent to the decommissioning of a facility are kept for other purposes, reference to the records and their locations shall be used.

(e) Information the cabinet considers pertinent to decommissioning shall consist of:

1. Records of spills or other unusual occurrences involving the spread of contamination in and around the facility, equipment, or site.

a. The records may be limited to instances in which contamination remains after a cleanup procedure or if 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.

b. The records shall include all 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, or stored, and of locations of possible inaccessible contamination, such as buried pipes, which may be subject to contamination.

a. If required drawings are referenced, each relevant document need not be indexed individually.

b. If drawings are not available, the licensee shall substitute appropriate records of available information concerning these areas and locations.

3. A list contained in a single document and updated every two (2) years, except for areas containing only sealed sources, if the sources have not leaked or no contamination remains after a leak, or radioactive materials having half-lives of less than sixty-five (65) days, or depleted uranium used only for shielding or as penetrators in unused munitions:

a. Areas designated and formerly designated restricted areas as defined in 902 KAR 100:010, Section 1. For requirements prior to January 26, 1994, see 902 KAR 100:010, Section 1 contained in the 1990 edition of 902 KAR Chapter 100;

b. Areas outside of restricted areas that require documentation under subsection (3) of this section;

c. Areas outside of restricted areas where current and previous wastes have been buried as documented under 902 KAR 100:021, Section 11; and

d. Areas outside of restricted areas that contain material so that, if the license expired, the licensee shall be required to either decontaminate the area to meet the criteria for decommissioning in this administrative regulation or to apply for approval for disposal under 902 KAR 100:021, Section 2.

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.

Section 16. Quantities¹ of Licensed Material.

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
Molbdenum-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
Seleium-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

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) 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
Vandium-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
An alpha emitting radionuclide not listed above or mixtures of alpha emitters of unknown composition	.01
A radionuclide other than an 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 products.

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

Note: For purposes of 902 KAR 100:021, Section 3, if there is involved a combination of isotopes in known amounts, the limit for the combination shall be derived as follows: Determine,

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for each isotope in the combination, the ratio between the quantity present in the combination and the limit otherwise established for the specific isotope if not in combination. The sum of such ratios for all the isotopes in the combination shall not exceed one ("1") ("unity").(20 Ky.R. 2511; eff. 4-11-1994; Am. 26 Ky.R. 2444; 27 Ky.R. 801; eff. 9-11-2000; 38 Ky.R. 376; 952; eff. 11-16-2011; 41 Ky.R. 897; 1592; eff. 2-5-2015.)