CABINET FOR HEALTH SERVICES
COMMONWEALTH OF KENTUCKY
FRANKFORT 40621-0001

DEPARTMENT FOR PUBLIC HEALTH

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OSP

February 23, 2000

Fred Combs
Deputy Director
Office of State Programs
One White Flint North
11555 Rockville Pike
Mail Stop O3C10
Rockville, MD 20852

RE: Administrative Regulations

Dear Mr. Combs:

Per the U.S. Nuclear Regulatory Commission Office of State Program's letter SP-98-100, the Kentucky Radiation Health and Toxic Agents Branch is providing the enclosed administrative regulations for your review. The attachment provides the timeline for submission of comments by agencies and the public.

All new administrative regulations and amendments to existing administrative regulations were prepared by downloading the sections from the appropriate U.S. Nuclear Regulatory Commission regulations and not from the Conference of Radiation Control Program Directors, Inc. suggested state regulations.

If you have questions regarding the information, feel free to contact Vicki Jeffs or me at (502) 564-3700.

Sincerely,

John A. Volpe, Ph.D.,Manager
Kentucky Radiation Health and Toxic Agents Branch

Enclosures

c: Vicki Jeffs
Richard Woodruff, NRC

Notice Of Intent
to Promulgate an Administrative Regulation

Notice Of Intent filed with
Legislative Research Commission..... February 15, 2000

Published in Administrative Register.... March 1, 2000

Public hearing, if necessary..... March 31, 2000
(public hearing must be requested
10 days prior to the public hearing)

Submittal of Administrative Regulation

If no public hearing, administrative
regulations will be filed with
Legislative Research Commission..... April 15, 2000

Published in Administrative Register.... May 1, 2000

Public Hearing requested by..... May 15, 2000

Public Hearing, if requested..... May 22, 2000

Hearing by Administrative Regulation
Review Subcommittee..... June 2000

Health and Welfare Committee must review administrative regulations within 30 days after they are passed out of the Administrative Regulation Review Subcommittee.

Administrative regulations become effective after review by Health and Welfare Committee.

If Health and Welfare Committee does not review administrative regulations, they become effective the day they are passed out of the Administrative Regulation Review Subcommittee.

CABINET FOR HEALTH SERVICES

DEPARTMENT FOR PUBLIC HEALTH

DIVISION OF PUBLIC HEALTH PROTECTION AND SAFETY

(New Administrative Regulation)

902 KAR 100:036. Repeal of 902 KAR 100:035.

RELATES TO: KRS 211.842 to 211.852, 211.990(4)

STATUTORY AUTHORITY: KRS 194.050, 211.090, 211.844

NECESSITY, FUNCTION, AND CONFORMITY: 902 KAR 100:035 is no longer necessary because a new administrative regulation (902 KAR 100:019) regulating requirements for the picking up, receiving and opening of packages containing radioactive material and describing the test for special form licensed material has been promulgated by the Department for Public Health.

Section 1. 902 KAR 100:036, Repealer Regulation for 902 KAR 100:035, Receiving radioactive material and special form tests, is hereby repealed.

CABINET FOR HEALTH SERVICES

DEPARTMENT FOR PUBLIC HEALTH

DIVISION OF PUBLIC HEALTH PROTECTION AND SAFETY

(Amendment)

902 KAR 100:040. General provisions for specific licenses.

RELATES TO: KRS 211.842 to 211.852, 211.990(4), 13B.170 10 C.F.R 30.31, 30.32, 30.33, 30.34, 30.36, 30.37, 30.38, 30.39, 30.41, 30.50, 30.51, 30.61

STATUTORY AUTHORITY: KRS Chapter 13B, 194.050, 211.090, 211.844, 13B.170,[~~EO 96-862~~] 10 C.F.R. 30.31, 30.32, 30.33, 30.34, 30.36, 30.37, 30.38, 30.39, 30.41, 30.50, 30.51, 30.61

NECESSITY, FUNCTION, AND CONFORMITY: [~~Executive Order 96-862, effective July 2, 1996, reorganizes the Cabinet for Human Resources and places the Department for Public Health and its programs under the Cabinet for Health Services.~~] KRS 211.844 authorizes the Cabinet for Health Services to promulgate administrative regulations for regulating and licensing the possession or use of sources of ionizing or electronic product radiation and the handling and disposal of radioactive waste. This administrative regulation provides general provisions for the issuance of radioactive material licenses to possess, use, and transfer radioactive material within Kentucky.

Section 1. License Requirement. Except for persons exempted by 902

KAR 100:015 and 902 KAR 100:045, a person shall not manufacture, produce, receive, possess, use, transfer, own, or acquire radioactive material except as authorized in a specific or general license issued in accordance with 902 KAR Chapter 100. Authority to transfer possession or control by the manufacturer, processor, or producer of equipment, devices or commodity, or other products containing radioactive material whose subsequent possession, use, transfer and disposal by other persons are exempted from regulatory requirements may be obtained only from the U.S. Nuclear Regulatory Commission, Washington, D. C. 20555.

Section 2. Types of Licenses. (1) Licenses for radioactive material shall be of two (2) types:

(a) General; and

(b) Specific.

(2) Except as specified in 902 KAR 100:050, general licenses shall be:

(a) Effective without the filing of an application with the cabinet or the issuance of licensing documents to the licensee; and

(b) Subject to other applicable requirements of 902 KAR Chapter 100 and limitations of 902 KAR 100:050.

(3) Specific licenses shall require:

(a) The submission of an application to the cabinet; and

(b) The issuance of a licensing document by the cabinet.

(4) The license shall be subject to applicable requirements of 902 KAR Chapter 100 and to limitations specified in the licensing document.

Section 3. Filing of Application for a Specific License. (1) An application

for "specific license" shall be filed with the Cabinet for Health Services on "Form RPS-7". The form may be obtained from the cabinet at 275 East Main Street, Frankfort, Kentucky 40621, between 8 a.m. and 4:30 p.m., Monday through Friday.

(2)(a) The cabinet may at a time after the filing of the original application, and before the expiration of the license, require further statements in order to enable the cabinet to determine whether:

1. The application shall be granted or denied; or

2. A license shall be modified or revoked.

(b) Prelicensing visits may be made to the applicant's facility for the purpose of obtaining information in addition to that furnished in the original application.

(c) If the applicant or licensee fails to respond to a request in writing forwarded by certified mail for additional information within thirty (30) days of the date of the receipt of the request, or within another specified time if health and safety are threatened, the cabinet may suspend, modify or revoke the license in accordance with 902 KAR 100:170 or deny the application.

(3) The application shall be signed by the applicant or licensee or a person duly authorized to act for and on his behalf.

(4) An application for a license may include a request for a license authorizing one (1) or more activities if the application specifies the additional activities and complies with the provisions of 902 KAR Chapter 100 relating to specific licenses.

(5) (a) The applicant may incorporate in the application, by reference, information contained in previous applications, statements, or reports filed with the cabinet, if references are clear and specific.

(b) Information provided to the cabinet by an applicant for a license or by a licensee or information required to be maintained by statute or by 902 KAR 100 Chapter 100, cabinet orders, or license conditions shall be complete and accurate in all aspects.

(6) An application for a specific license to use radioactive material in the form of a sealed source or in a device that contains the sealed source must:

(a) Identify the source or device by manufacture and model number as registered with the cabinet, U.S. Nuclear Regulatory Commission, or an Agreement State, or

(b) Contain the information identified in 902 KAR 100:058, Section 1.

(7) Applications for specific licenses filed under this regulation must contain, if required:

(a) A proposed decommissioning funding plan or a certification of financial assurance for decommissioning as provided in 902 KAR 100:042, and

(b) An emergency plan for responding to a release as provided in 902 KAR 100:041.

Section 4. General Requirements for the Issuance of a Specific License. (1) A license application shall be approved if the cabinet determines:

(a) The applicant is qualified by reason of training and experience to use the radioactive material in question for the purpose requested in accordance with 902 KAR Chapter 100 and in a manner as to minimize danger to public health and safety or property;

(b) The applicant's proposed equipment, facilities, and procedures are adequate to minimize danger to public health and safety or property;

(c) The issuance of the license will not be adverse to the health and safety of the public; and

(d) The applicant satisfies applicable special requirements in 902 KAR Chapter 100.

(2) For an application for a license to receive and possess radioactive material which the cabinet determines will significantly affect the quality of the environment, the following shall apply:

(a) The secretary of the cabinet or his designee shall, before commencement of construction of the plant or facility in which the activity is to be conducted, weigh the environmental, economic, technical, and other benefits against environmental costs and consider available alternatives;

(b) A license application may be approved if the cabinet determines after consideration of the factors described in subsection (2)[~~paragraph~~] (a) of this section[~~subsection~~], that the action called for is the issuance of the proposed license, with appropriate conditions to protect environmental values;

(c) Commencement of construction prior to the determination shall be grounds for denial of a license to receive and possess radioactive material in the plant or facility.

1. As used in this subsection, the term "commencement of construction" means clearing of land, excavation, or other substantial action that would adversely affect the environment of a site.

2. The term shall not mean site exploration, necessary roads for site exploration, borings to determine foundation conditions, or other preconstruction monitoring or testing to establish background information related to the suitability of the site or the protection of environmental values.

(3)(a) The licensee shall notify the cabinet in writing, immediately following the filing of a voluntary or involuntary petition for bankruptcy under a chapter of Title 11 (bankruptcy) of the United States Code by or against:

1. The licensee;

2. An entity (as that term is defined in 11 USC 101(14)) controlling the licensee or listing the license or licensee as property of the estate; or

3. An affiliate (as that term is defined in 11 USC 101(2)) of the licensee.

(b) This notification shall indicate:

1. The bankruptcy court in which the petition for bankruptcy was filed; and

2. The date of the filing of the petition.

[~~(4) Information provided to the cabinet by an applicant for a license or by a licensee or information required by 902 KAR Chapter 100, orders or license conditions to be maintained by the applicant or licensee shall be complete and accurate in all material aspects.~~]

Section 5. Issuance of Specific Licenses. (1) Upon a determination that an application meets the requirements of KRS 211.842 to 211.852 and 902 KAR Chapter 100, the cabinet may issue a specific license authorizing the proposed activity in a form containing conditions and limitations as it deems appropriate or necessary.

(2) The cabinet may incorporate in a license when issued, or thereafter

by appropriate rule, 902 KAR Chapter 100, or order, or as [~~otherwise~~] specified in Section 13 of this administrative regulation, additional requirements and conditions with respect to the licensee's receipt, possession, use, and transfer of radioactive material subject to 902 KAR Chapter 100 as it deems appropriate or necessary in order to:

(a) Minimize danger to public health and safety or property;

(b) Require reports and the keeping of records, and provide for inspections of activities under the license as may be appropriate or necessary; and

(c) Prevent loss or theft of licensed material.

Section 6. Specific Terms and Conditions of Licenses. (1) A license issued pursuant to this administrative regulation shall be subject to the provisions of KRS 211.842 to 211.852, 902 KAR Chapter 100, and orders of the cabinet.

(2) Neither the license nor a right under the license shall be assigned or otherwise transferred in violation of the provisions of KRS 211.842 to 211.852.

(3) A person licensed by the cabinet under 902 KAR Chapter 100 shall confine his use and possession of the radioactive material(s) licensed to the locations and purposes authorized in the license.

Section 7. Expiration and Termination of Licenses. (1) A specific license shall expire at midnight on the day, in the month and year stated in the license, except as specified in subsection (4) of this section and in Section 8(2) of this administrative regulation[~~Except as specified in subsection (9) of this section and in Section 8(2) of this administrative regulation, a specific license shall expire at midnight on the day, in the month and year stated in the license~~].

(2) A licensee shall notify the cabinet promptly, in writing, and request

termination of the license if the licensee decides to terminate activities involving materials authorized under the license. This notification and request for termination of the license shall include:

(a) The reports and information specified in subsection (3)(d) and (e) of this section; and

(b) A plan for completion of decommissioning, if required, by 902 KAR 100:042 ~~[subsection (4) of this section]~~ or by license condition.

(3) If a licensee does not submit an application for license renewal under Section 8(2) of this administrative regulation, the licensee, on or before the expiration date specified in the license, shall:

(a) Terminate use of radioactive material;

(b) Remove radioactive contamination to the extent practicable except for those procedures covered by subsection (4) of this section;

(c) Properly dispose of radioactive material;

(d) File the "Disposition of Radioactive Material", "Form RPS-10", with the Cabinet for Health Services. The form may be obtained from the cabinet at 275 East Main Street, Frankfort, Kentucky 40621, between 8 a.m. and 4:30 p.m., Monday through Friday; and

(e) Prior to license termination, a licensee authorized to possess radioactive material with a half-life greater than 120 days, in an unsealed form, shall forward the following records to the cabinet:

1. Records of disposal of radioactive material made under 902 KAR 100:021, Sections 3-6, including burials authorized before January 28,

1981; and

2. Records required by 902 KAR 100:019, Section 31 (2)(d).

(f) If licensed activities are transferred or assigned in accordance with 902 KAR 100:040, Section 6, a licensee authorized to possess radioactive material, with a half-life greater than 120 days, in an unsealed form, shall transfer the following records to the new licensee. The new licensee will be responsible for maintaining these records until the license is terminated:

1. Records of disposal of licensed material made under 902 KAR 100:021, Sections 3–6, including burials authorized before January 28, 1981; and

2. Records required by 902 KAR 100:019, Section 31 (2)(d).

(g) Prior to license termination, a licensee shall forward the records required by 902 KAR 100:042, Section 15(7), to the cabinet.

[~~Conduct a radiation survey of the premises where the licensed activities were carried out and submit a report of the result of this survey, unless the licensee demonstrates that the premises are suitable for release for unrestricted use in some other manner. The licensee shall, as appropriate:~~

~~1. Report levels of radiation in units of microrads per hour of beta and gamma radiation at one (1) centimeter and gamma radiation at one (1) meter from surfaces, and report levels of radioactivity, including alpha, in units of disintegrations per minute (or microcuries) per 100 square centimeters removable and fixed for surfaces, microcuries per milliliter for water, and picocuries per gram for solids such as soils or concrete; and~~

~~2. Specify the survey instrument(s) used and certify that each instrument~~

~~is properly calibrated and tested.~~

~~(4) In addition to the information required under paragraphs (d) and (e) of this subsection, the licensee shall submit a plan for completion of decommissioning if the procedures necessary to carry out decommissioning have not been previously approved by the cabinet and may increase potential health and safety impacts to workers or to the public as in the following cases:~~

~~(a) Procedures would involve techniques not applied routinely during cleanup or maintenance operations; or~~

~~(b) Workers may be entering areas not normally occupied in which surface contamination and radiation levels are significantly higher than routinely encountered during operation; or~~

~~(c) Procedures would result in significantly greater airborne concentrations of radioactive materials than are present during operation; or~~

~~(d) Procedures would result in significantly greater releases of radioactive material to the environment than those associated with operation.~~

~~(5) Procedures with potential health and safety impacts shall not be carried out prior to approval of the decommissioning plan.~~

~~(6) The proposed decommissioning plan, if required by subsection (4) of this section or by license condition, shall include:~~

~~(a) Description of planned decommissioning activities;~~

~~(b) Description of methods used to assure protection of workers and the environment against radiation hazards during decommissioning;~~

~~(c) A description of the planned final radiation survey; and~~

~~(d) An updated detailed cost estimate for decommissioning, comparison of that estimate with present funds set aside for decommissioning; and~~

~~(e) A plan for assuring the availability of adequate funds for completion of decommissioning.~~

~~(7) The proposed decommissioning plan may be approved by the cabinet if the information in the plan demonstrates that the decommissioning shall be completed as soon as is reasonable and the health and safety of workers and the public shall be adequately protected.~~

~~(8) Upon approval of the decommissioning plan by the cabinet, the licensee shall complete decommissioning in accordance with the approved plan. As a final step in decommissioning, the licensee shall again submit the information required in subsection (3)(e) of this section and shall certify the disposition of accumulated wastes from decommissioning.~~

~~(9) If the information submitted under subsection (3)(e) or (8) of this section does not adequately demonstrate that the premises are suitable for release for unrestricted use, the cabinet shall inform the licensee of appropriate further actions required for termination of license.~~

(4) [~~(10)~~] A specific license continues in effect, beyond the expiration date if necessary, with respect to possession of [~~residual~~] radioactive material [~~present as contamination~~] until the cabinet notifies the licensee in writing that the license shall be terminated. During this time, the licensee shall:

(a) Limit actions involving radioactive material to those related to decommissioning; and

(b) Continue to control entry to restricted areas until they are suitable for release for unrestricted use and the cabinet notifies the licensee in writing that the license shall be terminated.

~~(11) A licensee shall provide notification to the cabinet in writing within sixty (60) days of the occurrence of events in paragraph (b) of this subsection.~~

~~(a) If a condition of paragraph (b) of this subsection is met, a licensee shall:~~

~~1. Begin decommissioning its site, or any separate building, or outdoor area that contains residual radioactivity so that the building or outdoor area is suitable for release in accordance with cabinet requirements; or~~

~~2. Submit within twelve (12) months of notification, as required in this section, a decommissioning plan, if required by subsection (4) of this section.~~

~~(b) A licensee shall begin decommission upon approval of the plan required in subsection (4) of this section if:~~

~~1. The license has expired pursuant to this section of this administrative regulation; or~~

~~2. The licensee has decided to permanently cease licensed 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 cabinet requirements; or~~

~~3. Licensed activities under the license have not been conducted for a period~~

~~of twenty-four (24) months; or~~

~~4. Licensed activities have not been conducted for a period of twenty-four (24) months in any separate building or outdoor area that contains residual radioactivity that prohibits the release in accordance with cabinet requirements.~~

~~(12) Specific licenses shall be terminated by written notice to the licensee when the cabinet determines that:~~

~~(a) Radioactive material has been properly disposed;~~

~~(b) Reasonable effort has been made to eliminate residual radioactive contamination, if present; and~~

~~(c) A radiation survey has been performed which demonstrates that the premises are suitable for release for unrestricted use; or~~

~~(d) Other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release for unrestricted use.~~]

Section 8. Renewal of License. (1) An application for renewal of specific licenses shall be filed in accordance with 902 KAR Chapter 100.

(2) If a licensee, not less than thirty (30) days prior to expiration of his existing license, has filed an application in proper form for renewal or for a new license authorizing the same activities, the existing license shall not expire until the application has been finally determined by the cabinet.

Section 9. Amendment of Licenses. (1) Applications for amendment of a license at the request of the licensee shall be filed in accordance with 902 KAR Chapter 100 and shall specify the respects in which the licensee desires his license to be amended and the

grounds for the amendment.

(2) Every five (5) years or at the request of the cabinet, the licensee shall be required to amend the license in its entirety by submitting a complete application.

Section 10. Cabinet Action on Applications to Renew or Amend. In considering an application by a licensee to renew or amend his license, the cabinet shall apply the requirements of 902 KAR Chapter 100.

Section 11. Inalienability of Licenses. A license issued or granted under 902 KAR Chapter 100 or right to possess or utilize radioactive material granted by a license issued under 902 KAR Chapter 100 shall not be transferred, assigned, or otherwise disposed of, through transfer of control of a license to a person unless the cabinet, after securing full information, finds that the transfer is in accordance with the requirements of 902 KAR Chapter 100 and gives its consent in writing.

Section 12. Transfer of Material. (1) A licensee shall not transfer radioactive material except as authorized by this administrative regulation.

(2) Except as stated in the license and subject to the provisions of subsections (3) and (4) of this section, a licensee may transfer radioactive material subject to the acceptance of the transferee to a person:

(a) Exempt from the requirements for a license as specified in this administrative regulation to the extent permitted under the exemption;

(b) Authorized to receive radioactive material under terms of a general license as specified in 902 KAR 100:050, or its equivalent, or a specific license or equivalent

licensing document, issued by the cabinet, the U.S. Nuclear Regulatory Commission, or an Agreement State;

(c) Otherwise authorized to receive radioactive material by the federal government or an agency thereof, the cabinet, or an Agreement State; or

(d) As otherwise authorized by the cabinet in writing.

(3) Before transferring radioactive material to a specific licensee of the cabinet, U.S. Nuclear Regulatory Commission, or an Agreement State or to a general licensee who is required to register with the cabinet, U.S. Nuclear Regulatory Commission, or an Agreement State prior to receipt of the radioactive material, the licensee transferring the material shall verify that the transferee's license authorizes the receipt of the type, form, and quantity of radioactive material to be transferred.

(4) The following methods for the verification required by this administrative regulation are acceptable:

(a) The transferor may have in his possession, and read, a current copy of the transferee's specific license or registration certificate;

(b) The transferor may have in his possession a written certificate by the transferee that he is authorized by license or registration certificate to receive the type, form, and quantity of radioactive material to be transferred, specifying the license or registration certificate number, issuing
agency and expiration date;

(c) For emergency shipments, the transferor may accept oral certification by the transferee that the transferee is authorized by license or registration certificate to receive the type, form, and quantity of radioactive material to be transferred,

specifying the license or registration certificate number, issuing agency, and expiration date; if the oral certification is confirmed in writing within ten (10) days;

(d) The transferor may obtain other sources of information compiled by a reporting service from official records of the cabinet, the U.S. Nuclear Regulatory Commission, or the licensing agency of an Agreement State as to the identity of licensees and the scope and expiration dates of licenses and registration; or

(e) When none of the methods of verification described in subsection (4)[~~paragraphs~~] (a) through (d) of this section[~~subsection~~] are readily available or when a transferor desires to verify that information received by one (1) of the[~~such~~] methods is correct or up-to-date, the transferor may obtain and record confirmation from the cabinet, U.S. Nuclear Regulatory Commission, or the licensing agency of an Agreement State that the transferee is licensed to receive the radioactive material.

(5) Shipment and transport of radioactive material shall meet the requirements of 902 KAR Chapter 100.

Section 13. Modification, Revocation, and Suspension of Licenses. (1) The terms and conditions of a license shall be subject to amendment, revision, or modification or the license may be suspended or revoked by reason of amendments to or violation of KRS 211.842 to 211.852, 902 KAR Chapter 100, or orders issued by the cabinet.

(2) A license may be revoked, suspended, or modified, in whole or in part, for:

(a) A material false statement in the application or in a statement of fact required under provisions of KRS 211.842 to 211.852;

(b) Conditions revealed by application or statement of fact;

(c) A report, record, or inspection, or other means which would warrant the cabinet to refuse to grant a license on an original application; or

(d) A violation of, or failure to observe the terms and conditions of KRS 211.842 to 211.852, or of the license, or of rules, 902 KAR Chapter 100, or orders of the cabinet.

(3) Except in cases of willful violation or those in which the public health, interest, or safety requires otherwise, a license shall not be modified, suspended, or revoked unless, prior to the institution of proceedings:

(a) Facts or conduct which may warrant this action shall have been called to the attention of the licensee in writing; and

(b) The licensee shall have been accorded an opportunity to demonstrate or achieve compliance with lawful requirements.

(4) A licensee whose license is suspended or revoked, shall have a right to a hearing in a manner set forth in 902 KAR 1:400.

Section 14. Retention of Records. (1) A person who receives radioactive material in accordance with a license issued under 902 KAR Chapter 100 shall keep records showing the receipt, transfer, and disposal of radioactive material.

(2)(a) Records of receipt of radioactive material which are required by subsection (1) of this section shall be maintained as long as the licensee retains possession of the radioactive material and for two (2) years following transfer or disposal of the radioactive material.

(b) Records of transfer of radioactive material shall be maintained by the licensee who transferred the material for five (5) years after the transfer.

(c) Records of disposal of radioactive material shall be maintained in accordance with 902 KAR 100:021.

(3) Other records required by 902 KAR Chapter 100 or by a license condition shall be maintained for the period specified in 902 KAR Chapter 100. If the retention period is not specified by 902 KAR Chapter 100 or license condition, the records shall be permanently maintained unless the cabinet authorizes their disposition upon proper application for their destruction.

(4) Records required to be maintained by 902 KAR Chapter 100 may be:

(a) The original, a reproduced copy or a microform if duly authenticated by authorized personnel and capable of producing a clear and legible copy after storage for the period specified by 902 KAR Chapter 100[.] ;or

(b) In electronic media with the capability for producing legible, accurate, and complete records during the required retention period.

(5) Records, such as letters, drawings, and specifications must include all pertinent information such as stamps, initials, and signatures. The licensee shall maintain adequate safeguards against tampering with and loss of records.

[~~Section 15. Financial Assurance and Recordkeeping for Decommissioning. (1)(a) An applicant for a specific license authorizing the possession and use of unsealed radioactive material, except source material, with a half-life greater than 120 days and in quantities exceeding 10E5 times the applicable quantities set forth in 902 KAR 100:030, Section 1 shall submit a decommissioning funding plan as~~

~~described in subsection (5) of this section. The decommissioning funding plan shall also be submitted if a combination of isotopes is involved if R divided by 10E5 is greater than one (1) (i.e., unity rule), where R is defined as the sum of the ratios of the quantity of each isotope to the applicable value in 902 KAR 100:030, Section 1.~~

~~(b) An applicant for a specific license authorizing the possession and use of more than 100 millicuries of source material in a readily dispersible form shall submit a decommissioning funding plan as described in subsection (5) of this section.~~

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

~~1. Submit a decommissioning funding plan as described in subsection (5) of this section; or~~

~~2. Submit a certification that financial assurance for decommissioning has been provided in the amount of $150,000 using one (1) of the methods described in subsection (6) of this section. For an applicant, this certification may state that the appropriate assurance shall be obtained after the application has been approved and the license issued but prior to the receipt of radioactive material. As part of the certification, a copy of the financial instrument obtained to satisfy the requirements of subsection (6) of this section shall be submitted to the cabinet.~~

~~(2) An applicant for a specific license authorizing possession and use of radioactive material, except source material and sealed~~

~~special nuclear material sources, with a half-life greater than 120 days and in quantities specified in subsection (4) of this section shall either:~~

~~(a) Submit a decommissioning funding plan as described in subsection (5) of this section; or~~

~~(b) Submit a certification that financial assurance for decommissioning has been provided in the amount prescribed by subsection (4) of this section using one (1) of the methods described in subsection (6) of this section. For an applicant, this certification may state that the appropriate assurance shall be obtained after the application has been approved and the license issued but prior to the receipt of radioactive material. As part of the certification, a copy of the financial instrument obtained to satisfy the requirements of subsection~~

~~(6) this section shall be submitted to the cabinet.~~

~~(3)(a) A holder of a specific license issued on or after January 1, 1995, which is of a type described in subsection (1) or (2) of this section, shall provide financial assurance for decommissioning in accordance with the criteria set forth in this section.~~

~~(b) A holder of a specific license issued before January 1, 1995, and of a type described in subsection (1)(a) or (b) of this section shall submit, on or before January 1, 1995, a decommissioning funding plan or a certification of financial assurance for decommissioning in an amount at least equal to $750,000 in accordance with the criteria set forth in this section. If the licensee submits the certification of financial assurance rather than a decommissioning funding plan at this time, the licensee shall include a decommissioning funding plan in an application for amending the license in its entirety.~~

~~(c) A holder of a specific license issued before January 1, 1995, and of a type described in subsection (1)(c) or (2) of this section shall submit, on or before January 1, 1995, a certification of financial assurance for decommissioning or a decommissioning funding plan in accordance with the criteria set forth in this section.~~

~~(4) Table of required amounts of financial assurance for decommissioning by quantity of material:~~

~~(a) Greater than 10E4 but less than or equal to 10E5 times the applicable quantities of 902 KAR 100:030, Section 1, in unsealed form. For a combination of isotopes, if R, as defined in subsection (1) of this section divided by 10E4 is greater than one (1) but R divided by 10E5 is less than or equal to one (1) - $750,000.~~

~~(b) Greater than 10E3 but less than or equal to 10E4 times the applicable quantities of 902 KAR 100:030, Section 1, in unsealed form. For a combination of isotopes, if R, as defined in subsection (1) of this section, divided by 10E3 is greater than one (1) but R divided by 10E4 is less than or equal to one (1) - $150,000.~~

~~(c) Greater than 10E10 times the applicable quantities of 902 KAR 100:030, Section 1, in sealed sources or plated foils other than sealed special nuclear material sources. For a combination of isotopes, if R, as defined in subsection (1) of this section, divided by 10E10 is greater than one (1) - $75,000.~~

~~(5) A decommissioning funding plan shall contain a cost estimate for decommissioning and a description of the method of assuring funds for~~

~~decommissioning from subsection (6) of this section, including means of adjusting cost estimates and associated funding levels periodically over the life of the facility.~~

~~(6) Financial assurance for decommissioning shall be provided by:~~

~~(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 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.~~

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

~~1. If the licensee defaults, these methods guarantee that decommissioning costs shall be paid.~~

~~(c) A surety method may 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 16 of this administrative regulation.~~

~~4. A parent company guarantee may not be used in combination with other financial methods to satisfy the requirements of this section.~~

~~5. 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 conducted pursuant to Section 17 of this administrative regulation.~~

~~6. A guarantee by the applicant or licensee shall not be used in combination with other financial methods to satisfy the requirement of this section, or in a situation where the applicant or licensee has a parent company holding majority control of the voting stock of the company.~~

~~7. 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, such as five (5) years, shall be renewed automatically unless ninety (90) days or more prior to the renewal date, the issuer notifies the cabinet, 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 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 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.~~

~~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 shall be sufficient to pay decommissioning costs at the time termination of operation is expected.~~

~~2. An external sinking fund may 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 paragraph (b) of this subsection.~~

~~(d) In the case of a state, or local government licensee, a statement of intent containing a cost estimate for decommissioning or an amount based on the table in subsection (4) of this section, and indicating that funds for decommissioning shall be obtained when necessary.~~

~~(7) A person licensed under this administrative regulation shall keep records of information important to the safe and effective decommissioning of the facility in an identified location until the license is terminated by the cabinet. If records of relevant information are kept for other purposes, reference to these records and their locations may be used. Information the cabinet considers important to decommissioning consists of:~~

~~(a) Records of spills or other unusual occurrences involving the spread of contamination in and around the facility, equipment, or site. These records may be~~

~~limited to instances when contamination remains after cleanup procedures or if there is reasonable likelihood that contaminants may have spread to inaccessible areas as in the case of possible seepage into porous materials like concrete. These records shall include known information on identification of involved nuclides, quantities, forms and concentrations.~~

~~(b) As-built drawings and modifications of structures and equipment in restricted areas where radioactive materials are used or stored, and of locations of possible inaccessible contamination such as buried pipes which may be subject to contamination. If required drawings are referenced, relevant documents need not be indexed individually. If drawings are not available, the licensee shall substitute appropriate records of available information concerning these areas and locations.~~

~~(c) A list of the following, contained in a single document and updated every two (2) years, except for areas containing only sealed sources, provided 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:~~

~~1. Areas designated and formerly designated restricted areas as defined in 902 KAR 100:010, Section 1(196). For requirements prior to January 26, 1994, see 902 KAR 100:010, Section 1(110) contained in the 1990 edition of 902 KAR Chapter 100 of the Kentucky Administrative Regulations, June 27, 1990;~~

~~2. Areas outside of restricted areas that require documentation pursuant to paragraph (a) of this subsection;~~

~~3. Areas outside of restricted areas where current and~~

previous wastes have been buried as documented under 902 KAR 100:021, Section 11;

4. Areas outside of restricted areas which contain radioactive material so that, if the license expired, the licensee shall be required to either decontaminate the area to unrestricted release levels or apply for approval for disposal under 902 KAR 100:021, Section 2.

(c) 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. Criteria Relating to Use of Financial Tests and Parent Company Guarantees for Providing Reasonable Assurance of Funds for Decommissioning. An applicant or licensee may provide reasonable assurance of the availability of funds for decommissioning based on obtaining a parent company guarantee that funds shall be available for decommissioning costs and on a demonstration that the parent company passes a financial test.

This section establishes criteria for passing the financial test and for obtaining the parent company guarantee.

(1) Financial test. To pass the financial test, the parent company shall meet the criteria of either paragraph (a) or (b) of this subsection:

(a) The parent company shall have:

1. Two (2) of the following three (3) ratios: A ratio of

~~total liabilities to net worth less than two (2.0); a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than one-tenth (0.1); and a ratio of current assets to current liabilities greater than one and one-half (1.5); and~~

~~2. Net working capital and tangible net worth at least six (6) times the current decommissioning cost estimates (or prescribed amount if a certification is used); and~~

~~3. Tangible net worth of at least $10 million; and~~

~~4. Assets located in the United States amounting to at least ninety (90) percent of total assets or at least six (6) times the current decommissioning cost estimates (or prescribed amount if certification is used).~~

~~(b) The parent company shall have:~~

~~1. 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~~

~~2. Tangible net worth at least six (6) times the current decommissioning cost estimate (or prescribed amount if a certification is used); and~~

~~3. Tangible net worth of at least $10 million; and~~

~~4. Assets located in the United States amounting to at least ninety (90) percent of total assets or at least six (6)~~
~~times the current decommissioning cost estimates (or~~
~~prescribed amount if certification is used).~~

~~(c) 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 the financial statement. In connection with that procedure the~~

~~licensee shall inform the cabinet within ninety (90) days of 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.~~

~~(d)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. If the parent company no longer meets the requirements of paragraphs (a) and (b) of this subsection, the licensee shall send notice to the cabinet of intent to establish alternate financial assurance as specified in this administrative regulation. 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. The licensee shall provide alternate financial assurance within 120 days after the end of that fiscal year.~~

~~(2) Parent company guarantee. The terms of a parent company guarantee which an applicant or licensee obtains shall provide that:~~

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

~~(b) If the licensee fails to provide alternate financial assurance as specified in this administrative regulation within ninety (90) days after receipt by the licensee and the cabinet of a notice of cancellation of the parent company guarantee from the~~

guarantor, the guarantor shall provide 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 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.

Section 17. Criteria Relating to Use of Financial Test 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 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 subsection (4) of this section.

(2) The terms of self-guarantee are in subsection (7) of this section.

(3) This section establishes criteria for passing the financial test for the self-guarantee and establishes the terms for self-guarantee.

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

(a) Tangible net worth 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;~~

~~(b) Assets located in the Unites 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; and~~

~~(c) A current rating for its most recent bond issuance of AAA, AA or A as issued by the Standard and Poors, or Aaa, Aa, or A as issued by Moodys.~~

~~(5) To pass the financial test, a company shall meet the following additional criteria:~~

~~(a) The company has at least one (1) class of equity securities registered under the Securities Exchange Act of 1934;~~

~~(b) The company's independent certified public accountant has 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 the financial statement;~~

~~(c) In connection with the procedure in subsection (5)(b) of this section, the licensee provides the cabinet within ninety (90) days of matters coming to the attention of the auditor that cause the auditor to believe:~~

~~1. The data specified in the financial test needs to be~~

~~adjusted; and~~

~~2. The company no longer passes the test; and~~

~~(d) After the initial financial test, the company repeats passage of the test within ninety (90) days after the close of each succeeding fiscal year.~~

~~(6) If the licensee no longer meets the requirements of subsection (4) of this section, the licensee shall provide immediate notice to the cabinet of its intent to establish alternate financial assurance as specified this administrative regulation within 120 days of the notice.~~

~~(7) The terms of self-guarantee which an applicant or licensee furnishes shall provide that:~~

~~(a) The guarantee remains in effect unless the licensee provides notices of cancellation by certified mail to the Manager, Radiation Control Branch, 275 East Main Street, Frankfort, Kentucky 40621. Cancellation shall not occur, however, 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) Alternative financial assurance as specified in this administrative regulation shall be provided within ninety (90) days following receipt by the cabinet of notice of cancellation of the guarantee;~~

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

~~(d) The licensee promptly forwards to the cabinet and the licensee's independent auditor 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 Security and Exchange Act of 1934;~~

~~(e) If the licensee's most recent bond issuance ceases to be rated in a category of "A" or above by either Standard and Poors or Moodys, the licensee shall provide notice in writing of the fact to the cabinet 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 in a category of "A" or above by both Standard and Poors and Moodys, the licensee no longer meets the requirements of subsection (4) of this section; and~~

~~(f) The applicant or licensee shall provide to the cabinet a written guarantee, a written commitment by a corporate officer, which states 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 15 [~~18~~]. Reporting Requirements. (1) Immediate report. A licensee shall directly notify the Cabinet for Health Services, Radiation Health and Toxic Agents[~~Control~~] Branch as soon as possible but not later than four (4) hours after the discovery of an event that prevents immediate protective actions necessary to avoid exposure to radiation or radioactive materials or releases of radioactive materials that could exceed regulatory limits. These events may include fires, explosions, toxic gas release.

(2) Twenty-four (24) hour report. A licensee shall notify the Cabinet for

Health Services, Radiation Control Branch within twenty-four (24) hours after the discovery of the following events involving radioactive material:

(a) An unplanned contamination event that:

1. Requires access to the contaminated area, by workers or the public, to be restricted for more than twenty-four (24) hours by imposing additional radiological controls or by prohibiting entry into the area;

2. Involves a quantity of material greater than five (5) times the lowest annual limit on intake specified in 902 KAR 100:019, Section 44 for the material; and

3. Has access to the area restricted for a reason other than to allow isotopes with a half-life of less than twenty-four (24) hours to decay prior to decontamination.

(b) An event in which equipment is disabled or fails to function as designed if:

1. The equipment is required by regulation or license condition to prevent releases exceeding regulatory limits, to prevent exposures to radiation and radioactive material exceeding regulatory limits, or to mitigate the consequences of an accident;

2. The equipment is required to be available and operable when it is disabled or fails to function; and

3. Redundant equipment is not available and operable to perform the required safety function.

(c) An event that requires unplanned medical treatment at a medical facility of an individual with spreadable radioactive contamination on the individual's clothing or body.

(d) An unplanned fire or explosion damaging radioactive material or a device, container, or equipment containing radioactive material if:

1. The quantity of material involved is greater than five (5) times the lowest annual limit on intake specified in 902 KAR 100:019, Section 44 for the radioactive material; and

2. The damage affects the integrity of the radioactive material or its container.

(3) Reports by licensees in response to the requirements of this section shall be made as follows:

(a) Licensees shall be required to make reports by subsections (1) and (2) of this section by telephone to the Cabinet for Health Services, Radiation Health and Toxic Agents[~~Control~~] Branch at (502) 564-3700 from 8:00 a.m.-4:30 p.m. Monday through Friday and at (502) 564-7815[~~8715~~] at other hours. To the extent that the information is available at the time of notification, the information provided in these reports shall include:

1. The caller's name and call back telephone number;

2. A description of the event, including date and time;

3. The exact location of the event;

4. The isotopes, quantities, and chemical and physical form of the radioactive material involved; and

5. Available personnel radiation exposure data.

(b) A licensee who makes a report required by subsections (1) and (2) of the section shall submit a written follow-up report within thirty (30) days of the initial report. Written reports prepared pursuant to 902 KAR Chapter 100 may be submitted to fulfill this requirement if the reports contain the necessary information and the appropriate distribution is made. These written reports shall be sent to the Manager, Radiation Health and Toxic Agents[~~Control~~] Branch, 275 East Main Street, Mail Stop HS 2E-D, Frankfort, Kentucky, 40621. The report shall include the following:

1. A description of the event, including the probable cause and the manufacturer and model number, if applicable, of equipment that failed or malfunctioned;

2. The exact location of the event;

3. The isotopes, quantities, and chemical and physical form of the radioactive material involved;

4. Date and time of the event;

5. Corrective actions taken or planned and results of evaluations or assessments; and

6. The extent of exposures of individuals to radiation or to radioactive materials without identification of individuals by name.

CABINET FOR HEALTH SERVICES

DEPARTMENT FOR PUBLIC HEALTH

DIVISION OF PUBLIC HEALTH PROTECTION AND SAFETY

(Amendment)

902 KAR 100:041. Quantities of radioactive materials requiring consideration of the need for an emergency plan.

RELATES TO: KRS 211.842 to 211.852, 211.990(4), 13B.170, 10 C.F.R.[~~CFR~~] 30.32, 30.72, 42 U.S.C.[~~USC~~] 11001

STATUTORY AUTHORITY: KRS 194.050, 211.090, 13B.170, 211.844, 10 C.F.R.[~~CFR~~] 30.32, 30.72, 42 U.S.C.[~~USC~~] 11001

NECESSITY, FUNCTION, AND CONFORMITY: KRS 211.844 authorizes the Cabinet for Health Services[~~Human Resources~~] to provide by administrative regulation for the registration and licensing of the possession or use of sources of ionizing or electronic product radiation, and the handling and disposal of radioactive waste. This administrative regulation provides requirements for emergency plans for responding to a release of radioactive material or waste, and shall apply to a person, applicant, or licensee required to submit an emergency plan.

Section 1. General Requirements. A license application to possess or a license authorizing the possession of radioactive materials in unsealed form, on foils or plated sources, or sealed in glass in excess of the quantities in

Section 4(1) of this administrative regulation shall contain:

(1) An evaluation showing the maximum dose to a person off site due to a release of radioactive materials shall not exceed one (1) rem effective dose equivalent or five (5) rems to the thyroid; or

(2) An emergency plan for responding to a release of radioactive material.

Section 2. Factors Supporting an Evaluation. One (1) or more of the following factors may be used to support an evaluation submitted pursuant to Section 1(1) of this administrative regulation:

(1) The radioactive material is physically separated that only a portion may be involved in an accident.

(2) The radioactive material, or part of the radioactive material, shall not be subject to release during an accident because of storage or packaging.

(3) The release fraction in the respirable size range may be lower than the release fraction shown in Section 4(1) of this administrative regulation due to the chemical or physical form of the material.

(4) The solubility of the radioactive material may reduce the dose received.

(5) Facility design or engineered safety features in the facility may cause the release fraction to be lower than the limits in Section 4(1) of this administrative regulation.

(6) Operating restrictions or procedures may prevent a release fraction as large as that shown in Section 4(1) of this administrative regulation.

(7) Other factors appropriate for the specific facility as determined by

the cabinet.

Section 3. Emergency Plan Information. (1) An emergency plan for responding to a release of radioactive material submitted pursuant to Section 1(2) of this administrative regulation shall include:

(a) Facility description. A brief description of the licensee's facility and area near the site.

(b) Types of accidents. An identification of each type of radioactive materials accident for which protective actions may be needed.

(c) Classification of accidents. A classification system for classifying accidents as alerts or site area emergencies.

(d) Detection of accidents. Identification of the means of detecting each type of accident in a timely manner.

(e) Mitigation of consequences. A brief description of the means and equipment for mitigating the consequences of each type of accident, including those provided to protect workers on site, and the program for maintaining the equipment.

(f) Assessment of releases. A brief description of the methods and equipment to assess releases of radioactive materials.

(g) Responsibilities. A brief description of the responsibilities of licensee personnel if an accident occurs, including identification of personnel responsible for promptly notifying off site response organizations and the Radiation Health and Toxic Agents[~~Control~~] Branch, and responsibilities for developing, maintaining, and updating the plan.

(h) Notification and coordination. A brief description of the means to promptly notify off site response organizations and request off site assistance, including medical assistance for the treatment of contaminated injured on site workers, if appropriate.

1. A control point shall be established.

2. Unavailability of personnel, parts of a facility, and equipment shall not exempt the licensee from notification and coordination requirements.

3. The licensee shall notify the appropriate off site response organizations immediately after the licensee declares an emergency and the Radiation Health and Toxic Agents[~~Control~~] Branch within one (1) hour.

(i) Information to be communicated. A brief description of the types of information on facility status, radioactive releases, and recommended protective actions, if necessary, to be given to off site response organizations and the Radiation Health and Toxic Agents[~~Control~~] Branch.

(j) Training. A brief description of the frequency, performance objectives, and licensee's plan for training workers to respond to an emergency, including special instructions and orientation tours offered by licensee to fire, police, medical, and other emergency personnel. Training shall:

1. Familiarize personnel with site-specific emergency procedures; and

2. Thoroughly prepare site personnel for responsibilities in the event of accident scenarios postulated as most probable for the specific site, including the use of team training for the scenarios.

(k) Safe shutdown. A brief description of the means of restoring the facility

to a safe condition after an accident.

(l) Exercises.

1. Provisions for conducting quarterly communication checks with off site response organizations, and biennial on site exercises to test response to simulated emergencies.

a. Quarterly communication checks with off site response organizations shall include the check and update of necessary telephone numbers.

b. The licensee shall invite off site response organizations to participate in the biennial exercises. Participation of off site response organizations in biennial exercises, although recommended, is not required.

2. Exercises shall use accident scenarios postulated as most probable for the specific site, and the scenarios shall not be known to most exercise participants.

3. The licensee shall critique each exercise using individuals without direct implementation responsibility for the plan. Critiques of exercises shall evaluate the appropriateness of the plan, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the response.

4. Deficiencies found by the critiques shall be corrected.

(m) Hazardous chemicals. A certification stating the applicant has met responsibilities pursuant to 42 U.S.C. 11001,Emergency Planning and Community Right-to-Know Act of 1986, if applicable to the applicant's activities at the proposed place of use of the radioactive material.

(2) The licensee shall allow off site response organizations expected to respond if an accident occurs sixty (60) days to comment on the licensee's emergency

plan before submitting the plan to Radiation Health and Toxic Agents[~~Control~~] Branch. The licensee shall provide comments received within the sixty (60) days to the Radiation Health and Toxic Agents[~~Control~~] Branch with the emergency plan.

Section 4. Quantities of Radioactive Materials. (1) The following table provides the quantities of radioactive materials requiring consideration of the need of an emergency plan for responding to a release:

Radioactive Material	Release fraction	Quantity (curies)
Actinium-228	0.001	4,000
Americium-241	.001	2
Americium-242	.001	2
Americium-243	.001	2
Antimony-124	.01	4,000
Antimony-126	.01	6,000
Barium-133	.01	10,000
Barium-140	.01	30,000
Bismuth-207	.01	5,000
Bismuth-210	.01	600
Cadmium-109	.01	1,000
Cadmium-113	.01	80
Calcium-45	.01	20,000
Californium-252	.001	9(20 mg)

1	Carbon-14 NonCO_2	.01	50,000
2	Cerium-141	.01	10,000
3	Cerium-144	.01	300
4	Cesium-134	.01	2,000
5	Cesium-137	.01	3,000
6	Chlorine-36	.5	100
7	Chromium-51	.01	300,000
8	Cobalt-60	.001	5,000
9	Copper-64	.01	200,000[~~20,000~~]
10	Curium-242	.001	60
11	Curium-243	.001	3
12	Curium-244	.001	4
13	Curium-245	.001	2
14	Europium-152	.01	500
15	Europium-154	.01	400
16	Europium-155	.01	3,000
17	Germanium-68	.01	2,000
18	Gadolinium-153	.01	5,000
19	Gold-198	.01	30,000
20	Hafnium-172	.01	400
21	Hafnium-181	.01	7,000
22	Holmium-166m	.01	100[~~7,000~~]
23	Hydrogen-3	.5	20,000[~~100~~]

1	Iodine-125	.5	10[~~20,000~~]
2	Iodine-131	.5	10
3	Indium-114m	.01	1,000
4	Iridium-192	.001	40,000
5	Iron-55	.01	40,000
6	Iron-59	.01	7,000
7	Krypton-85	1.0	6,00,000
8	Lead-210	.01	8
9	Manganese-56	.01	60,000
10	Mercury-203	.01	10,000
11	Molybdenum-99	.01	30,000
12	Neptunium-237	.001	2
13	Nickel-63	.01	20,000
14	Niobium-94	.01	300
15	Phosphorus-32	.5	100
16	Phosphorus-33	.5	1,000
17	Polonium-32	.01	10
18	Potassium-42	.01	9,000
19	Promethium-145	.01	4,000
20	Promethium-147	.01	4,000
21	Ruthenium-106	.01	200
22	Samarium-151	.01	4,000
23	Scandium-46	.01	3,000

1	Selenium-75	.01	10,000
2	Silver-110m	.01	1,000
3	Sodium-22	.01	9,000
4	Sodium-24	.01	10,000
5	Strontium-89	.01	3,000
6	Strontium-90	.01	90
7	Sulfur-35	.5	900
8	Technetium-99	.01	10,000
9	Technetium-99m	.01	400,000
10	Tellurium-127m	.01	5,000
11	Tellurium-129m	.01	5,000
12	Terbium-160	.01	4,000
13	Thulium-170	.01	4,000
14	Tin-113	.01	10,000
15	Tin-123	.01	3,000
16	Tin-126	.01	1,000
17	Titanium-44	.01	100
18	Vanadium-48	.01	7,000
19	Xenon-133	1.0	900,000
20	Yttrium-91	.01	2,000
21	Zinc-65	.01	5,000
22	Zirconium-93	.01	400
23	Zirconium-95	.01	5,000

Other beta-gamma emitter	.01	10,000
Mixed corrosion products	.01	10,000
Mixed fission products	.01	1,000
Contaminated equipment		
beta gamma	.001	10,000
Irradiated material, forms		
other than solid		
noncombustible	.01	1,000
Irradiated material, solid		
noncombustible	.001	10,000
Mixed radioactive waste,		
beta-gamma	.01	1,000
Packaged mixed waste		
beta-gamma	.001	10,000
Other alpha emitter	.001	2
Contaminated equipment,		
alpha	.0001	20
Packaged waste, alpha	.0001	20

(2) For combinations of radioactive materials, consideration of the need for an emergency plan shall be required if the sum of the ratios of the quantity of each radioactive material authorized to the quantity listed for that material in subsection (1) of this section exceeds one (1).

(3) Waste packaged in Type B containers shall not require an

emergency plan.

Cabinet for Health Services

Department for Public Health

Division of Public Health Protection and Safety

(New Administrative Regulation)

902 KAR 100:042. Decommissioning and Financial Surety.

RELATES TO: KRS 211.842 to 211.852, 211.990(4), 13B.170, 10 C.F.R. 20.1401 through 20.1406, 10 C.F.R. 30.35 and 30.36, Appendices A through E of 10 C.F.R. 30, 10 C.F.R. 40.36, and 10 C.F.R. 70.25

STATUTORY AUTHORITY: KRS 194.050, 211.090, 211.844, 13B.170, 10 C.F.R. 20.1401 through 20.1406, 10 C.F.R. 30.35 and 30.36, Appendices A through E of 10 C.F.R. 30, 10 C.F.R. 40.36, and 10 C.F.R. 70.25

NECESSITY, FUNCTION, AND CONFORMITY: The Cabinet for Health Services is mandated by KRS 211.844 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 prescribes requirements for decommissioning and financial assurance requirements of radioactive material licensees.

Section 1. General Provisions and Scope. (1) The criteria in this administrative regulation apply to the decommissioning and financial assurance requirements of facilities licensed under 902 KAR 100:040 and 902 KAR 100:022, as well as other facilities subject to the cabinet's jurisdiction under the Act. For low-level waste

disposal facilities (902 KAR 100:022), the criteria for decommissioning apply only to ancillary surface facilities that support radioactive waste disposal activities.

(2) The criteria in this administrative regulation do not apply to sites which:

(a) Have been decommissioned prior to the effective date of this administrative regulations.

(b) Have previously submitted and received cabinet approval on a license termination plan (LTP) or decommissioning plan prior to the effective date of this regulation; or

(c) Submit a sufficient LTP or decommissioning plan with an application in its entirety as required by 902 KAR 100:040, Section 9.

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

(4) When calculating 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 1000 years after decommissioning.

Section 2. Radiological Criteria for Unrestricted Use. A site shall 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 25 millirem (mrem) (0.25 mSv) 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). Determination of the levels, which are ALARA, shall take into account consideration of detriments, such as deaths from transportation accidents, expected to potentially result from decontamination and waste disposal.

Section 3. Criteria for License Termination Under Restricted Conditions. A site shall be considered acceptable for license termination under restricted conditions if:

(1) The licensee demonstrates that further reductions in residual radioactivity necessary to comply with the provisions of Section 2 of this administrative regulation may result in net public or environmental harm or were not being made because the residual levels associated with restricted conditions are ALARA. Determination of the levels which are ALARA must take into account consideration of detriments, such as traffic accidents, expected to potentially 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 shall not exceed 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 are:

(a) Funds placed into an account segregated from the licensee's assets and outside the licensee's administrative control as described 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) A statement of intent in the case of Federal, State, or local Government licensees, as described in Section 15(2)(d) of this administrative regulation; or

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

(4) The licensee has submitted a decommissioning plan or License Termination Plan (LTP) 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 LTP or decommissioning plan how the advice of individuals and institutions in the community who may be affected by the decommissioning has been sought and incorporated, as appropriate, following analysis of that advice.

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

1. Whether provisions for institutional controls proposed by the licensee;

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

b. Shall be enforceable; and

c. Shall not impose undue burdens on the local community or other

affected parties.

2. Whether 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 subsection 4(a) of this section, the licensee shall provide for:

1. Participation by representatives of a broad cross section of community interests who may be affected by the decommissioning;

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

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

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

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

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

1. Demonstrates that further reductions in residual radioactivity necessary to comply with the 100 mrem/year (1 mSv/y) value of 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, both to carry out periodic rechecks of the site no less frequently than every five (5) years to assure that the institutional controls remain in place as necessary to meet the criteria of subsection (2) of this section and to assume and carry out responsibilities for necessary control and maintenance of those controls. Acceptable financial assurance mechanisms are those 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 of Section 2, Section 3(2), and Section 3(4)(a)1.a. of this administrative regulation, if the licensee:

(a) Provides assurance that public health and safety continues to be protected, and that it is unlikely that the dose from man-made 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), by submitting an analysis of possible sources of exposure;

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

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

(d) Has submitted a decommissioning plan or License Termination Plan (LTP) 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. The licensee shall document in the decommissioning plan or LTP how the advice of individuals and institutions in the community who may be affected by the decommissioning has been sought and addressed, as appropriate, following analysis of that advice. In seeking such advice, the licensee shall provide for:

1. Participation by representatives of a broad cross section of community interests who may be affected by the decommissioning;

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

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

(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 the receipt of an LTP or decommissioning plan from the licensee, or a proposal by the licensee for release of a site pursuant to Section 3 or Section 4 of this administrative regulation, or whenever the cabinets 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 for cases where the licensee proposes to release a site pursuant to Section 4 of this administrative regulation.

(2) Publish a notice in a forum, such as local newspapers, letters to state or local organizations, or other appropriate forum, that is readily accessible to individuals in the vicinity of the site, and solicit comments from affected parties.

Section 6. Minimization of Contamination. Applicants for licenses and amendments in their entirety shall describe in the application how facility design and procedures for operation shall 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.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 may provide reasonable assurance of the availability of funds for decommissioning based on obtaining a parent company guarantee that funds shall be available for decommissioning costs and on a demonstration that the parent company passes a financial test. This section establishes criteria for passing the financial test and for obtaining the parent company guarantee.

(2) Financial Test.

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

1. The parent company shall have:

2. a. Two (2) of the following three (3) ratios: A ratio of total liabilities to net

worth less than two (2.0); a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than one-tenth (0.1); and a ratio of current assets to current liabilities greater than one and five tenths (1.5); and

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 thereof (or prescribed amount if a certification is used; and

c. Tangible net worth of at least ten (10) million dollars; and

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

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; and

b. Tangible net worth each at least six (6) times the current decommissioning cost estimates for the total of facilities or parts thereof (or prescribed amount if a certification is used); and

c. Tangible net worth of at least ten (10) million dollars; and

d. Assets located in the United States amounting to at least ninety percent (90%) of the total assets or at least six (6) times the current decommissioning cost estimates for the total of 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 the financial statement. In connection with that procedure the licensee shall inform the cabinet within ninety (90) days of matters coming to the auditor's attention which cause the auditor to believe that the data specified in the financial test shall 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 ninety (90) days after the close of each succeeding fiscal year.

2. If the parent company no longer meets the requirements of subsection (2)(a) of this section, the licensee shall send notice to the cabinet of intent to establish alternate financial assurance as specified in the cabinet's administrative regulations. 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. 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 which an applicant or licensee obtains shall provide that:

(a) The parent company guarantee shall remain in force unless the guarantor sends notice of cancellation by certified mail to the licensee and the cabinet. 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 cabinet, as evidenced by the return receipts.

(b) If the licensee fails to provide alternate financial assurance as specified in the cabinet administrative regulations 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 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.

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 on furnishing its own guarantee that funds shall be available for decommissioning costs and on a demonstration that the company passes the financial test of subsection (2) of this section. The terms of the self-guarantee are in subsection (3) of this section. This section establishes criteria for passing the financial test for the self guarantee and establishes the terms for a self-guarantee.

(2) Financial Test.

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

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

2. Assets located in the United States amounting to at least ninety percent (90%) of total assets or at least ten (10) times the total current decommissioning cost estimate

for the total of 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 Poors (S&P), or Aaa, Aa, or A as issued by Moodys.

(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 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 the financial statement. In connection with that procedure, 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 the data specified in the financial test shall 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 ninety (90) days after the close of each succeeding fiscal year.

(c) If the licensee no longer meets the requirements of subsection 2(a) of this section, the licensee shall send immediate notice to the cabinet of its intent to establish alternate financial assurance as specified in this administrative regulation within 120 days of such notice.

(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 to the cabinet. Cancellation may not occur, however, 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 the cabinet's administrative regulations 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 in 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 Section 13 of the Securities and Exchange Act of 1934.

(e) If, at a time, the licensee's most recent bond issuance ceases to be rated in a category of "A" or above by either Standard and Poors or Moodys, the licensee shall provide notice in writing of such fact to the cabinet 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 in a category of A or above by both Standard and Poors and Moodys, the licensee no longer meets the requirements of subsection (2)(a) of this section.

(f) The applicant or licensee shall provide to the cabinet a written guarantee (a written commitment by a corporate officer) which states 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 on furnishing its own guarantee that funds shall be available for decommissioning costs and on a demonstration that the company passes the financial test of subsection (2) of this section. The terms of the self-guarantee are in subsection (3) of this section. This section establishes criteria for passing the financial test for the self-guarantee and establishes the terms for a self-guarantee.

(2) Financial Test.

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

1. Tangible net worth greater than ten (10) million dollars, 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 percent (90%) 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 fifteen hundredths (0.15) and a ratio of total liabilities divided by net worth less than one and five tenths (1.5).

(b) In addition, to pass the financial test, a company shall meet 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 the financial statement. In connection with that procedure, the licensee shall inform the cabinet within ninety (90) days of matters that may cause the auditor to believe that the data specified in the financial test shall 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 ninety (90) days after the close of each succeeding fiscal year.

3. If the licensee no longer meets the requirements of subsection (2)(a) of this section, the licensee shall send notice to the cabinet of intent to establish alternative financial assurance as specified in this administrative regulation. 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 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 may 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 in effect by the licensee.

(d) The applicant or licensee shall provide to the cabinet a written guarantee (a written commitment by a corporate officer) which states 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 on furnishing its own guarantee that funds shall be available for decommissioning costs and on a demonstration that the applicant or licensee passes the financial test of subsection (2) of this section. The terms of the self-guarantee are in subsection (3) of this section. This section establishes criteria for passing the financial test for the

self-guarantee and establishes the terms for a self-guarantee.

(2) Financial Test. (a) For colleges and universities, to pass the financial test a college or university shall meet either of the following criteria:

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 Poors (S&P) or Aaa, Aa, or A as issued by Moodys.

2. For applicants or licensees that do not issue bonds, unrestricted endowment consisting of assets located in the United States of at least fifty (50) million dollars, 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) For hospitals, to pass the financial test a hospital must meet either of the following criteria:

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 Poors (S&P) or Aaa, Aa, or A as issued by Moodys.

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

a. (Total Revenues less total expenditures) divided by total revenues shall be equal to or greater than four hundredths (0.04).

b. Long term debt divided by net fixed assets shall be less than or equal to sixty-seven hundredths (0.67).

c. (Current assets and depreciation fund) divided by current liabilities must be greater than or equal to 2.55.

d. Operating revenues shall be at least one hundred (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) In addition, to pass the financial test, a licensee shall meet 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 the financial statement. In connection with that procedure, 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 the data specified in the financial test may 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 ninety (90) days after the close of each succeeding fiscal year.

3. If the licensee no longer meets the requirements of subsection (1) of this section, the licensee shall send notice to the cabinet of its intent to establish alternative financial assurance as specified in cabinet administrative regulations. 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 such fiscal year.

(3) 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, or return receipt requested, to the cabinet. Cancellation may 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 in effect by the licensee.

(d) The applicant or licensee shall provide to the cabinet a written guarantee (a written commitment by a corporate officer or officer of the institution) which states 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.

(e) If, at a time, the licensee's most recent bond issuance ceases to be rated in a category of ``A" or above by either Standard and Poors or Moodys, the licensee shall provide notice in writing of such fact to the cabinet 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) 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 regulations shall submit a decommissioning funding plan as described in Section 15 of this administrative regulation. The decommissioning funding plan shall also be submitted when a combination of isotopes is involved if R divided by 10^5 is greater than one (1) (unity rule), where R is defined here as the sum of the ratios of the quantity of an isotope to the applicable value in Section 16 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 either:

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

(b) Submit a certification that financial assurance for decommissioning has been provided in the amount prescribed by subsection (4) of this section using one of the methods described in Section 15 of this administrative regulation. For an applicant, this 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 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 Section 15 of this administrative regulation shall be submitted to the cabinet before receipt of licensed material. If the applicant does not defer execution of

the financial instrument, the applicant shall submit to 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 issued before January 1, 1995, which is of a type described in subsection 1 or 2 of this section, shall provide financial assurance for decommissioning in accordance with the criteria set forth in this section.

(b) A holder of a specific license issued before January 1, 1995, and of a type described in subsection (1) of this section shall submit, on or before January 1, 1995, a decommissioning funding plan as described in Section 15(1) of this administrative regulation or a certification of financial assurance for decommissioning in an amount at least equal to $750,000 in accordance with the criteria set forth in this 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 issued before January 1, 1995, and of a type described in subsection (2) of this section shall submit, on or before January 1, 1995, 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 set forth in this section.

(d) A licensee who has submitted an application before January 1, 1995, for renewal of license in accordance with 902 KAR 100:040 shall provide financial assurance for decommissioning in accordance with subsections (1) and (2) of this section.

(4) Table of required amounts of financial assurance for decommissioning by quantity of radioactive material:

(a) Greater than 10^4 but less than or equal to 10^5 times the applicable quantities of 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 1.) $750,000

(b) Greater than 10^3 but less than or equal to 10^4 times the applicable quantities of 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).) $150,000

(c) Greater than 10^{10} times the applicable quantities of 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)). $75,000

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 are as follows:

(a) 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.

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

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

2. A certification that financial assurance for decommissioning has been provided in the amount of $150,000 using one (1) of the methods described in Section 15 of this administrative regulations.

a. This 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.

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

c. If the 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 issued on or after January 1, 1995, which is covered by subsection (1) (a) or (b) of this section, shall provide financial assurance for decommissioning in accordance with the criteria set forth in this section.

(b) A holder of a specific license issued before January 1, 1995, and of a

type described in subsection (1)(a) of this section shall submit, on or before January 1, 1995, a decommissioning funding plan as described in Section 15(1) of this administrative regulations or a certification of financial assurance for decommissioning in an amount at least equal to $750,000 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.

(c) A holder of a specific license issued before January 1, 1995, and of a type described in subsection (1)(b) of this section shall submit, on or before January 1, 1995, 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 set forth in this section.

(d) A licensee who has submitted an application before January 1, 1995, for renewal of license in accordance with 902 KAR 100:040, Section 8 shall provide financial assurance for decommissioning in accordance with subsection (1) and (2) of this section. This assurance must be submitted when this rule becomes effective April 19, 1995.

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

decommissioning funding plan shall also be submitted when a combination of isotopes is involved if R divided by 10^5 is greater than one (1) (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 either 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 the amount prescribed by subsection (4) of this section using one of the methods described in Section 15 of this administrative regulation.

1. This 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 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 Section 15 of this administrative regulation shall be submitted to cabinet before receipt of licensed material.

3. If the applicant does not defer execution of the financial instrument, the applicant shall submit to 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 issued on or after January 1, 1995, which is of a type described in subsection (1) of this section, shall provide financial assurance for decommissioning in accordance with the criteria set forth in this section.

(b) A holder of a specific license issued before January 1, 1995, and of a type described in subsection (1) of this section shall submit, on or before January 1, 1995, a decommissioning funding plan as described in Section 15(1) of this administrative regulations or a certification of financial assurance for decommissioning in an amount at least equal to $750,000 in accordance with the criteria set forth in this section. If the licensee submits the certification of financial assurance rather than a decommissioning funding plan at this time, the licensee shall include a decommissioning funding plan in an application for license renewal.

(c) Each holder of a specific license issued before January 1, 1995, and of a type described in subsection (1) of this section shall submit, on or before January 1, 1995, a decommissioning funding plan, described in Section 15(1) of this administrative regulation, or a certification of financial assurance for decommissioning in accordance with the criteria set forth in this section.

(d) A licensee who has submitted an application before January 1, 1995, for renewal of license in accordance with 902 KAR 100:040, Section 8 shall provide financial assurance for decommissioning in accordance with subsections (1) and (2) of this section. This assurance must be submitted when this rule becomes effective before April 19, 1995.

(4) Table of required amounts of financial assurance for decommissioning by quantity of material:

(a) Greater than 10^4 but less than or equal to 10^5 times the applicable quantities of 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 1.....$750,000.

(b) Greater than 10^3 but less than or equal to 10^4 times the applicable quantities of 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 1.....$150,000.

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 of the following, a licensee shall provide notification to the cabinet in writing, and either begin decommissioning its site, or a separate building or outdoor area that contains residual radioactivity so that the building or outdoor area is suitable for release in accordance with cabinet requirements, or submit within twelve (12) months of notification a decommissioning plan, if required by subsection (4)(a) of this section, and begin decommissioning upon approval of that plan if:

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

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

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

(3) The cabinet may grant a request to extend the time periods established in this section if the cabinet determines that this relief is not detrimental to the public health and safety and is in the public interest. The request must be submitted no later than thirty (30) days before notification pursuant to subsection (1) of this section. The schedule for decommissioning established in subsection (1) of this section may

not commence until the cabinet has made a determination on the request.

(4)(a) A decommissioning plan shall be submitted 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 cabinet and these procedures could increase potential health and safety impacts to workers or to the public, such as in the following cases:

1. Procedures involve techniques not applied routinely during cleanup or maintenance operations;

2. Workers enter areas not normally occupied where surface contamination and radiation levels are significantly higher than routinely encountered during operation;

3. Procedures may result in significantly greater airborne concentrations of radioactive materials than are present during operation; or

4. Procedures may result 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 the public health and safety and is in the public interest.

(c) Procedures such as those listed in subsection (4)(a) of this section with potential health and safety impacts may not be carried out prior to approval of the decommissioning plan.

(d) The proposed decommissioning plan for the site or separate building

or outdoor area shall include:

1. A description of the conditions of the site or separate building or outdoor area sufficient to evaluate the acceptability of the plan;

2. A description of planned decommissioning activities;

3. A description of methods used to ensure protection of workers and the environment against radiation hazards during decommissioning;

4. A description of the planned final radiation survey; and

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

6. For decommissioning plans calling for completion of decommissioning later than twenty-four (24) months after plan approval, the plan shall include 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 therein demonstrates that the decommissioning shall be completed as soon as practicable and that the health and safety of workers and the public shall be adequately protected.

(5)(a) Licensees shall complete decommissioning of the site or separate building or outdoor area as soon as practicable but no later than 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 no later than twenty-four (24) months

following the initiation of decommissioning, except as provided in subsection (6) of this section.

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

(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 shall 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 which the cabinet 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 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" 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 decommissioning 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, and report levels;

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

c. 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 when the cabinet determines that:

(a) Radioactive material has been properly disposed;

(b) Reasonable effort has been made to eliminate residual radioactive contamination, if present; and

(c) A radiation survey has been performed which demonstrates that the premises are suitable for release in accordance with the criteria for decommissioning in Sections 1 through 6 of this administrative regulation; or

(d) Other information submitted by the licensee is sufficient to demonstrate

that the premises are suitable for release in accordance with the criteria for decommissioning in Sections 1 through 6.

(e) Records required by Section 902 KAR 100:040, Section 7(3)(e) and Section 15(7) 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. The decommissioning funding plan shall also contain a certification by the licensee that financial assurance for decommissioning has been provided in the amount of the cost estimate for decommissioning and 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 may 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 may 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 may not be used in combination with other financial methods 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 the guarantee and test are as contained in 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 as contained in 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 as contained in Section 10 of this administrative regulation.

8. A guarantee by the applicant or licensee may not be used in combination with other financial methods used to satisfy the requirements of this section or in a situation where 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, such as five (5) years, must be renewed automatically unless ninety (90) days or more prior to the renewal date, the issuer notifies the cabinet, 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 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 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.

c. The surety method or insurance must 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 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 may be sufficient to pay decommissioning costs at the time termination of operation is expected.

2. An external sinking fund may 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 must be as stated in subsection (2)(b) of this section.

(d) In the case of Federal, State, or local government licensees, 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 when necessary.

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

(7) Each person licensed under 902 KAR 100:040 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 902 KAR 100:040, Section 6, licensees shall transfer the records described in this subsection to the new licensee. In this case, the new licensee shall 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 cabinet considers important to decommissioning consists of:

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

(b) As-built drawings and modifications of structures and equipment in

restricted areas where radioactive materials are used, or stored, and of locations of possible inaccessible contamination such as buried pipes, which may be subject to contamination. If required drawings are referenced, each relevant document need not be indexed individually. If drawings are not available, the licensee shall substitute appropriate records of available information concerning these areas and locations.

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

1. 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;

2. Areas outside of restricted areas that require documentation under subsection (7) of this section.

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

4. 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 apply for approval for disposal under 902 KAR 100:021, Section 2.

(d) 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. Quantities[1] 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

1	Cerium-141	100
2	Cerium-143	100
3	Cerium-144	1
4	Cesium-131	1,000
5	Cesium-134m	100
6	Cesium-134	1
7	Cesium-135	10
8	Cesium-136	10
9	Cesium-137	10
10	Chlorine-36	10
11	Chlorine-38	10
12	Chromium-51	1,000
13	Cobalt-58m	10
14	Cobalt-58	10
15	Cobalt-60	1
16	Copper-64	100
17	Dysprosium-165	10
18	Dysprosium-166	100
19	Erbium-169	100
20	Erbium-171	100
21	Europium-152 9.2h	100
22	Europium-152 13 yr	1
23	Europium-154	1

1	Europium-155	10
2	Fluorine-18	1,000
3	Gadolinium-153	10
4	Gadolinium-159	100
5	Gallium-72	10
6	Germanium-71	100
7	Gold-198	100
8	Gold-199	100
9	Hafnium-181	10
10	Holmium-166	100
11	Hydrogen-3	1,000
12	Indium-113m	100
13	Indium-114m	10
14	Indium-115m	100
15	Indium-115	10
16	Iodine-125	1
17	Iodine-126	1
18	Iodine-129	0.1
19	Iodine-131	1
20	Iodine-132	10
21	Iodine-133	1
22	Iodine-134	10
23	Iodine-135	10

1	Iridium-192	10
2	Iridium-194	100
3	Iron-55	100
4	Iron-59	10
5	Krypton-85	100
6	Krpton-87	10
7	Lanthanum-140	10
8	Lutetium-177	100
9	Manganese-52	10
10	Manganese-54	10
11	Manganese-56	10
12	Mercury-197m	100
13	Mercury-197	100
14	Mercury-203	10
15	Molbdenum-99	100
16	Neodymium-147	100
17	Neodymium-149	100
18	Nickel-59	100
19	Nickel-63	10
20	Nickel-65	100
21	Niobium-93m	10
22	Niobium-95	10
23	Niobium-97	10

1	Osmium-185	10
2	Osmium-191m	100
3	Osmium-191	100
4	Osmium-193	100
5	Palladium-103	100
6	Palladium-109	100
7	Phosphorus-32	10
8	Platinum-191	100
9	Platinum-193m	100
10	Platinum-193	100
11	Platinum-197m	100
12	Platinum-197	100
13	Plutonium-239	.01
14	Polonium-210	0.1
15	Potassium-42	10
16	Praseodymium-142	100
17	Praseodymium-143	100
18	Promethium-147	10
19	Promethium-149	10
20	Radium-226	.01
21	Rhenium-186	100
22	Rhenium-188	100
23	Rhodium-103m	100

1	Rhodium-105	100
2	Rubidium-86	10
3	Rubidium-87	10
4	Ruthenium-97	100
5	Ruthenium-103	10
6	Ruthenium-105	10
7	Ruthenium-106	1
8	Samarium-151	10
9	Samarium-153	100
10	Scandium-46	10
11	Scandium-47	100
12	Scandium-48	10
13	Seleium-75	10
14	Silicon-31	100
15	Silver-105	10
16	Silver-110m	1
17	Silver-111	100
18	Sodium-24	10
19	Strontium-85	10
20	Strontium-89	1
21	Strontium-90	0.12
22	Strontium-91	10
23	Strontium-92	10

1	Sulphur-35	100
2	Tantalum-182	10
3	Technetium-96	10
4	Technetium-97m	100
5	Technetium-97	100
6	Technetium-99m	100
7	Technetium-99	10
8	Tellurium-125m	10
9	Tellurium127m	10
10	Tellurium-127	100
11	Tellurium129m	10
12	Tellurium-129	100
13	Tellurium-131m	10
14	Tellurium-132	10
15	Terbium-160	10
16	Thallium-200	100
17	Thallium-201	100
18	Thallium-202	100
19	Thallium-204	10
20	Thorium (natural)[1]	100
21	Thulium-170	10
22	Thulium-171	10
23	Tin-113	10

1	Tin-125	10
2	Tungsten-181	10
3	Tungsten-185	10
4	Tungsten-187	100
5	Uranium (natural)[2]	100
6	Uranium-233	.01
7	Uranium-234 -- Uranium-235	.01
8	Vandium-48	10
9	Xenon-131m	1,000
10	Xenon-133	100
11	Xenon-135	100
12	Ytterbium-175	100
13	Yttrium-90	10
14	Yttrium-91	10
15	Yttrium-92	100
16	Yttrium-93	100
17	Zinc-65	10
18	Zinc-69m	100
19	Zinc-69	1,000
20	Zirconium-93	10
21	Zirconium-95	10
22	Zirconium-97	10
23	An alpha emitting radionuclide not listed of	

above or mixtures alpha emitters of unknown composition	.01
An radionuclide other than alpha emitting radio-nuclides, not listed above or mixtures of beta emitters of unknown composition	.1

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

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

Note: For purposes of 902 KAR 100:021, Section 3, where there is involved a combination of isotopes in known amounts, the limit for the combination shall 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 one ("1") (i.e., "unity").

CABINET FOR HEALTH SERVICES

DEPARTMENT FOR PUBLIC HEALTH

DIVISION OF PUBLIC HEALTH PROTECTION AND SAFETY

(Amendment)

902 KAR 100:045. Exemptions.

RELATES TO: KRS 211.842 to 211.852, 211.990(4), 13B.170, 10 C.F.R. 30.15, 30.16, 30.19, 30.20, 30.21, and 10 C.F.R. 40.11 and 40.13

STATUTORY AUTHORITY: KRS 194.050, 211.090, 211.844), 13B.170, 10 C.F.R. 30.15, 30.16, 30.19, 30.20, 30.21, and 10 C.F.R. 40.11 and 40.13

NECESSITY, FUNCTION, AND CONFORMITY: The Cabinet for Health Services[~~Human Resources~~] is mandated[~~authorized~~] by KRS 211.844 to provide by administrative regulation for the registration and licensing of the possession or use of sources of ionizing or electronic product radiation and the handling and disposal of radioactive waste. This administrative regulation provides exemptions for certain uses of radioactive material and specific devices containing radioactive material from the requirements of 902 KAR Chapter 100.

[~~Section 1. Applicability. This administrative regulation exempts certain uses of radioactive material and devices containing radioactive material from the requirements of these administrative regulations.~~]

Section 1[~~2~~]. Exemption of Source Material. (1) A person is exempt from

these administrative regulations to the extent that the person receives, possesses, uses, or transfers source material in a chemical mixture, compound, solution, or alloy in which the source material is by weight less than one-twentieth of one (1) percent (0.05 percent) of the mixture, compound, solution, or alloy.

(2) A person is exempt from these administrative regulations to the extent that the person receives, possesses, uses, or transfers unrefined and unprocessed ore containing source material; except that, as authorized in a specific license, the person shall not refine or possess the ore.

(3) A person is exempt from these administrative regulations to the extent that the person receives, possesses, uses, or transfers:

(a) Any quantities of thorium contained in:

1. Incandescent gas mantles;

2. Vacuum tubes;

3. Welding rods;

4. Electric lamps for illuminating purposes except that each lamp does not contain more than fifty (50) milligrams of thorium;

5. Germicidal lamps, sun lamps, and lamps for outdoor or industrial lighting except that each lamp shall not contain more than two (2) grams of thorium;

6. Rare earth metals and compounds, mixtures, and products containing not more than twenty-five hundredths (0.25) percent by weight thorium, uranium, or any combination of these; or

7. Personal neutron dosimeters, except that each dosimeter shall not contain more than fifty (50) milligrams of thorium.

(b) Source material contained in the following products:

1. Glazed ceramic tableware, except that the glaze contains not more than twenty (20) percent by weight source material;

2. Glassware containing not more than ten (10) percent by weight source material; but not including commercially manufactured glass brick, pane glass, ceramic tile, or other glass, glass enamel, or ceramic used in construction;

3. Glass enamel or glass enamel frit containing not more than ten (10) percent by weight source material imported or ordered for importation into the United States, or initially distributed by manufacturers in the United States, before July 25, 1983;

4. Piezoelectric ceramic containing not more than two (2) percent by weight source material.

(c) Photographic film, negatives, and prints containing uranium or thorium.

(d) A finished product or part fabricated of, or containing, tungsten-thorium or magnesium-thorium alloys, except that the thorium content of the alloy shall not exceed four (4) percent by weight and that the exemption contained in this paragraph shall not be deemed to authorize the chemical, physical, or metallurgical treatment or processing of the product or part.

(e) Uranium contained in counterweights installed in aircraft, rockets, projectiles, and missiles, or stored or handled in connection with installation or removal of the counterweights; provided that:

1. The counterweights are manufactured in accordance with a specific

license issued by the U.S. Nuclear Regulatory Commission authorizing distribution by the licensee as authorized by 10 CFR Part 40;

2. Each counterweight has been impressed with following legend clearly legible through any plating or other covering: "DEPLETED URANIUM;"

3. Each counterweight is durably and legibly labeled or marked with identification of the manufacturer, and the statement: "UNAUTHORIZED ALTERATIONS PROHIBITED;" and

4. The exemption contained in this subsection shall not be deemed to authorize the chemical, physical, or metallurgical
treatment or processing of the counterweights other than
repair or restoration of a plating or other covering.

(f) Natural or depleted uranium metal used as shielding constituting part of a shipping container; provided that:

1. The shipping container is conspicuously and legibly impressed with the legend "CAUTION - RADIOACTIVE SHIELDING - URANIUM"; and

2. The uranium metal is encased in mild steel or equally fire resistant metal of minimum wall thickness of one-eighth inch (3.2mm).

(g) Thorium contained in finished optical lenses, except that each lens shall not contain more than thirty (30) percent by weight of thorium. The exemption contained in this subsection shall not be deemed to authorize either:

1. The shaping, grinding, or polishing of lens or manufacturing processes other than the assembly of lens into optical systems and devices without any alteration of the lens; or

2. The receipt, possession, use, or transfer of thorium contained in contact lenses, or in spectacles, or in eyepieces in binoculars or other optical instruments.

(h) Uranium contained in detector heads for use in fire detection units, if each detector head contains not more than

five thousandths (0.005) microcurie of uranium.

(i) Thorium contained in a finished aircraft engine part containing nickel-thoria alloy, if:

1. The thorium is dispersed in the nickel-thoria alloy in the form of finely divided thoria (thorium dioxide); and

2. The thorium content in the nickel-thoria alloy does not exceed four (4) percent by weight.

(4) The exemptions in this section of this administrative regulation do not authorize the manufacture of the products described herein.

Section 2[3]. Exemption of Radioactive Material Other than Source Material. (1) Exempt concentrations.

[(a) Except as provided in paragraph (b) of this subsection, a] A person is exempt from these administrative regulations to the extent that the person receives, possesses, uses, transfers, owns, or acquires products or materials containing radioactive material in exempt concentrations not in excess of those listed in 902 KAR 100:085 except: [:]

(a) This exemption shall not apply to the transfer of radioactive material contained in a food, beverage, cosmetic, drug or other commodity or product designed for ingestion

or inhalation by, or application to a human being; and

(b) No person may introduce radioactive material into a product or material knowing or having reason to believe that it will be transferred to persons exempt under [~~paragraph (a) of~~] this subsection or equivalent regulations of the U.S. Nuclear Regulatory Commission or an agreement state, except in accordance with a license issued as authorized by 902 KAR Chapter 100 [~~these administrative regulations~~].

(2) Certain items containing radioactive material. Except for persons who apply radioactive material to, or persons who incorporate radioactive material into the following products, a person is exempt from these administrative regulations to the extent that he receives, possesses, uses, transfers, owns, or acquires the following products:

(a) Timepieces or hand or dials containing not more than the following specified quantities of radioactive material and not exceeding the following specified levels of radiation:

1. Twenty-five (25) millicuries of tritium per timepiece;

2. Five (5) millicuries of tritium per hand; [~~or~~]

3. Fifteen (15) millicuries of tritium per dial (bezels if used shall be considered as part of the dial); [~~.~~]

4. 100 microcuries of promethium-147 per watch or 200 microcuries of promethium-147 per other timepiece;

5. Twenty (20) microcuries of promethium-147 per watch hand or forty (40) microcuries of promethium-147 per other timepiece hand; or

6. Sixty (60) microcuries of promethium-147 per watch dial or 120 microcuries of promethium-147 per other timepiece dial (bezels if used shall be considered as part of the dial); [.]

7. The radiation dose rate from hands and dials containing promethium-147 shall not exceed, when measured through fifty (50) milligrams per square centimeter of absorber:

a. For wrist watches, one-tenth (0.1) millirad per hour at ten (10) centimeters from a surface;

b. For pocket watches, one-tenth (0.1) millirad per hour at one (1) centimeter from a surface;

c. For other timepiece, two-tenths (0.2) millirad per hour at ten (10) centimeters from a surface.

8. One (1) microcurie of radium-226 per timepiece in timepieces acquired prior to January 3, 1986.

(b) Lock illuminators containing not more than fifteen (15) millicuries of tritium or not more than two (2) millicuries of promethium-147 installed in automobile locks. The radiation dose rate from each lock illuminator containing promethium-147 shall not exceed one (1) millirad per hour at one (1) centimeter from a surface when measured through fifty (50) milligrams per square centimeter of absorber.

(c) Precision balances containing not more than one (1) (1) millicurie of tritium per balance or not more than five-tenths (0.5) millicurie of tritium per balance part.

(d) Automobile shift quadrants containing not more than twenty-five (25) millicuries of tritium.

(e) Marine compasses containing not more than 750 millicuries of tritium gas and other marine navigational instruments containing not more than 250 millicuries of tritium gas.

(f) Thermostat dials and pointers containing not more than twenty-five (25) millicuries of tritium per thermostat.

(g) Electron tubes[;] if each tube does not contain more than one (1) of the following specified quantities of radioactive material:

1. 150 millicuries of tritium per microwave receiver protector tube or ten (10) millicuries of tritium per other electron tube[;]

2. One (1) microcurie of cobalt-60[;]

3. Five (5) microcuries of nickel-63[;]

4. Thirty (30) microcuries of krypton-85[;]

5. Five (5) microcuries of cesium-137[;]

6. Thirty (30) microcuries of promethium-147; and, that the radiation dose rate due to radioactive material contained in each electron tube does not exceed one (1) millirad per hour at one (1) centimeter from a surface when measured through seven (7) milligrams per square centimeter of absorber. For purposes of this subparagraph, "electron tubes" include spark gap tubes, power tubes, gas tubes including glow lamps, receiving tubes, microwave tubes, indicator tubes, pickup tubes, radiation detection tubes, and other completely sealed tubes that are designed to conduct or control electrical currents.

(h) Ionizing radiation measuring instruments containing, for purposes of internal calibration or standardization, one (1) or more sources of radioactive material provided [~~not exceeding the applicable quantity set forth in these administrative regulations except~~] that:

1. Each source contains no more than one (1) exempt quantity set forth in 902 KAR 100:080;

2. Each instrument contains no more than ten (10) exempt quantities. For purposes of this requirement, an instrument's source(s) may contain either one (1) or different types of radionuclides and an individual exempt quantity may be composed of fractional parts of one (1) or more of the exempt quantities in 902 KAR 100:080, except that the sum of the fractions shall not exceed unity; and

3. For purposes of this paragraph, five hundredth (0.05) microcuries of americium-241 is considered an exempt quantity under 902 KAR 100:080.

(i) Spark cap irradiators containing not more than one (1) microcurie of cobalt-60 per spark gap irradiator for use in electrically ignited fuel oil burners having a firing rate of at least three (3) gallons per hour.

Section 3. [~~(3)~~] Resins C[c]ontaining S[s]candium-46 and D[d]esigned for S[s]and C[c]onsolidation in O[o]il W[w]ells. (1) A person is exempt from these administrative regulations to the extent that the person receives, possesses, uses, transfers, owns, or acquires synthetic plastic resins containing scandium-46 which are designed for sand consolidation in oil wells.

(2) The resins shall have been manufactured or imported in accordance with

a specific license issued by the U.S. Nuclear Regulatory Commission, or shall have been manufactured in accordance with the specifications contained in a specific license issued by the cabinet or an agreement state to the manufacturer of the resins as authorized by the licensing requirements equivalent to those in Section 32.16 and 32.17 of 10 CFR Part 32 of the regulations of the U.S. Nuclear Regulatory Commission.

(3) This exemption does not authorize the manufacture of resins containing scandium-46.

Section 4. [~~(4)~~] Gas and A[~~a~~]erosol D[~~d~~]etectors C[~~c~~]ontaining R[~~r~~]adioactive M[~~m~~]aterial. [~~Except for persons who manufacture, process, or produce gas and aerosol detectors containing radioactive material,~~] (1) A person is exempt from these administrative regulations to the extent that the person receives, possesses, uses, transfers, owns, or acquires radioactive material in gas and aerosol detectors designed to protect life or property from fires and airborne hazards provided:

(a) Detectors containing by-product material shall have been manufactured, imported, or transferred in accordance with a specific license issued by the U.S. Nuclear Regulatory Commission as authorized by Section 32.26 of 10 C.F.R.[~~CFR,~~] Part 32, [~~which license~~] authorizing[~~es~~] the transfer of the detectors to persons who are exempt from regulatory requirements; or

(b) Detectors containing other than by-product, source, or special nuclear material shall have been manufactured or transferred in accordance with a specific license issued by the cabinet or an agreement state under [~~authorized by licensing~~] requirements equivalent to those set forth in 902 KAR 100:058, [~~which license~~] authorizing[~~es~~] the transfer of the detectors to persons who are exempt from

regulatory requirements.

(2) This exemption does not apply to persons who manufacture, process, or produce gas and aerosol detectors containing radioactive material.

Section 5. [~~(5)~~] Self-luminous P[~~p~~]roducts C[~~c~~]ontaining [~~radioactive material.(a)~~] Tritium, K[~~k~~]rypton-85, or P[~~p~~]romethium-147. (1) Except for persons who manufacture, process, or produce self-luminous products containing tritium, krypton-85, or promethium-147, a person is exempt from these administrative regulations to the extent that the person receives, possesses, uses, transfers, owns, or acquires tritium, krypton-85, or promethium-147 in self-luminous products manufactured, processed, produced, imported, or transferred in accordance with a specific license issued by the U.S. Nuclear Regulatory Commission as authorized by Section 32.22 of 10 C.F.R.[~~CFR,~~] Part 32, [~~which license~~] authorizing[~~es~~] the transfer of the product to persons who are exempt from regulatory requirements. The exemption in this subsection does not apply to tritium, krypton-85, or promethium-147, used in products for frivolous purposes or in toys or adornments.

(2)[~~(b)~~] Radium-226. A person is exempt from these administrative regulations to the extent that the person receives, possesses, uses, transfers, or owns articles containing less than one-tenth (0.1) microcurie of radium-226 which were acquired prior to January 3, 1986.

Section 6 . [~~(6)~~] Exempt Q[~~q~~]uantities. (1)[~~(a)~~] Except as provided in subsections (3) and (4) [~~paragraphs (c) and (d)~~] of this subsection, a person is exempt from these administrative regulations to the extent that the person receives, possesses, uses,

transfers, owns, or acquires radioactive material in individual quantities each of which does not exceed the applicable quantity set forth in 902 KAR 100:080.

(2)[~~(b)~~] A person who possesses radioactive material received or acquired under the general license formerly provided in RH-8, Section 3(a)(2) of the Kentucky State Board of Health "RH" Regulations, effective October, 1968, is exempt from the requirements for a license set forth in these administrative regulations to the extent that the person possesses, uses,
transfers or owns the radioactive material. The exemption does
not apply for radium-226.

(3) [~~(c)~~] Subsections[~~Paragraphs~~] 1[~~(a)~~] and 2[~~(b)~~] of this section do not authorize the production, packaging or repackaging of radioactive material for purposes of commercial distribution, or the incorporation of radioactive material into products intended for commercial distribution.

(4) [~~(d)~~] A[No] person may not, for purposes of commercial distribution, transfer radioactive material in the individual quantities set forth in 902 KAR 100:080 knowing or having reason to believe that the quantities of radioactive material will be transferred to persons exempt under this subsection or equivalent regulations of the U.S. Nuclear Regulatory Commission or an agreement state, except in accordance with a specific license issued by the U.S. Nuclear Regulatory Commission as authorized by Section 32.18 of 10 C.F.R.[~~CFR,~~] Part 32, or by the cabinet, which [~~license~~] states that the radioactive material may be transferred by the licensee to persons exempt under this paragraph or the equivalent regulations of the U.S. Nuclear Regulatory Commission or an agreement state.

Section 7. Radioactive Drug: Capsules Containing Carbon-14 Urea for "in vivo" Diagnostic Use for Humans. (1) Except as provided in subsection (2) of this section, a person is exempt from the requirements for a license set forth in 902 KAR 100:040 and 902 KAR 100:073 provided that a person receives, possesses, uses, transfers, owns, or acquires capsules containing one (1) microcurie (37 kBq) carbon-14 urea (allowing for nominal variation that may occur during the manufacturing process) each, for "in vivo" diagnostic use for humans.

(2) A person who desires to use the capsules for research involving human subjects shall apply for and receive a specific license in accordance to 902 KAR 100:040.

(3) Any person who desires to manufacture, prepare, process, produce, package, repackage, or transfer for commercial distribution such capsules shall apply for and receive a specific license issued by the U.S. Nuclear Regulatory Commission in accordance to 10 C.F.R. PART 32, Section 32.21.

(4) Nothing in this section relieves persons from complying with applicable FDA, other Federal, and State requirements governing receipt, administration, and use of drugs.

CABINET FOR HEALTH SERVICES

DEPARTMENT FOR PUBLIC HEALTH

DIVISION OF PUBLIC HEALTH PROTECTION

(Amendment)

902 KAR 100:058. Specific licenses to manufacture, assemble, repair, or distribute products.

RELATES TO: KRS 211.842 to 211.852, 211.990(4), 13B.170, 10 C.F.R. 32.11, 32.51 to 32.74, 32.101 to 32.103, 32.110, and 10 C.F.R. 40.34 and 40.35

STATUTORY AUTHORITY: KRS 194.050, 211.090, 211.844, 13B.170, 10 C.F.R. 32.11, 32.51 to 32.74, 32.101 to 32.103, 32.110, and 10 C.F.R. 40.34 and 40.35

NECESSITY, FUNCTION, AND CONFORMITY [~~NECESSITY AND FUNCTION~~]: The Cabinet for Health Services[~~Human Resources~~] is mandated[~~authorized~~] by KRS 211.844 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 prescribes requirements for the issuance of specific licenses to persons who manufacture, assemble, repair, or distribute commodities, products, or devices, which contain radioactive material.

Section 1. Registration of Product Information. (1) A manufacturer or initial distributor of a sealed source or device containing a sealed source whose product is intended for use under a specific license shall submit a request to the cabinet for evaluation of radiation safety information about its product and for its registration.

(2) The request for review of a sealed source or a device shall include sufficient information to provide reasonable assurance that the radiation safety properties of the source or device are adequate to protect health and minimize danger to life and property.

(3) The request shall include information on the:

(a) Design;

(b) Manufacture;

(c) Prototype testing;

(d) Quality control program;

(e) Labeling;

(f) Proposed uses;

(g) Leak testing; and

(4) For a device, the request shall also include sufficient information about:

(a) Installation;

(b) Service and maintenance;

(c) Operating and safety instructions; and

(d) Its potential hazards.

(5) The cabinet evaluates a sealed source or device using radiation safety criteria in accepted industry standards. If these standards and criteria do not readily apply to a particular case, the cabinet formulates reasonable standards and criteria with the help of the manufacturer or distributor. The cabinet shall use criteria and standards sufficient to ensure that the radiation safety properties of the device or sealed source are adequate to protect health and minimize danger to life and property.

(6) After completion of the evaluation, the cabinet issues a certificate of registration

to the person making the request. The certificate of registration acknowledges the availability of the submitted information for inclusion in an application for a specific license proposing use of the product.

(7) A person submitting the request for evaluation and registration of safety information about the product shall manufacture and distribute the product in accordance with:

(a) The statements and representations, including quality control program contained in the request; and

(b) The provisions of the registration certificate. [~~Applicability. The requirements in this administrative regulation shall apply to licensees who manufacture, assemble, repair, or distribute commodities, products, or devices.~~

Section 2. Licensing the Introduction of Radioactive Material into Products in Exempt Concentrations. (1) In addition to the requirements set forth in 902 KAR 100:040, Section 4 [~~5~~], a specific license authorizing the introduction of radioactive material into a product or material owned by or in the possession of the licensee or another to be transferred to persons exempt under 902 KAR 100:045, Section 2[~~3~~](1)(a) may [~~shall~~] be issued if:

(a)[~~(1)~~] The applicant submits a description of:

1. T[~~t~~]he product or material into which the radioactive material will be introduced;[~~,~~]

2. I[~~i~~]ntended use of the radioactive material and the product or material into which it is introduced; [~~,~~]

3. M[~~m~~]ethod of introduction;[~~,~~]

4. I[i]nitial concentration of the radioactive material in the product or material;[,]

5. C[c]ontrol methods to assure that no more than the specified concentration is introduced into the product or material;[,]

6. E[e]stimated time interval between introduction and transfer of the product or material; and

7. E[e]stimated concentrations of the radioactive material in the product or material at the time of [when] transfer[red];

(b)~~(2)~~ The applicant provides reasonable assurance that the:

1. C[c]oncentrations of the radioactive material at the time of [when] transfer[red] shall [will]not exceed the concentrations in 902 KAR 100:085;[~~, relating to concentrations of certain radionuclides, that~~]

2. R[r]econcentration of the radioactive material in concentrations exceeding those in 902 KAR 100:085 is not likely;[~~, that~~]

3. U[u]se of lower concentrations is not feasible;[,] and [~~that the~~]

4. P[p]roduct or material is not likely to be incorporated in a food, beverage, cosmetic, drug or other commodity or product designed for ingestion or inhalation by, or application to, a human being; and

(2)~~(3)~~ A [~~Each~~] person licensed under this administrative regulation shall:

(a) Maintain records of transfer of radioactive material; and

(b) F[f]ile an annual report with the cabinet which shall include:

1.[~~identify the~~] T[t]ype and quantity of a [~~each~~] product or material into which radioactive material has been introduced during the reporting period;

2. N[~~n~~]ame and address of the person who owned or possessed the product or material, into which radioactive material has been introduced, at the time of introduction;

3.[~~the~~] T[t]ype and quantity of radionuclide introduced into a[~~each~~] [~~such~~] product or material; and

4.[~~the~~] I[~~i~~]nitial concentrations of the radionuclide in the product or material at the time of transfer of[~~when~~] the radioactive material[~~is transferred~~] by the licensee.

(c) Indicate in the report i[~~I~~]f no transfers of radioactive material have been made as authorized by this administrative regulation during the reporting period[~~,the report shall so indicate~~].

(d) Submit a report to[~~shall~~] cover the year ending June 30, and[~~shall~~] be filed within thirty (30) days thereafter.

(e) Maintain the record of a transfer for a period of one (1) year after the event is included in a report to the cabinet.

Section 3. Resins Containing Scandium - 46 and Designed for Sand-Consolidation in Oil Wells: Requirements for License to Manufacture, or Initially Transfer for Sale or Distribution. An application for a specific license to manufacture, or initially transfer for sale or distribution, synthetic plastic resins containing scandium-46 for use as indicated in 902 KAR 100:045, Section 3(3) may be approved if:

(1) The applicant satisfies the requirements specified in 902 KAR 100:040, Section 4;

(2) The product is designed to be used only for sand-consolidation in oil wells;

(3) The applicant submits the following information:

(a) The general description of the product to be manufactured or initially transferred;

(b) A description of control procedures to be used to assure that the concentration of scandium - 46 in the final product at the time of distribution shall not exceed $1.4x10^{-3}$ micro-curie/milliliter; and

(4) A container of such product shall bear a durable, legible label approved by the cabinet, which contains the following information:

(a) The product name;

(b) A statement that the product contains radioactive scandium and is designed and manufactured only for sand-consolidation in oil wells;

(c) Instructions necessary for proper use; and

(d) The manufacturer's name.

Section 4[3]. Licensing the Manufacture and Distribution of Devices to Persons Generally Licensed under 902 KAR 100:050. (1)In addition to the requirements set forth in 902 KAR 100:040,[,]

Section 4[,] a[A]n application for a specific license to distribute certain devices containing radioactive material, excluding special nuclear material, to persons generally licensed may [shall] be issued only if[:] t[T]he applicant submits sufficient information relating to the:

(a) D[d]esign;[,]

(b) M[m]anufacture;[,]

(c) P[p]rototype testing;[,]

(d) Q[q]uality control;[,]

(e) L[l]abels;[,]

(f) P[p]roposed uses;[,]

(g) I[i]nstallation;[,]

(h) S[s]ervicing;[,]

(i) L[l]eak testing;[,]

(j) O[o]perating and safety instructions; and

(k) P[p]otential hazards of the device to provide reasonable assurance that:

1.[(a)] Under accident conditions, such as fire and explosion associated with handling, storage, and use of the device, it is unlikely that a person would receive an external radiation dose or dose commitment in excess of the following organ doses:

a.[1.]Whole body; head and trunk; active blood-forming organs; gonads; or lens of eye - 15 rems (150 mSv)

b. [2.]Hands and forearms; feet and ankles; localized areas of skin averaged over areas no larger than one (1) square centimeter - 200 rems (2 Sv)

c. [3.]Other organs - 50 rems (500 mSv);

2.[(b)]Under ordinary conditions of handling, storage, and use of the device, the radioactive material contained in the device shall not be released or inadvertently removed from the device, and it is unlikely that a person will receive in a period of one (1) calendar year [quarter] a dose in excess of ten (10) percent of the limits specified in 902 KAR 100:019 [020], Section 3 [2]; and

3. [(c)] The device can be safely operated by individuals not having training in

radiological protection.

(2) The [~~Each~~] device bears a durable, legible, clearly visible label or labels approved by the cabinet, which contain in a clearly identified and separate statement:

(a) Instructions and precautions necessary to assure safe installation, operation, and servicing of the device[~~;~~] (documents such as operating and service manuals, may be identified in the label and used to provide this information);

(b) The requirement, or lack of requirement, for leak testing, or for testing an "on-off" mechanism and indicator, including the maximum time interval for the testing, and the identification of radioactive material by:

1.I[~~i~~]sotope:[~~,~~]

2.Q[~~q~~]uantity of radioactivity;[~~, and~~]

3. D[~~d~~]ate of determination of the quantity; and

(c) The information called for in the following statement, in the same or substantially similar form:

"The receipt, possession, use, and transfer of this device, Model _____, Serial No. _____, are subject to a general license or the equivalent and the regulations of the U.S. Nuclear Regulatory Commission or an Agreement State. This label shall be maintained on the device in a legible condition. Removal of this label is prohibited.

CAUTION - RADIOACTIVE MATERIAL

_____

Name of manufacturer or distributor"

The model, serial number, and name of the manufacturer or distributor may be omitted from this label provided the information is elsewhere specified in labeling affixed to the device.

(3)(a) In the event the applicant desires that the device be required to be tested for proper operation of the "on-off" mechanism and indicator, if any, or for leakage of radioactive material, subsequent to the initial tests required by this [these] administrative regulation[s] at intervals longer than six (6) months but not exceeding three (3) years, the applicant shall include in the application sufficient information to demonstrate that the longer interval is justified by:

1. P[p]erformance characteristics of the device or similar devices;[,] and

2. [by] D[d]esign features which have a significant bearing on the probability or consequences of leakage of radioactive material from the device or failure of the "on-off" mechanism and indicator.

(b) In determining the acceptable interval for the test for leakage of radioactive material, the cabinet may consider information [on particulars] which includes, but is not limited to:

1.(a) Primary containment or source capsule;

2.(b) Protection of primary containment;

3.(c) Method of sealing containment;

4.(d) Containment construction materials;

5.(e) Form of contained radioactive material;

6.(f) Maximum temperature withstood during prototype tests;

7.~~(g)~~ Maximum pressure withstood during prototype tests;

8.~~(h)~~ Maximum quantity of contained radioactive material;

9.~~(i)~~ Radiotoxicity of contained radioactive material; and

10.~~(j)~~ Operating experience with identical devices or similarly designed and constructed devices.

(4)(a) In the event the applicant desires that the general licensee under 902 KAR 100:050, Section 3, or under equivalent regulations of the U.S. Nuclear Regulatory Commission or an Agreement State, be authorized to install the device, collect the sample to be analyzed by a specific licensee for leakage of radioactive material, service the device, test the "on-off" mechanism and indicator, or remove the device from installation, the applicant shall include in the application:

1. W[~~w~~]ritten instructions to be followed by the general licensee;[~~,~~]

2. E[~~e~~]stimated calendar quarter doses associated with the activity or activities;[~~,~~] and

3. B[~~b~~]ases for these [~~such~~] estimates.

(b) The submitted information shall demonstrate that performance of the activity or activities by an individual untrained in radiological protection, in addition to other handling, storage, and use of devices under the general license, is unlikely to cause that individual to receive a [~~calendar quarter~~] dose in excess of ten (10) percent of the annual limits specified in 902 KAR 100:019 [~~020~~], Section 3 [~~2~~].

(5) A [~~each~~] person licensed under this administrative regulation to distribute devices to generally licensed persons shall:

(a) Furnish a copy of the general license contained in 902

KAR 100:050, Section 3, to a [~~each~~] person the licensee, directly or through an intermediate person, transfers radioactive material in a device for use as authorized by a general license;

(b) Furnish a copy of the general license contained in the U.S. Nuclear Regulatory Commission's or Agreement State's regulation equivalent to 902 KAR 100:050, Section 3, or alternatively, furnish a copy of the general license to a [~~each~~] person the licensee directly or through an intermediate person transfers radioactive material in a device for use pursuant to the general license of the U.S. Nuclear Regulatory Commission or the Agreement State. If a copy of the general license in 902 KAR 100:050, Section 3 is furnished to the person, it shall be accompanied by a note explaining that the use of the device is regulated by the U.S. Nuclear Regulatory Commission or Agreement State under requirements substantially the same as those in 902 KAR 100:050, Section 3;

(c) Report to the cabinet all transfers of the devices to persons for use under the general license.

1. The report shall identify a [~~each~~] general licensee by name and address, an individual by name or position who may constitute a point of contact between the cabinet and the general licensee, the type and model number of device transferred, and the quantity and type of radioactive material contained in the device.

2. If one (1) or more intermediate persons will temporarily possess the device at the intended place of use prior to its possession by the user, the report shall include identification of an [~~each~~] intermediate person by name, address, contact, and relationship to the intended user.

3. If no transfers have been made to persons generally licensed during the reporting period, the report shall so indicate.

4. The report shall cover a [~~each~~] calendar quarter and be filed within thirty (30) days thereafter;

(d) Furnish reports to other agencies:

1. Report to the U.S. Nuclear Regulatory Commission all transfers of such devices to persons for use under the U.S. Nuclear Regulatory Commission general license in Section 31.5 of 10 CFR Part 31; or

2. Report to the responsible state agency all transfers of devices manufactured and distributed for use under a general license in that state's regulations equivalent to 902 KAR 100:050,

Section 3.

3. The reports shall identify a [~~each~~] general licensee by name and address, an individual by name or position who may constitute a point of contact between the agency and the general

licensee, the type and model of the device transferred, and the

quantity and type of radioactive material contained in the device.

4. If one (1) or more intermediate persons will temporarily possess the device at the intended place of use prior to its

possession by the user, the report shall include identification of the [~~each~~] intermediate person by name, address, contact, and relationship to the intended user.

5. The report shall be submitted within thirty (30) days after the end of a[~~each~~] calendar quarter in which the device is transferred to the generally licensed person;

6. [4] If no transfers have been made to U.S. Nuclear Regulatory Commission licensees during the reporting period, this information shall be reported to the U.S. Nuclear Regulatory Commission;

7. [5] If no transfers have been made to general licensees within a particular state during the reporting period, this information shall be reported to the responsible state agency upon request of that agency; and

(e) Keep records showing the name, address, and the point of contact for a [each] general licensee to which the licensee directly or through an intermediate person transfers radioactive material in devices for use as authorized by a general license or equivalent regulations of the U.S. Nuclear Regulatory Commission or an Agreement State. The records shall show:

1. T[t]he date of a [each] transfer;[,]

2. T[t]he radionuclide and the quantity of radioactivity in a [each] device transferred;[,]

3. T[t]he identity of the intermediate person;[,]and

3. C[c]ompliance with the report requirements.

(f) The records required by this section shall be maintained for a period of five (5) years from the date of the recorded transfer.

Section 5[4]. Special Requirements for the Manufacture, Assembly, or Repair of Luminous Safety Devices for use in Aircraft. An application for a specific license to manufacture, assemble, or repair luminous safety devices containing tritium or promethium-147 for use in aircraft, for distribution to persons generally licensed under 902 KAR 100:050 may be approved if:

(1) The applicant satisfies the [~~general~~] requirements specified in 902 KAR 100:040, Section 4; and

(2) The applicant satisfies the requirements of U.S. Nuclear Regulatory Commission 10 CFR Part 32, Sections 32.2(b), 32.53, 32.54, 32.55, 32.56, [~~and~~] 32.101, and 32.110 or their equivalent.

Section 6[~~5~~]. Special Requirements for License to Manufacture and Distribute Calibration Sources Containing Americium-241, Plutonium or Radium-226 for Distribution to Persons Generally

Licensed under 902 KAR 100:050. An application for a specific license to manufacture or distribute calibration and reference sources containing americium-241, plutonium or radium-226 to persons generally licensed under 902 KAR 100:050 may be approved if:

(1) The applicant satisfies the [~~general~~] requirements of 902 KAR 100:040, Section 4; and

(2) The applicant satisfies the requirements of U.S. Nuclear Regulatory Commission 10 CFR Part 32, Sections 32.57, 32.58, 32.59, and 32.102; and 10 CFR Part 70, Section 70.39 [~~70.29~~], or their equivalent.

Section 7[~~6~~]. Licensing the Manufacture and Distribution of Ice Detection Devices Containing Strontium-90. An application for a specific license to manufacture and distribute ice detection devices to persons generally licensed may be approved if:

(1) The applicant satisfies the requirements of 902 KAR 100:040, Section 4; and

(2) The criteria of U.S. Nuclear Regulatory Commission 10 CFR Part 32,

Sections 32.2(b), 32.61, 32.62, 32.103, and 32.110 are met. [~~Manufacture and Distribution of Radioactive Material for Medical use under a General License. An application for a specific license to distribute radioactive material for use by physicians under the general license of these administrative regulations shall be approved if:~~

~~(1) The applicant satisfies the general requirements specified in 902 KAR 100:040;~~

~~(2) The applicant submits evidence that the radioactive material is to be manufactured, labeled and packaged in accordance with a new drug application which the Commissioner of Food and Drug Administration has approved, or in accordance with a license for a biologic product issued by the Secretary, U.S. Department of Health and Human Services; and~~

~~(3) The following statement, or a substantially similar statement, appears on the label affixed to the container or appears in the leaflet or brochure which accompanies the package:~~

~~"This radioactive drug may be received, possessed and used only by physicians licensed to dispense drugs in the practice of medicine. Its receipt, possession, use and transfer are subject to the administrative regulations and a general license or the equivalent of the United States Nuclear Regulatory Commission or of an Agreement State.~~

~~_____~~

~~_____ (Name of Manufacturer)"]~~

Section 8[~~7~~]. Manufacture and Distribution of Radioactive Material for Certain In Vitro Clinical or Laboratory Testing under a General License.

An a[A]pplication for a specific license to manufacture or distribute radioactive material for use under the general license of 902 KAR 100:050, Section 4 [~~these administrative regulations~~] may be approved if:

(1) The applicant satisfies the general requirements specified in 902 KAR 100:040, Section 4;

(2) The radioactive material is to be prepared for distribution in prepackaged units of:

(a) Iodine-125 in units not exceeding ten (10) microcuries (370 kBq) each.

(b) Iodine-131 in units not exceeding ten (10) microcuries (370 kBq) each.

(c) Carbon-14 in units not exceeding ten (10) microcuries (370 kBq) each.

(d) Hydrogen-3 (tritium) in units not exceeding fifty (50) microcuries (1.85 MBq) each.

(e) Iron-59 in units not exceeding twenty (20) microcuries (740 kBq) each.

(f) Selenium-75 in units not exceeding ten (10) microcuries (370 kBq) each.

(g) Mock iodine-125 in units not exceeding 0.05 microcurie (1.85 MBq) of iodine-129 and 0.005 microcurie (185 Bq) of americium-241 each.

(h) Cobalt-57 in units not exceeding fifty (50) microcuries (370 kBq) each.

(3) A [~~Each~~] prepackaged unit bears a durable, clearly visible label:

(a) Identifying the radioactive contents as to chemical form and radionuclide, and indicating that the amount of radioactivity does not exceed:

1. T[t]en (10) microcuries (370 kBq) of iodine-131, iodine-125, selenium-75,

cobalt-57, or carbon-14;

2. F[f]ifty (50) microcuries (1.85 MBq) of hydrogen-3 (tritium);

3. T[t]wenty (20) microcuries (740 kBq) of iron-59; or

4. M[m]ock iodine-125 in units not exceeding 0.05 microcurie (1.85 kBq) of iodine-129 and 0.005 microcurie (185 Bq) of americium-241 each; and

(b) Displaying the radiation caution symbol described in 902 KAR 100:019, Section 23 and the words, "Caution, Radioactive Material," and "Not for Internal or External Use in Humans or Animals;"

(4) The following statement, or a substantially similar statement which contains the information called for in the following statement, appears on a label affixed to a [each] prepackaged unit or appears in a leaflet or brochure which accompanies the package:

"This radioactive material may be received, acquired, possessed, and used only by physicians, veterinarians, clinical laboratories or hospitals and only for in vitro clinical or laboratory tests not involving internal or external administration of the material, or the radiation therefrom, to human beings or animals. Its receipt, acquisition, possession, use, and transfer are subject to the administrative regulations and a general license or the equivalent of the United States Nuclear Commission or of an Agreement State.

_____

(Name of Manufacturer)"; and

(5) The label affixed to the unit, or the leaflet or brochure which accompanies the package, contains adequate information as to the precautions to be observed in handling and storing the radioactive material. In the case of the mock iodine-125 reference or

calibration source, the information accompanying the source shall also contain directions to the licensee regarding the waste disposal requirements set out in 902 KAR 100:021, Section 1 [~~these administrative regulations~~].

[~~Section 8. Licensing the Manufacture and Distribution of Ice Detection Devices. An application for a specific license to manufacture and distribute ice detection devices to persons generally licensed may be approved if:~~

~~(1) The applicant satisfies the general requirements of 902 KAR 100:040; and~~

~~(2) The criteria of U.S. Nuclear Regulatory Commission 10 CFR Part 32, Sections 32.61, 32.62, and 32.103 are met.~~]

Section 9. Manufacture and Distribution of Radiopharmaceuticals Containing Radioactive Material for Medical Use Under Specific Licenses. (1) An application for a specific license to manufacture, prepare or transfer for commercial distribution [~~and distribute~~] radiopharmaceuticals containing radioactive material for use by persons licensed pursuant to 902 KAR 100:073, [~~for the uses listed in 902 KAR 100:073, Sections 29, 31 and 35~~] may be approved if the applicant:

(a) [~~(1) The applicant~~] S[s]atisfies the [~~general~~] requirements specified in 902 KAR 100:040, Section 4;

(b) [~~(2) The applicant~~] S[s]ubmits evidence that the applicant is at least one (1) of the following:

1. [~~(a)~~] Registered or licensed with the U.S. Food and Drug Administration (FDA) as a drug manufacturer;

2. Registered or licensed with a state agency as a drug manufacturer; or

3. Licensed as a pharmacy by the State Board of Pharmacy.

[~~The radiopharmaceutical containing radioactive material will be manufactured, labeled, and packaged in accordance with the Federal Food, Drug and Cosmetic Act or the Public Health Service Act, such as a new drug application (NDA) approved by the Food and Drug Administration (FDA), or a "Notice of Claimed Investigational Exemption for a New Drug" (IND) that has been accepted by the FDA; or~~

~~(b) The manufacture and distribution of the radiopharmaceutical containing radioactive material is not subject to the Federal Food, Drug and Cosmetic Act and the Public Health Service Act;~~]

(c) [~~(3) The applicant~~] S[s]ubmits information on:

1. T[t]he radionuclide; [~~,~~]

2. C[c]hemical and physical form; [~~,~~]

3. Maximum activity per vial, syringe, generator, or other container of the radioactive drug [~~packaging including maximum activity per package~~], and

4. S[s]hielding provided by the packaging of the radioactive material to show it [~~which~~] is appropriate for safe handling and storage of radiopharmaceuticals by medical use [~~group~~] licensees;~~and~~

(d) [~~(4)~~] Satisfies the following labeling requirements:

1. [~~(a)~~] The label is affixed to the transport radiation shield, whether it is constructed of lead, glass, plastic or other material, of a radioactive drug to be transferred for commerical distribution. The label must include:

a. The radiation symbol;

b. The words "CAUTION, RADIOACTIVE MATERIAL" or "DANGER, RADIOACTIVE MATERIAL";

c. The name of the radioactive drug or its abbreviation; and

d. The quantity of radioactivity at a specified date and time. For radioactive drugs with a half life greater than l00 days, the time may be omitted.

2. A label is affixed to a syringe, vial, or other container used to hold a radioactive drug to be transferred for commercial distribution. The label must include:

a. The radiation symbol;

b. The words "CAUTION, RADIOACTIVE MATERIAL" or "DANGER, RADIOACTIVE MATERIAL" and

c. An identifier that ensures the syringe, vial or other container can be correlated with the information on the transport radiation shield label. [~~each package of the radiopharmaceutical contains information on the radionuclide, quantity, and date of assay and the label affixed to each package, or the leaflet or brochure which accompanies each package, contains a statement that the radiopharmaceutical is licensed by the cabinet for distribution to persons licensed under the requirements of 902 KAR 100:073 for uses listed in 902 KAR 100:073, Sections 29, 31 and 35, or under equivalent licenses of the U.S. Nuclear Regulatory Commission or an Agreement State.~~

~~(b) The labels, leaflets, or brochures required by this subsection are in addition to the labeling required by the Food and Drug Administration (FDA) and they may be separate from or, with the approval of FDA, may be combined with~~

~~the labeling required by FDA.~~]

(2) A licensee described by subsection (1)(b)3. of this section may:

(a) Prepare radioactive drugs for medical use, as defined in 902 KAR 100:010 provided the radioactive drug is prepared by either an authorized nuclear pharmacist, as specified in subsection (2)(b) and (2)(c)of this section, or an individual under the supervision of an authorized nuclear pharmacist as specified in 902 KAR 100:073, Section 8.

(b) Allow a pharmacist to work as an authorized nuclear pharmacist if this individual:

1. Qualifies as an authorized nuclear pharmacist as defined in 902 KAR 100:010;

2. Meets the requirements specified in 902 KAR 100:073, Sections 58 and 59 and the licensee has received an approved license amendment identifying this individual as an authorized nuclear pharmacist; or

3. Is designated as an authorized nuclear pharmacist in accordance with subsection (2)(c) of this section.

(c) Designate a pharmacist as an authorized nuclear pharmacist if the individual is identified as of the effective date of this regulation, as an authorized user on a nuclear pharmacy license issued by the cabinet.

(3) The actions authorized in subsections (2)(a) and (2)(b)of this section are permitted in spite of more restrictive language in license conditions.

(4) The licensee shall provide to the cabinet a copy of an individual's certification by the Board of Pharmaceutical Specialties, the cabinet, the U.S. Nuclear Regulatory Commission, or an agreement state license, and a copy of the state pharmacy licensure or registration, no later than thirty (30) days after the date that the licensee allows, pursuant

to subsection (2)(b)1. and (2)(b)3. of this section, the individual to work as an authorized nuclear pharmacist.

(5) A licensee shall:

(a) Possess and use instrumentation to measure the radioactivity of radioactive drugs;

(b) Have procedures for use of the instrumentation;

(c) Measure, by direct measurement or by combination of measurements and calculations, the amount of radioactivity in dosages of alpha-, beta- or photon-emitting radioactive drugs prior to transfer for commercial distribution;

(d) Perform tests before initial use, periodically, and following repair, on an instrument for accuracy, linearity, and geometry dependence, as appropriate for the use of the instrument; and make adjustments when necessary; and

(e) Check an instrument for constancy and proper operation at the beginning of each day of use.

(6) Nothing in this section relieves the licensee from complying with applicable FDA, other federal, and state requirements governing radioactive drugs.

[~~Section 10. Manufacture and Distribution of Generators or Reagent Kits for Preparation of Radiopharmaceuticals Containing Radioactive Material. An application for a specific license to manufacture and distribute generators or reagent kits containing radioactive material for preparation of radiopharmaceuticals by persons licensed as authorized by 902 KAR 100:073 for the uses listed in 902 KAR 100:073, Section 31 may be approved if:~~

~~(1) The applicant satisfies the general requirements specified in 902 KAR 100:040;~~

~~(2) The applicant submits evidence that:~~

~~(a) The generator or reagent kit is to be manufactured, labeled and packaged in accordance with the Federal Food, Drug and Cosmetic Act or the Public Health Service Act, such as a new drug application (NDA) approved by the Food and Drug Administration (FDA), or a "Notice of Claimed Investigational Exemption for a New Drug" (IND) that has been accepted by the FDA; or~~

~~(b) The manufacture and distribution of the generator or reagent kit are not subject to the Federal Food, Drug and Cosmetic Act and the Public Health Service Act;~~

~~(3) The applicant submits information on the radionuclide, chemical and physical form, packaging including maximum activity per package, and shielding provided by the packaging of the radioactive material contained in the generator or reagent kit;~~

~~(4) The label affixed to the generator or reagent kit contains information on the radionuclide, quantity, and date of assay; and~~

~~(5) The label affixed to the generator or reagent kit, or the leaflet or brochure which accompanies the generator or reagent kit, contains:~~

~~(a) Adequate information, from a radiation safety standpoint, on the procedures to be followed and the equipment and shielding to be used in eluting the generator or processing radioactive material with the reagent kit; and~~

~~(b) A statement that this generator or reagent kit, as appropriate, is approved for use by persons licensed by the cabinet as authorized by 902 KAR 100:073 for uses listed in 902 KAR~~

~~100:073, Section 31 or under equivalent licenses of the U.S. Nuclear Regulatory Commission or an Agreement State. The labels, leaflets, or brochures required by this section are in addition to the labeling required by the Food and Drug Administration (FDA) and they may be separate from or, with the approval of FDA, may be combined with the labeling required by FDA.]~~

Section 10 [~~11~~]. Manufacture and Distribution of Sources or Devices Containing Radioactive Material for Medical Use. An application for a specific license to manufacture and distribute sources and devices containing radioactive material to persons licensed as authorized by 902 KAR 100:073 for use as a calibration or reference source or for medical uses may be approved if:

(1) The applicant satisfies the [~~general~~] requirements in 902 KAR 100:040, Section 4;

(2) The applicant submits sufficient information regarding a [~~each~~] type of source or device pertinent to an evaluation of its radiation safety, including:

(a) The radioactive material contained, its chemical and physical form, and amount;

(b) Details of design and construction of the source or device;

(c) Procedures for, and results of, prototype tests to demonstrate that the source or device will maintain its integrity under stresses likely to be encountered in normal use and accidents;

(d) For devices containing radioactive material, the radiation profile of a prototype device;

(e) Details of quality control procedures to assure that production sources and

devices meet the standards of the design and prototype tests;

(f) Procedures and standards for calibrating sources and devices;

(g) Legend and methods for labeling sources and devices as to their radioactive content; and

(h) Instructions for handling and storing the source or device from the radiation safety standpoint. These instructions are to be included on a durable label attached to the source or device or attached to a permanent storage container for the source or device; except that, instructions which are too lengthy for the label may be summarized on the label and printed in detail on a brochure which is referenced on the label;

(3) The label affixed to the source or device, or to the permanent storage container for the source or device, contains:

a. I[i]nformation on the radionuclide;[,]

b. Q[q]uantity; [,~~and~~]

c. D[d]ate of assay;[,] and

d. A[a] statement that the name of source or device is licensed by the cabinet for distribution to persons licensed as authorized by 902 KAR 100:073 or under equivalent licenses of the U.S. Nuclear Regulatory Commission or an Agreement State[~~, except that, the labeling for sources which do not require long term storage may be on a leaflet or brochure which accompanies the source~~];

(4) In the event the applicant desires that the source or device be required to be tested for leakage of radioactive material at intervals longer than six (6) months, he shall include in the application sufficient information to demonstrate that the longer interval is

justified by:

(a) P[p]erformance characteristics of the source or device or similar sources or devices; and [by]

(b) D[d]esign features that have a significant bearing on the probability or consequence of leakage of radioactive material from the source; and

(5) In determining the acceptable interval for tests of leakage of radioactive material, the cabinet may consider information that includes, but is not limited to:

(a) Primary containment or source capsule;

(b) Protection of primary containment;

(c) Method of sealing containment;

(d) Containment construction materials;

(e) Form of contained radioactive material;

(f) Maximum temperature withstood during prototype tests;

(g) Maximum pressure withstood during prototype tests;

(h) Maximum quantity of contained radioactive material;

(i) Radiotoxicity of contained radioactive material; and

(j) Operating experience with identical sources or devices or similarly designed and constructed sources or devices.

Section 11 [12]. Requirements for License to Manufacture and Distribute Industrial Products Containing Depleted Uranium for Mass Volume Applications. (1) An application for a specific license to manufacture or distribute industrial products and devices containing depleted uranium for use authorized by 902 KAR 100:050, Section 2 or equivalent regulations of the U.S. Nuclear Regulatory Commission or an Agreement State may be

approved if:

(a) The applicant satisfies the general requirements specified in 902 KAR 100:040, Section 4;

(b) The applicant submits sufficient information[;] relating to the:

1. D[d]esign,

2. M[m]anufacture,

3. P[p]rototype testing,

4. Q[q]uality control procedures,

5. L[l]abeling or marking,

6. P[p]roposed uses, and

7. P[p]otential hazards of the industrial product or device;

(c)The applicant [to] provides reasonable assurance that possession, use, or transfer of the depleted uranium in the product or device is not likely to cause an individual to receive in a period of one (1) calendar quarter a radiation dose in excess of ten (10) percent of the limits specified in 902 KAR 100:019 [020], Section 3; and

(d)[(c)] The applicant submits sufficient information regarding the industrial product or device and the presence of depleted uranium for a mass-volume application in the product or device to provide reasonable assurance that unique benefits will accrue to the public because of the usefulness of the product or device.

(2) In the case of an industrial product or device whose unique benefits are questionable, the cabinet may approve an application for a specific license under this section only if the product or device is found to combine a high degree of utility and low

probability of uncontrolled disposal and dispersal of significant quantities of depleted uranium into the environment.

(3) The cabinet may deny an application for a specific license under this section if the end use(s) of the industrial product or device cannot be reasonably foreseen.

(4) A [~~Each~~] person licensed as authorized by this section shall:

(a) Maintain the level of quality control required by the license in the manufacture of the industrial product or device and in the installation of the depleted uranium into the product or device;

(b) Label or mark a [~~each~~] unit to identify:

1. [~~Identify~~] T[t]he manufacturer of the product or device; [~~and~~]

2. T[t]he number of the license under which the product or device was manufactured or distributed;[,]

3. T[t]he fact that the product or device contains depleted uranium;[,]

4. The [~~and the~~] quantity of depleted uranium in a [~~each~~] product or device; and

5. [~~2. State~~] T[t]hat the receipt, possession, use, and transfer of the product or device are subject to a general license, or the equivalent, and the regulations of the U.S. Nuclear Regulatory Commission or an Agreement State;

(c) Assure that the depleted uranium before being installed in a [~~each~~] product or device has been impressed with the following legend clearly legible through plating or other covering: "Depleted Uranium;"

(d) Furnish a copy of the general license contained in [~~the following~~]:

1. [~~A copy of the general license contained in~~] 902 KAR 100:050 to a [~~each~~] person to whom depleted uranium is transferred in a product or device

for use authorized by the general license contained in 902 KAR 100:050; or

2. [~~A copy of the general license contained in~~] T[~~t~~]he U.S. Nuclear Regulatory Commission's or Agreement State's regulation equivalent to 902 KAR 100:050 and a copy of an applicable U.S. Nuclear Regulatory Commission's or Agreement State's certificate, to a [~~each~~] person to whom depleted uranium is transferred in a product or device for use as authorized by the general license of the U.S. Nuclear Regulatory Commission or an Agreement State, with a note explaining that use of the product or device is regulated by the U.S. Nuclear Regulatory Commission or an Agreement State under requirements substantially the same as those in 902 KAR 100:050;

(e) Furnish the following reports to either the cabinet, U.S. Nuclear Regulatory Commission, or Agreement State:

1. A r[~~R~~]eport of[~~to the cabinet~~] all transfers of industrial products or devices to persons for use under the general license in 902 KAR 100:050. The report shall identify:

a. A[~~The report shall identify each~~] general licensee by name and address;[~~,~~]

b. A[a]n individual by name or position who may constitute a point of contact between the cabinet and the general licensee;[]

c. T[~~t~~]he type and model number of device transferred, and

d. T[~~t~~]he quantity of depleted uranium contained in the product or device.

2. The report shall be submitted within thirty (30) days after the end of a [~~each~~] calendar quarter in which the product or device is transferred to the generally licensed person. If no transfers have been made to persons generally licensed under 902 KAR 100:050 during the reporting period, the report shall so indicate;

[~~(f) Furnish the following:~~]

[~~1. A report to the U.S. Nuclear Regulatory Commission of all transfers of industrial products or devices to persons for use under the U.S. Nuclear Regulatory Commission general license in 10 CFR Part 40.25;~~

~~2. A report to the responsible Agreement State agency~~ of ~~all transfers of devices manufactured and distributed as authorized by this section for use under a general license in that state's regulations equivalent to 902 KAR 100:050;~~

~~3. Reports identifying each general licensee by name and address, an individual by name or position who may constitute a point of contact between the agency and the general licensee, the type and model number of the device transferred, and the quantity of depleted uranium contained in the product or device. Reports shall be submitted within thirty (30) days after the end of each calendar quarter in which the product or device is transferred to the generally licensed person.~~

~~4. A report to[, upon the request of] the responsible agency, that no transfers have been made to a general licensee of that agency;~~] and

(f) [~~(g)~~] Keep records showing the name, address, and point of contact for a [~~each~~] general licensee to whom he transfers depleted uranium in industrial products or devices for use authorized by the general license provided in 902 KAR 100:050 or equivalent regulations of the U.S. Nuclear Regulatory Commission or an Agreement State. The records shall be maintained for a period of three (3) [~~two (2)~~] years from the date of transfer and shall show the date of a [~~each~~] transfer, the quantity of depleted uranium in a [~~each~~] product or device transferred, and compliance with the report requirements of this section.

Section 12 [~~13~~]. Licensing the Distribution of Naturally Occurring and Accelerator Produced Radioactive Material (NARM) in Exempt Quantities. (1) An application for a specific license to distribute NARM to persons exempted from these regulations authorized by 902 KAR 100:045 may be approved if:

(a) The radioactive material is not contained in a food, beverage, cosmetic, drug, or other commodity designed for ingestion or inhalation by, or application to, a human being;

(b) The radioactive material is in the form of processed chemical elements, compounds, or mixtures, tissue samples, bioassay samples, counting standards, plated or encapsulated sources, or similar substances, identified as radioactive and to be used for its radioactive properties, but is not incorporated into a manufactured or assembled commodity, product, or device intended for commercial distribution; and

(c) The applicant submits copies of prototype labels and brochures and the cabinet approves the labels and brochures.

(2) The license issued under this section is subject to the following conditions:

(a) No more than ten (10) exempt quantities shall be sold or transferred in a single transaction. However, an exempt quantity may be composed of fractional parts of one (1) or more of the exempt quantity provided the sum of the fractions shall not exceed unity.

(b) An [~~Each~~] exempt quantity shall be separately and individually packaged. No more than ten (10) packaged exempt quantities shall be contained in an outer package for transfer to persons exempt as authorized by 902 KAR 100:045. The dose rate at the external surface of the outer package shall not exceed five-tenths (0.5) millirem per hour.

(c) The immediate container of a [~~each~~] quantity or separately packaged fractional quantity of radioactive material shall bear a durable, legible label which:

1. Identifies the radionuclide and the quantity of radioactivity; and

2. Bears the words "Radioactive Material."

(d) In addition to the labeling information required by this subsection, the label affixed to the immediate container, or an accompanying brochure, shall:

1. State that the contents are exempt from licensing agency requirements;

2. Bear the words "Radioactive Material - Not for Human Use - Introduction into Foods, Beverages, Cosmetics, Drugs, or Medicinals, or into Products Manufactured for Commercial Distribution is Prohibited - Exempt Quantities Should Not Be Combined;" and

3. Set forth appropriate additional radiation safety precautions and instructions relating to the handling, use, storage, and disposal of the radioactive material.

(3) A [~~Each~~] person licensed under this section shall maintain records identifying, by name and address, a [~~each~~] person to whom radioactive material is transferred for use under 902 KAR 100:045 or the equivalent regulations of a licensing agency, and stating the kinds and quantities of radioactive material transferred. An annual summary report stating the total quantity of a [~~each~~] radionuclide transferred under the specific license shall be filed with the cabinet. A [~~Each~~] report shall cover the year ending June 30, and shall be filed within thirty (30) days thereafter. If no transfers of radioactive material have been made as authorized by this section during the reporting period, the report shall so indicate.

Section 13 [~~14~~]. Licensing the Incorporation of Naturally Occurring and Accelerator Produced Radioactive Material (NARM) into Gas and Aerosol Detectors. An application for a specific license authorizing the incorporation of NARM into gas and aerosol detectors to be distributed to persons exempt under 902 KAR 100:045 may be approved if the application satisfies requirements equivalent to those contained in U.S. Nuclear Regulatory Commission 10 CFR Part 32.26. The maximum quantity of radium-226 in a [~~each~~] device shall not exceed one-tenth (0.1) microcurie (3.7 kBq).

Section 14. Material Incorporated by Reference. (1) The following are incorporated by reference:

(a) Chapter 10 Code of Federal Register Part 32, Sections 32.2(b), 32.53, 32.54, 32.55, 32.56, 32.57, 32.58, 32.59, 32.61, 32.62, 32.101, 32.102, 32.103 and 32.110;

(b) 10 CFR Part 70, Section 70.39.

(2) The Code of Federal Register citations in subsection (1) of this section may be viewed or copied at the Office of the Commissioner of Public Health, 275 East Main Street, Frankfort, Kentucky 40621, 8 a.m. until 4:30 p.m., Monday through Friday.

CABINET FOR HEALTH SERVICES

DEPARTMENT FOR PUBLIC HEALTH

DIVISION OF PUBLIC HEALTH PROTECTION AND SAFETY

(Amendment)

902 KAR 100:070. Transportation of radioactive material.

RELATES TO: KRS 211.842 to 211.852, 211.990(4), 13B.170, 10 C.F.R. 71

STATUTORY AUTHORITY: KRS 194.050, 211.090, 211.844), 13B.170, 10 C.F.R. 71

NECESSITY, FUNCTION, AND CONFORMITY: KRS 211.844 authorizes t[~~T~~]he Cabinet for Health Services[~~Human Resources is authorized by KRS 211.844~~] to provide by administrative regulation for the registration and licensing of the possession or use of sources of ionizing or electronic product radiation and the handling and disposal of radioactive waste. This administrative regulation provides requirements for the transportation of radioactive material.

[~~Section 1. Applicability. The provisions of this administrative regulation shall apply to persons who transport or deliver radioactive material in Kentucky.~~]

Section 1[~~2~~]. Requirement for a License[~~Transportation of Radioactive Material~~]. No person shall deliver radioactive material to a carrier for transport or transport radioactive material except as authorized in a general or specific license issued by the cabinet or as exempted in Section 2[~~3~~] of this administrative regulation.

Section 2[~~3~~]. Exemptions. (1) Common and contract carriers, freight forwarders,

and warehousemen who are subject to the requirements of the U.S. Department of Transportation in 49 C.F.R. 170 through 189 or the U.S. Postal Service in the Postal Service Manual (Domestic Mail Manual), Section 124.3 incorporated by reference, 39 C.F.R. 111.11(1974), are exempt from these administrative regulations to the extent that they transport or store radioactive material in the regular course of their carriage for another or storage incident to the transportation and storage of radioactive material. Common and contract carriers who are not subject to the requirements of the U.S. Department of Transportation or U.S. Postal Service are subject to Section 1[~~2~~] of this administrative regulation and other applicable sections of these administrative regulations.

(2) A licensee is exempt from Section 1[~~Section 2~~] of this administrative regulation with respect to shipment or carriage of [~~to the extent that he delivers to a carrier for transport~~] a package containing radioactive material having a specific activity not greater than 0.002 microcurie per gram (70 Bq/g).

(3) A licensee is exempt from all requirements of this administrative regulation, other than Sections 3[4] and 9[~~13~~] of this administrative regulation, with respect to shipment or carriage of the following, provided the packages contain no fissile material, or the fissile material exemption standards of 10 C.F.R. 71.53 are satisfied:

(a) Packages containing no more than Type A quantities of radioactive material[~~if the package contains no fissile material~~];[~~or~~]

(b) Packages transported between locations within the United States which contain only americium or plutonium in special form with an aggregate radioactivity not to exceed twenty (20) curies; or

(c) A package in which the only radioactive material is low specific activity (LSA) material or surface contaminated objects (SCO), provided the external radiation level at three (3) meters from the unshielded material or objects does not exceed one (1) rem/hour (10 mS/hr).

(4) A licensee is exempt from all requirements of this administrative regulation, other than Sections 3 and 9, with respect to shipment or carriage of low specific activity (LSA) material in group LSA-1, or surface contaminated objects (SCOs) in group SCO-1.

(5) Any physician licensed by the Commonwealth to dispense drugs in the practice of medicine is exempt from Section 3 of this regulation with respect to transport by the physician of radioactive material for use in the practice of medicine. However, a physician operating under this exemption shall be licensed under 902 KAR 100:073 or equivalent regulations of the U.S. Nuclear Regulatory Commission or an Agreement State.

Section 3[4]. Transportation of Licensed Material. (1) A [~~Each~~] licensee who transports licensed material outside of the confines of his plant or other place of use as specified in the cabinet license, or where transport is on public highways, or who delivers licensed material to a carrier for transport shall:

(a) Comply with the applicable requirements, appropriate to the mode of transport, of the regulations of the U.S. Department of Transportation in 49 C.F.R. 170-189; and

(b) Assure that special instructions needed to safely open the package are sent to or have been made available to the consignee for the consignee's use in

accordance with 902 KAR 100:019, Section 28(5).

(2) If[~~, for any reason,~~] the regulations of the U.S. Department of Transportation are not applicable to a shipment of licensed material, the licensee shall conform to the standards and requirements of the Department of Transportation[~~those~~] regulations to the same extent as if the shipment was subject to the administrative regulations.

Section 4[~~5~~]. General Licenses for Carriers. (1) A general license is hereby issued to a common or contract carrier not exempt under Section 2[~~3~~] of this administrative regulation to receive, possess, transport, and store radioactive material in the regular course of their carriage for another or storage incident to the transportation and storage, provided the transportation and storage is in accordance with the applicable requirements, appropriate to the mode of transport, of the U.S. Department of Transportation insofar as the requirements relate to the loading and storage of packages, placarding of the transporting vehicle, and incident reporting.

(2) A general license is hereby issued to a private carrier to transport radioactive material, provided the transportation is in accordance with the applicable requirements, appropriate to the mode of transport, of the U.S. Department of Transportation insofar as the requirements relate to the loading and storage of packages, placarding of the transporting vehicle, and incident reporting.

(3) The notification of incidents referred to in those U.S. Department of Transportation requirements shall be filed with, or made to, the cabinet.

(4) Persons who transport radioactive material as authorized by the general licenses in this section are exempt from the requirements of 902 KAR 100:019[~~020~~] and 902 KAR 100:165 of these administrative regulations to the extent that they

transport radioactive material.

Section 5[~~6~~]. General License: NRC Approved Packages. (1) A general license is hereby issued to a licensee of the cabinet to transport, or to deliver to a carrier for transport, licensed material in a package for which a license, certificate of compliance, or other approval has been issued by the U.S. Nuclear Regulatory Commission (NRC).

(2) This general license applies only to a licensee who:

(a) Has a copy of the[~~specific license,~~] certificate of compliance, or other approval of the package and has the drawings and other documents referenced in the approval relating to the use and maintenance of the packaging and to the actions to be taken prior to shipment;

(b) Complies with the terms and conditions of the license, certificate, or other approval, as applicable, and the applicable requirements of this administrative regulation; and 10 C.F.R. 71.101 through 71.137 ;

(c) Prior to the licensee's first use of the package, has registered with the U.S. Nuclear Regulatory Commission;[~~and~~]

(d) Has a quality assurance program, as required by 10 C.F.R. 71.103 through 71.137[~~Section 19 of this administrative regulation~~], approved by the NRC[~~cabinet~~] and

(e) Submits in writing to the Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, before the licensee's first use of the package, the licensee's name and license number and the package identification number specified in the package approval.

(3) The general license in subsection (1) of this section applies only if the package approval authorizes use of the package under this general license.

(4) For a[~~previously approved~~] Type B or fissile material package[~~s which are not designated as either B(U) or B(M) in the NRC Certificate of Compliance~~], the design of which was approved by NRC before April 1, 1996, this general license is subject to additional restrictions of Section 6[~~7~~] of this administrative regulation.

Section 6[7]. Previously Approved Type B Packages. (1) A Type B package previously approved by the NRC, but not designated as B(U) or B(M) in the NRC Certificate of Compliance, may be used under the general license of Section 5[~~6~~] of this administrative regulation with the following additional limitations:

(a) [~~(1)~~]Fabrication of the packaging was satisfactorily completed before August 31, 1986, as demonstrated by application of its model number in accordance with U.S. NRC r[~~R~~]egulations; [~~and~~]

(b) [~~(2)~~]The package may not be used for a shipment to a location outside the United States after August 31, 1986, except under multilateral[~~special arrangement~~] approval[~~ed~~] by the U.S. Department of Transportation as defined in[~~accordance with~~] 49 C.F.R. 173.403; and[~~471~~]

(3) A serial number that uniquely identifies each packaging which conforms to the approved design is assigned to, and legibly and durably marked on, the outside of each package.

(4) A Type B(U) package, a Type B(M) package, a low specific activity (LSA) material package or a fissile material package, previously approved by the NRC but without the designation "-85" in the identification number of the NRC Certificate of Compliance, may be used under the general license of Section 5 of this regulation with the following additional conditions:

(a) Fabrication of the package was satisfactorily completed by April 1, 1999 as demonstrated by application of its model number in accordance with U.S. Nuclear Regulatory Commission regulations;

(b) A package used for shipment to a location outside the United States is subject to multilateral approval by the U.S. Department of Transportation as defined in 49 C.F.R. 173.403; and

(c) A serial number which uniquely identifies each packaging which conforms to the approved design is assigned to and legibly and durably marked on the outside of each packaging.

Section 7[~~8~~]. General License: DOT Specification Container. (1) A general license is issued to a licensee of the cabinet to transport or to deliver to a carrier for transport licensed material in a specification container for fissile material or for a Type B quantity of radioactive material as specified in the regulations of the U.S. DOT in 49 C.F.R. 173 and 178.

(2) This general license applies only to a licensee who has a quality assurance program approved by the cabinet as satisfying the requirements of 10 C.F.R. 71.103 through 71.136 [~~Section 19 of this administrative regulation~~].

(3) This general license applies only to a licensee who:

(a) Has a copy of the specification; and

(b) Complies with the terms and conditions of the specification, and the applicable requirements of this administrative regulation and 10 C.F.R. 71.101 through 71.137.

(4) The general license in subsection (1) of this section is subject to the

limitation that the specification container may not be used for a shipment to a location outside the United States[~~after August 31, 1986~~] except[~~under special arrangements approved~~] by multilateral approval, as defined in U.S. DOT regulations in[~~accordance with~~] 49 C.F.R. 173.403 [~~472~~].

Section 8[~~9~~]. General License: Use of Foreign Approved Package. (1) (a) A general license is issued to a licensee of the cabinet to transport or to deliver to a carrier for transport, licensed material in a package the design of which has been approved in a foreign national competent authority certificate which has been revalidated by the U.S. DOT as meeting the applicable requirements of 49 C.F.R. 171.12.

(b) Except, as provided in this section, the general license applies only to a licensee who has a quality assurance program approved by the NRC as satisfying the applicable provisions of 10 C.F.R. 71.101 through 71.137.

(2) This general license applies only to shipments made to or from locations outside the United States.

(3) This general license applies to a licensee who:

(a) Has a copy of the applicable certificate, the revalidation, and the drawings and other documents referenced in the certificate, relating to the use and maintenance of the packaging and to the actions to be taken prior to shipment; and

(c) Complies with the terms and conditions of the certificate and revalidation and with the applicable requirements of this administrative regulation and 10 C.F.R. 71.101 through 71.137.

(4) With respect to the quality assurance provisions of 10 C.F.R. 71 through 71.137, the licensee is exempt from design, construction,

and fabrication considerations.

~~[Section 10. General License: Type A, Fissile Class II Packages. (1) A general license is hereby issued to a licensee to transport fissile material, or to deliver fissile material to a carrier for transport, if the material is shipped as a Fissile Class II package.~~

~~(2) This general license applies only if a package contains no more than a Type A quantity of radioactive material, including only one (1) of the following:~~

~~(a) Up to forty (40) grams of uranium-235; or~~

~~(b) Up to thirty (30) grams of uranium-233; or~~

~~(c) Up to twenty-five (25) grams of the fissile radionuclides of plutonium, except that for encapsulated plutonium-beryllium neutron sources in special form, an A_1 quantity of plutonium may be present; or~~

~~(d) A combination of fissile radionuclides in which the sum of the ratios of the amount of each radionuclide to the corresponding maximum amounts in this subsection does not exceed unity.~~

~~(3) This general license applies only if, except as specified below for encapsulated plutonium-beryllium sources, a package containing more than fifteen (15) grams of fissile radionuclides is labeled with a transport index not less than the number given by the following equation, where the package contains x grams of uranium-235, y grams of uranium-233, and z grams of the fissile radionuclides of plutonium:~~

$$\text{minimum transport index} = (0.4x + 0.67y + z)\left(1 - \frac{15}{x + y + z}\right)$$

~~For a package in which the only fissile material is in the form of encapsulated plutonium-beryllium neutron sources in special form, the transport index based on criticality considerations may be taken as 0.026 times the number of grams of the~~

~~fissile radionuclides of plutonium in excess of fifteen (15) grams. In all cases, the transport index must be rounded up to one (1) decimal place, and may not exceed ten (10).~~

~~Section 11. General License: Restricted, Fissile Class II Package. (1) A general license is hereby issued to a licensee to transport fissile material, or to deliver fissile material to a carrier for transport, if the material is shipped as a Fissile Class II package.~~

~~(2) This general license applies only if:~~

~~(a) The package contains no more than a Type A quantity of radioactive material;~~

~~(b) Neither beryllium nor hydrogenous material enriched in deuterium is present;~~

~~(c) The total mass of graphite present does not exceed 150 times the total mass of uranium-235 plus plutonium;~~

~~(d) Substances having a higher hydrogen density than water, (e.g. certain hydrocarbon oils, are not present, except that polyethylene may be used for packing or wrapping);~~

~~(e) Uranium-233 is not present, and the amount of plutonium does not exceed one (1) percent of the amount of uranium-235; and~~

~~(f) The amount of uranium-235 is limited as follows:~~

~~1. If the fissile radionuclides are not uniformly distributed, the maximum amount of uranium-235 per package may not exceed the value given in the following table:~~

~~Uranium enrichment in~~

~~Weight percent of uranium-235 Permissible maximum grams~~

~~not exceeding~~	~~of uranium-235 per package~~
~~24~~	~~40~~
~~20~~	~~42~~
~~15~~	~~45~~
~~11~~	~~48~~
~~10~~	~~51~~
~~9.5~~	~~52~~
~~9~~	~~54~~
~~8.5~~	~~55~~
~~8~~	~~57~~
~~7.5~~	~~59~~
~~7~~	~~60~~
~~6.5~~	~~62~~
~~6~~	~~65~~
~~5.5~~	~~68~~
~~5~~	~~72~~
~~4.5~~	~~76~~
~~4~~	~~80~~
~~3.5~~	~~88~~
~~3~~	~~100~~
~~2.5~~	~~120~~
~~2~~	~~164~~
~~1.5~~	~~272~~

~~1.35 320~~

~~1 680*~~

~~0.92 1200*~~

~~*Pursuant to its agreement with the U.S. Nuclear Regulatory Commission, the cabinet jurisdiction extends only to 350 grams of uranium-235.~~

~~2. If the fissile radionuclides are distributed uniformly (i.e., cannot form a lattice arrangement within the packaging) the maximum amount of uranium-235 per package may not exceed the value given in the following table:~~

~~TABLE II~~

~~Uranium enrichment in weight percent of Uranium-235 not exceeding~~	~~Permissible maximum grams of uranium-235 per package~~
~~4~~	~~84~~
~~3.5~~	~~92~~
~~3~~	~~112~~
~~2.5~~	~~148~~
~~2~~	~~240~~
~~1.5~~	~~569*~~
~~1.35~~	~~800*~~

~~*Pursuant to its agreement with the U.S. Nuclear Regulatory Commission, the cabinet jurisdiction extends only to 350 grams of uranium-235.~~

~~(g) The transport index of each package based on critically considerations is~~

~~taken as ten (10) times the number of grams of uranium-235 in the package divided by the maximum allowable number of grams per package in accordance with Table I or II above as applicable.~~

~~Section 12. Fissile Material: Assumptions as to Unknown Properties. If the isotopic abundance, mass, concentration, degree of irradiation, degree of moderation, or other pertinent property of fissile material in a package is not known, the licensee shall package the fissile material as if the unknown properties have credible values that may cause the maximum nuclear reactivity.~~]

Section 9[~~13~~]. Preliminary Determinations. Prior to the first use of a packaging for the shipment of radioactive material:

(1) The licensee shall ascertain that there are no defects which may significantly reduce the effectiveness of the packaging;

(2) If the maximum normal operating pressure will exceed thirty-five (35)[~~thirty-four and three tenths (34.3)~~] kilopascal (five (5) lbf/in^2)[~~psi) gauge~~], the licensee shall test the containment system at an internal pressure at least fifty (50) percent higher than the maximum normal operating pressure to verify the capability of that system to maintain its structural integrity at that pressure.

(3) The licensee shall conspicuously and durably mark the packaging with its model number, serial number, gross weight, and a package identification number assigned by the U.S. Nuclear Regulatory Commission. Prior to applying the model number, the licensee shall determine that the packaging has been fabricated in accordance with the design approved by the U.S. Nuclear Regulatory Commission.

Section 10[~~14~~]. Routine Determinations. Prior to each shipment of licensed

material, the licensee shall ensure that the package with its contents satisfies the applicable requirements of this administrative regulation and of the license. The licensee shall determine that:

(1) The package is proper for the contents to be shipped;

(2) The package is in unimpaired physical condition except for superficial defects, such as marks or dents;

(3) Each closure device of the packaging, including any required gasket, is properly installed and secured and free of defects;

(4) A system for containing liquid is adequately sealed and has adequate space or other specified provision for expansion of the liquid;

(5) A pressure relief device is operable and set in accordance with written procedures;

(6) The package has been loaded and closed in accordance with written procedures;

(7) For fissile material, any moderator or neutron absorber, if required, is present and in proper condition;

(8) A structural part of the package which could be used to lift or tie down the package during transport is rendered inoperable for that purpose unless it satisfies design requirements specified by[~~the~~] U.S. Nuclear Regulatory Commission regulation 10 C.F.R. 71.45.

(9) [~~(8)(a)~~] The level of nonfixed (removable) radioactive contamination on the external surfaces of each package offered for shipment is as low as reasonably achievable, and within the limits specified by the U.S. Department of Transportation in

49 C.F.R. 173.443;[. The level of nonfixed radioactive contamination may be determined by wiping an area of 300 square centimeters of the surface concerned with an absorbent material, using moderate pressure, and measuring the activity on the wiping material. Sufficient measurements shall be taken in the most appropriate locations to yield a representative assessment of the nonfixed contamination levels. Except as provided under paragraph (b) of this subsection, the amount of radioactivity measured on a single wiping material averaged over the surface wiped, shall not exceed the limits given in Table III of this subsection at any time during transport. Other methods of assessment of equal or greater efficiency may be used. If other methods are used, the detection efficiency of the method used shall be taken into account and in no case may the nonfixed contamination on the external surfaces of the package exceed ten (10) times the limits listed in Table III of this subsection.

Table III

REMOVABLE EXTERNAL RADIOACTIVE CONTAMINATION WIPE LIMITS

Contaminant	Maximum Permissible Limits	
	$\mu Ci/cm^2$	dpm/cm^2
Beta-gamma emitting radio nuclides; all radionuclides with half-lives less than ten (10) days; natural uranium; natural thorium; uranium-235; uranium-238;thorium-228; thorium-230 and thorium-232 when		

~~contained in ores or physical concentrates 10^{-5} 22~~

~~All other alpha emitting radionuclides 10^{-6} 2.2~~

~~(b) In the case of packages transported as exclusive use shipments by rail or highway only, the nonfixed radioactive contamination at any time during transport shall not exceed ten (10) times the levels prescribed in paragraph (a) of this subsection. The levels at the beginning of transport shall not exceed the levels prescribed in paragraph (a) of this subsection.~~]

(10) [~~(9)~~] External radiation levels around the package and around the vehicle, if applicable, shall not exceed the limits specified in U.S. Department of Transportation regulation 49 C.F.R. 71.47 [~~200 millirem per hour at a point in the external surface of the package at any time~~] during transportation. [~~The transport index shall not exceed ten (10).~~

~~[(10) For a package transported as exclusive use by rail, highway or water, radiation levels external to the package may exceed the limits specified in subsection (9) of this section but shall not exceed the following:~~

~~(a) 200 millirem/hour on the accessible external surface of the package unless the following conditions are met, in which case the limit is 1000 millirem per hour.~~

~~1. The shipment is made in a closed transport vehicle;~~

~~2. Provisions are made to secure the package so that its position within the vehicle remains fixed during transportation; and~~

~~3. There are no loading or unloading operations between the beginning and end of the transportation;~~

~~(b) 200 millirem/hour at a point on the outer surface of the vehicle, including the~~

~~upper and lower surfaces, or in the case of an open vehicle, at a point on the vertical planes projected from the outer edges of the vehicle, on the upper surface of the load, and on the lower external surface of the vehicle;~~

~~(c) Ten (10) millirem/hour at a point two (2) meters from the vertical planes represented by the outer lateral surfaces of the vehicle, or, in the case of an open vehicle, at a point two (2) meters from the vertical planes projected from the outer edges of the vehicle; and~~

~~(d) Two (2) millirem/hour in a normally occupied positions of the vehicle, except that this provision does not apply to private motor carriers if persons occupying these positions are provided with special health supervision, personnel radiation exposure monitoring devices, and training in accordance with 902 KAR 100:165, Section 3.~~

~~(11) A package shall be prepared for transport so that in still air at 100 degrees Fahrenheit (thirty-eight (38) degrees Centigrade) and in the shade, no accessible surface of a package would have a temperature exceeding 122 degrees Fahrenheit (fifty (50) degrees Centigrade) in a nonexclusive use shipment or 180 degrees Fahrenheit (eighty two (82) degrees Centigrade) in an exclusive use shipment.~~]

(11) Accessible package surface temperatures shall not exceed the[~~se~~] limits specified in 10 C.F.R. 71.43(g) at any time during transportation.

Section 11[~~15~~]. Air Transport of Plutonium. In addition to the requirements of a general license and exemptions stated in this administrative regulation or included by citation of U.S. Department of Transportation regulations, as may be applicable, the licensee shall assure that plutonium in any form, whether for import, export, or domestic shipment, is not transported by air or delivered to a carrier for air transport unless:

(1) The plutonium is contained in a medical device designed for individual human application; or

(2) The plutonium is contained in a material in which the specific activity is not greater than 0.002 microcurie per gram (70 Bq/g) of material and in which the radioactivity is essentially uniformly distributed; or

(3) The plutonium is shipped in a single package containing no more than an A_2 quantity of plutonium in an isotope or form and is shipped in accordance with Section 3[4] of this administrative regulation; or

(4) The plutonium is shipped in a package specifically authorized for the shipment of plutonium by air in the Certificate of Compliance for that package issued by the U.S. Nuclear Regulatory Commission.

(5) For a shipment of plutonium by air which is subject to subsection 4 of this section, the licensee shall, through special arrangement with the carrier, require compliance with U.S. Department of Transportation 49 C.F.R. 175.704, applicable to the air transport of plutonium.

~~[Section 16. Records. (1) Each licensee shall maintain for a period of two (2) years after shipment a record of each shipment of licensed material not exempt under Section 3 of this administrative regulation, showing, if applicable:~~

~~(a) Identification of the packaging by model number;~~

~~(b) Verification that there are no significant defects in the packaging, as shipped;~~

~~(c) Volume and identification or coolant;~~

~~(d) Type and quantity of licensed material in each package, and the total quantity of each shipment;~~

~~(e) Date of the shipment;~~

~~(f) Name and address of the transferee;~~

~~(g) Address to which the shipment was made; and~~

~~(h) Results of the determinations required by Section 13 of this administrative regulation.~~

~~(2) The licensee shall make available to the cabinet for inspection, upon reasonable notice, all records required by this administrative regulation.~~

~~Section 17. Reports. The licensee shall report to the cabinet within thirty (30) days:~~

~~(1) An instance in which there is significant reduction in the effectiveness of an authorized packaging during use; and~~

~~(2) Details of defects with safety significance in the packaging after first use, with the means employed to repair the defects and prevent their recurrence.~~]

Section 12[~~18~~]. Advance Notification of Transport of Irradiated Reactor Fuel and Nuclear Waste. (1)(a) Prior to the transport of nuclear waste outside of the confines of the licensee's facility or other place of use or storage, or prior to the delivery of nuclear waste to a carrier for transport, each licensee shall provide advance notification of the transport to the governor, or governor's designee, of each state through which the waste will be transported.

(b) Advance notification if required under this section for shipments of irradiated reactor fuel in quantities less than that subject to advance notification requirements in 10 C.F.R. 73.37(f).

(2) Advance notification is also required for licensed material, other than

irradiated fuel,[~~only~~] if:

(a) The nuclear waste is required to be in Type B packaging for transportation;

(b) The nuclear waste is being transported to, through, or across state boundaries to a disposal site or to a collection point for transport to a disposal site; and

(c) The quantity of licensed material in a single package exceeds the least of the following:

1. 3000 times the A_1 value of the radionuclides as specified in Section 13 of this administrative regulation for special form radioactive material[~~5,000 curies of special form radionuclides~~];

2. 3000 times the A_2 value of the radionuclides as specified in Section 13 of this administrative regulation for normal form radioactive material or[~~5,000 curies of uncompressed gases of argon-41, krypton-85m, krypton-87, xenon-131m, or xenon-135~~]; or

3. 27,000 curies (1000TBq)[~~50,000 curies of argon-37, or of uncompressed gases of krypton-85 or xenon-133, or of hydrogen-3 as a gas, as luminous paint, or absorbed on solid material;~~

~~4. Twenty (20) curies of other nonspecial form radionuclides for which A_2 is less than or equal to four (4) curies; or~~

~~5. 200 curies of to the nonspecial form radionuclides for which A_2 is greater than four (4) curies~~].

(3) Each advance notification shall be in writing and contain the following information:

(a) The name, address, and telephone number of the shipper, carrier, and

receiver of the shipment;

(b) A description of the nuclear waste contained in the shipment as required by the administrative regulations of the U.S. Department of Transportation, 49 C.F.R. 172.202 and 172.203(d);

(c) The point of origin of the shipment and the seven (7) day period during which departure of the shipment is estimated to occur;

(d) The seven (7) day period during which arrival of the shipment at state boundaries is estimated to occur;

(e) The destination of the shipment, and the seven (7) day period during which arrival of the shipment is estimated to occur; and

(f) A point of contact with a telephone number for current shipment information.

(4) The notification shall be made in writing to the office of each appropriate governor or governor's designee and to the cabinet. A notification delivered by mail must be postmarked at least seven (7) days before the beginning of the seven (7) day period during which departure of the shipment is estimated to occur. A notification delivered by messenger must reach the office of the governor, or governor's designee, at least four (4) days before the beginning of the seven (7) day period during which departure of the shipment is estimated to occur. A copy of the notification shall be retained by the licensee for three (3) [~~one (1)~~] years.

(5) The licensee who finds that schedule information previously furnished, will not be met,[~~shall notify each appropriate governor, or governor's designee, and the cabinet of changes to schedule information provided pursuant to subsection (1) of this section. The notification~~] shall[~~be by~~] telephone [~~to~~] a responsible individual in the office of the

governor, or governor's designee and the cabinet and inform that individual of the extent of the delay beyond the schedule originally reported[~~, of the appropriate state or states~~]. The licensee shall maintain for three (3)[~~one (1)~~] years a record of the name of the individual contacted.

(6) Each licensee who cancels a nuclear waste shipment, for which advance notification has been sent, shall send a cancellation notice to the governor, or governor's designee, of each appropriate state and to the cabinet. The licensee shall state in the notice that it is a cancellation and identify the advance notification that is being cancelled. A copy of the notice shall be retained by the licensee for three (3)[~~one (1)~~] years.

~~[Section 19. Quality Assurance Requirements. (1) Each licensee shall establish, maintain, and execute a quality assurance program to verify, by procedures such as checking, auditing, and inspection, that deficiencies, deviations, and defective material and equipment relating to the shipment of packages containing radioactive materials, are promptly identified and corrected. Prior to the use of any package for the shipment of radioactive material, each licensee shall obtain cabinet approval of its quality assurance program.~~

~~(2) Each licensee shall document the quality assurance program by written procedures or instructions and shall carry out the program in accordance with those procedures throughout the period during which packaging is used. The licensee shall identify the material and components to be covered by the quality assurance program.~~

~~(3) The licensee shall maintain sufficient written records to demonstrate compliance with the quality assurance program. Records pertaining to the use of a~~

~~package for shipment of radioactive material shall be retained for a period of two (2) years after shipment.]~~

~~Section 20. Determination of A_1 and A_2. The following procedures are to be followed to make a determination of A_1 and A_2 values:~~

~~(1) Single radionuclides.~~

~~(a) For a single radionuclide of known identity, the values of A_1 and A_2 are taken from Section 21 of this administrative regulation if listed there. The values A_1 and A_2 in Section 21 of this administrative regulation are also applicable for radionuclides contained in (α,η) or (Y,η) neutron sources.~~

~~(b) For a single radionuclide whose identity is known but which is not listed in Section 21 of this administrative regulation, the values of A_1 and A_2 are determined according to the following procedure:~~

~~1. If the radionuclide emits only one (1) type of radiation, A_1 is determined according to the rules in subparagraphs of this paragraph. For radionuclides emitting different finds of radiation, A_1 is the most restrictive value of those determined for each kind of radiation. However, in both cases, A_1 is restricted to a maximum of 1000 curies. If a parent nuclide decays into a shorter lived daughter with a half-life not greater than ten (10) days, A_1 is calculated for both the parent and the daughter, and the more limiting of the two (2) values is assigned to the parent nuclide.~~

~~a. For gamma emitters, A_1 is determined by the expression:~~

$$A_1 = \frac{9 \text{ curies}}{r}$$

~~where r is the gamma ray constant, corresponding to the dose in R/h at one (1) meter per curie; the number nine (9) results from the choice of one (1) rem/h at a distance~~

of three (3) meters as the reference dose equivalent rate.

b. For x-ray emitters, A_1 is determined by the atomic number of the nuclide:

for z less than or equal to 55 -- A_1 = 1000Ci

for z greater than 55 -- A_1 = 200Ci

where z is the atomic number of the nuclide.

c. For beta emitters, A_1 is determined by the maximum beta energy (E_{max}) according to Section 22 of this administrative regulation;

d. For alpha emitters, A_1 is determined by the expression:

$$A_1 = 1000\ A_3$$

where A_3 is the value listed in Section 23 of this administrative regulation.

2. A_2 is the more restrictive of the following two (2) values:

a. The corresponding A_1; and

b. The value A_3 obtained from Section 23 of this administrative regulation.

(c) For a single radionuclide whose identity is unknown, the value of A_1 is taken to be two (2) curies and the value of A_2 is taken to be 0.002 curie. However, if the atomic number of the radionuclide is known to be less than 82, the value of A_1 is taken to be ten (10) curies and the value of A_2 is taken to be four-tenths (0.4) curie.

(2) Mixtures of radionuclides, including radioactive decay chains:

(a) For mixed fission products the following activity limits may be assumed if a detailed analysis of the mixture is not carried out:

$$A_1 = 10\ Ci$$

$$A_2 = 0.4\ Ci$$

(b) A single radioactive decay chain is considered to be a single radionuclide if

the radionuclides are present in their naturally occurring proportions and no daughter nuclide has a half-life either longer than ten (10) days or longer than that of the parent nuclide. The activity to be taken into account and the A_1 and A_2 value from Table I to be supplied are those corresponding to the parent nuclide of that chain. When calculating A_1 or A_2 values, radiation emitted by daughters must be considered. However, in the case of radioactive decay chains in which any daughter nuclide has a half-life either longer than ten (10) days or greater than that of the parent nuclide, the parent and daughter nuclides are considered to be mixtures of different nuclides.

(c) In the case of a mixture of difference radionuclides, where the identify and activity of each radionuclide are known, the permissible activity of each radionuclide R_1, $R_2 \ldots R_n$ is such that $F_1 + F_2 + \ldots F_n$ is greater than unity, where

$$F_1 = \frac{\text{Total activity of } R_1}{A_1(R_1)}$$

$$F_2 = \frac{\text{Total activity of } R_2}{A_1(R_2)}$$

$$F_n = \frac{\text{Total activity of } R_n}{A_a(R_n)}$$

$A_i (R_1, R_2 \ldots R_n)$ is the value of A_1 or A_2 as appropriate for the nuclide $R_1, R^2 \ldots R_n$.

(d) If the identity of each radionuclide is known but the individual activities of some of the radionuclides are not known, the formula given in paragraph (c) of this subsection is applied to establish the values of A_1 or A_2 as appropriate. All the radionuclides whose individual activities are not known (their total activity will, however, be known) are classed in a single group and the most restrictive value of A_1 and A_2 applicable to any one (1) is used as the value of A_1 or A_2 in the denominator of the fraction.

(e) If the identity of each radionuclide is known but the individual activity

~~of none of the radionuclides is known, the most restrictive value of A_1 or A_2 applicable to any one (1) of the radionuclides present is adopted as the applicable value.~~

~~(f) If the identity of none of the nuclides is known, the value of A_1 is taken to be two (2) curies and the value of A_2 is taken to be 0.002 curie. However, if alpha emitters are known to be absent, the value of A_2 is taken to be four tenths (0.4) curie.~~]

Section 13. Determination of A_1 and A_2. (1) Values of A_1 and A_2 for individual radionuclides, which are the bases for many activity limits elsewhere in these regulations are given in table A - 1. The curie (Ci) values specified are obtained by converting from the Terabecquerel (TBq) figure. The curie values are expressed to three significant figures to assure that the difference in the TBq and Ci quantities is one tenth of one percent (0.1%) or less. Where values of A_1 or A_2 are unlimited, it is for radiation control purposes only. For nuclear criticality safety, some materials are subject to controls placed on fissile material.

(2) For individual radionuclides whose identities are known, but which are not listed in Table A - 1, the determination of the values of A_1 and A_2 requires Commission approval, except that the values of A_1 and A_2 in Table A - 2 may be used without obtaining cabinet approval.

(3) In the calculations of A_1 and A_2 for a radionuclide not in Table A - 1, a single radioactive decay chain, in which radionuclides are present in their naturally occurring proportions, and in which no daughter nuclide has a half-life either longer than ten (10) days, or longer than that of the parent nuclide, shall be considered as a single radionuclide, and the activity to be taken into account, and the A_1 or A_2 value to be applied shall be those corresponding to the parent nuclide of that chain. In the case of

radioactive decay chains in which any daughter nuclide has a half-life either longer than ten (10) days, or greater than that of the parent nuclide, the parent and those daughter nuclides shall be considered as mixtures of different nuclides.

(4) For mixtures of radionuclides whose identities and respective activities are known, the following conditions apply:

(a) For special form radioactive material, the maximum quantity transported in a Type A package:

$$\sum_{I} \frac{B(i)}{A_1(i)} \text{ less than or equal to } 1$$

(b) For normal form radioactive material, the maximum quantity transported in a Type A package:

$$\sum_{I} \frac{B(i)}{A_2(i)} \text{ less than or equal to } 1$$

Where B(i) is the activity of radionuclide I and $A_1(i)$ and $A_2(i)$ are the A_1 and A_2 values for radionuclide I, respectively. Alternatively, an A_1 value for mixtures of special form material may be determined as follows:

$$A_1 \text{ for mixture} = \frac{1}{\sum_{I} \frac{f(i)}{A_1(i)}}$$

Where f(i) is the of activity of nuclide I in the mixture and $A_1(i)$ is the appropriate A_1 value for nuclide I. An A_2 value for mixtures of normal form material may be determined as follows:

$$A_2 \text{ for mixture} = \frac{1}{\sum_{I} \frac{f(i)}{A_2(i)}}$$

Where f(i) is the fraction of activity of nuclide I in the mixture and $A_2(i)$ is the appropriate A_2 value for nuclide I.

(5) If the identity of each radionuclide is known, but the individual activities of some of the radionuclides are not known, the radionuclides may be grouped and the lowest A_1 or A_2 value, as appropriate, for the radionuclides in each group may be used in applying the formulas in subsection 4. Groups may be based on the total alpha activity and the total beta/gamma activity when these are known, using the lowest A_1 or A_2 values for the alpha emitters and beta/gamma.

(6) Table A-1: Values of A_1, A_2, and specific activities of radionuclides.

Symbol of radionuclide	Element and atomic number	A_1 (Ci)	A_2 (Ci)	Specific Activity (Ci/g)
Ac-225	Actinium (89)	16.2	0.270	5.8×10^{4}
Ac-227		1080	5.41×10^{-4}	7.2×10^{1}
Ac-228		16.2	10.8	2.2×10^{6}
Ag-105	Silver (47)	54.1	54.1	3.0×10^{4}
Ag-108m		16.2	16.2	2.6×10^{1}
Ag-110m		10.8	10.8	4.7×10^{3}
Ag-111		16.2	13.5	1.6×10^{5}
Al-26	Aluminium (13)	10.8	10.8	1.9×10^{-2}
Am-241	Americium (95)	54.1	5.41×10^{-3}	3.4
Am-242m		54.1	5.41×10^{-3}	1.0×10^{1}
Am-243		54.1	5.41×10^{-3}	2.0×10^{-1}

1	Ar-37	Argon (18)	1080	1080	9.9×10^{4}
2	Ar-39		541	541	3.4×10^{1}
3	Ar-41		16.2	16.2	4.2×10^{7}
4	Ar-42		5.41	5.41	2.6×10^{2}
5	As-72	Arsenic (33)	5.41	5.41	1.7×10^{6}
6	As-73		1080	1080	2.2×10^{4}
7	As-74		27.0	13.5	9.9×10^{4}
8	As-76		5.41	5.41	1.6×10^{6}
9	As-77		541	13.5	1.0×10^{6}
10	At-211	Astatine (85)	811	54.1	2.1×10^{6}
11	Au-193	Gold (79)	162	162	9.2×10^{5}
12	Au-194		27.0	27.0	4.1×10^{5}
13	Au-195		270	270	3.7×10^{3}
14	Au-196		54.1	54.1	1.1×10^{5}
15	Au-198		81.1	13.5	2.4×10^{5}
16	Au-199		270	24.3	2.1×10^{5}
17	Ba-131	Barium (56)	54.1	54.1	8.4×10^{4}
18	Ba-133m		270	24.3	6.1×10^{5}
19	Ba-133		81.1	81.1	2.6×10^{2}
20	Ba-140		10.8	10.8	7.3×10^{4}
21	Be-7	Beryllium (4)	541	541	3.5×10^{5}
22	Be-10		541	13.5	2.2×10^{-2}
23	Bi-205	Bismuth (83)	16.2	16.2	4.2×10^{4}

1	Bi-206		8.11	8.11	1.0×10^{5}
2	Bi-207		18.9	18.9	5.2×10^{1}
3	Bi-210m		8.11	0.811	5.7×10^{-4}
4	Bi-210		16.2	13.5	1.2×10^{5}
5	Bi-212		8.11	8.11	1.5×10^{7}
6	Bk-247	Berkelium (97)	54.1	5.41×10^{-3}	1.0
7	Bk-249		1080	2.16	1.6×10^{3}
8	Br-76	Bromine (35)	8.11	8.11	2.5×10^{6}
9	Br-77		81.1	81.1	7.1×10^{5}
10	Br-82		10.8	10.8	1.1×10^{6}
11	C-11	Carbon (6)	27	13.5	8.4×10^{8}
12	C-14		1080	54.1	4.5
13	Ca-41	Calcium (20)	1080	1080	8.5×10^{-2}
14	Ca-45		1080	24.3	1.8×10^{4}
15	Ca-47		24.3	13.5	6.1×10^{5}
16	Cd-109	Cadmium (48)	1080	27.0	2.6×10^{3}
17	Cd-113m		541	2.43	2.2×10^{2}
18	Cd-115m		8.11	8.11	2.5×10^{4}
19	Cd-115		108	13.5	5.1×10^{5}
20	Ce-139	Cerium (58)	162	162	6.8×10^{3}
21	Ce-141		270	13.5	2.8×10^{4}
22	Ce-143		16.2	13.5	6.6×10^{5}
23	Ce-144		5.41	5.41	3.2×10^{3}

1	Cf-248	Californium (98)	811	8.11×10^{-2}	1.6×10^{3}
2	Cf-249		54.1	5.41×10^{-3}	4.1
3	Cf-250		135	1.35×10^{-2}	1.1×10^{2}
4	Cf-251		54.1	5.41×10^{-3}	1.6
5	Cf-252		2.70	2.70×10^{-2}	5.4×10^{2}
6	Cf-253		1080	1.62	2.9×10^{4}
7	Cf-254		8.11×10^{-2}	1.62×10^{-2}	8.5×10^{3}
8	Cl-36	Chlorine (17)	541	13.5	3.3×10^{-2}
9	Cl-38		5.41	5.41	1.3×10^{8}
10	Cm-240	Curium (96)	1080	0.541	2.0×10^{4}
11	Cm-241		54.1	24.3	1.7×10^{4}
12	Cm-242		1080	0.270	3.3×10^{3}
13	Cm-243		81.1	8.11×10^{-3}	5.2×10^{1}
14	Cm-244		108	1.08×10^{-2}	8.1×10^{1}
15	Cm-245		54.1	5.41×10^{-3}	1.7×10^{-1}
16	Cm-246		54.1	5.41×10^{-3}	3.1×10^{-1}
17	Cm-247		54.1	5.41×10^{-3}	9.3×10^{-5}
18	Cm-248		1.08	1.35×10^{-3}	4.2×10^{-3}
19	Co-55	Cobalt (27)	13.5	13.5	3.1×10^{6}
20	Co-56		8.11	8.11	3.0×10^{4}
21	Co-57		216	216	8.4×10^{3}
22	Co-58m		1080	1080	5.9×10^{6}
23	Co-58		27.0	27.0	3.2×10^{4}

1	Co-60		10.8	10.8	1.1×10^{3}
2	Cr-51	Chromium (24)	811	811	9.2×10^{4}
3	Cs-129	Cesium (55)	108	108	7.6×10^{5}
4	Cs-131		1080	1080	1.0×10^{5}
5	Cs-132		27.0	27.0	1.5×10^{5}
6	Cs-134m		1080	243	8.0×10^{6}
7	Cs-134		16.2	13.5	1.3×10^{3}
8	Cs-135		1080	24.3	1.2×10^{-3}
9	Cs-136		13.5	13.5	7.3×10^{4}
10	Cs-137		54.1	13.5	8.7×10^{1}
11	Cu-64	Copper (29)	135	24.3	3.9×10^{6}
12	Cu-67		243	24.3	7.6×10^{5}
13	Dy-159	Dysprosium (66)	541	541	5.7×10^{3}
14	Dy-165		16.2	13.5	8.2×10^{6}
15	Dy-166		8.11	8.11	2.3×10^{5}
16	Er-169	Erbium (68)	1080	24.3	8.3×10^{4}
17	Er-171		16.2	13.5	2.4×10^{6}
18	Es-253	Einsteinium (99)	5400	5.41×10^{-1}	
19	Es-254		811	8.11×10^{-2}	
20	Es-254m		16.2	10.8	
21	Es-255				
22	Eu-147	Europium (63)	54.1	54.1	3.7×10^{4}
23	Eu-148		13.5	13.5	1.6×10^{4}

1	Eu-149		541	541	9.4×10^{3}
2	Eu-150		18.9	18.9	1.6×10^{6}
3	Eu-152m		16.2	13.5	2.2×10^{6}
4	Eu-152		24.3	24.3	1.8×10^{2}
5	Eu-154		21.6	13.5	2.6×10^{2}
6	Eu-155		541	54.1	4.9×10^{2}
7	Eu-156		16.2	13.5	5.5×10^{4}
8	F-18	Fluorine (9)	27.0	13.5	9.5×10^{7}
9	Fe-52	Iron (26)	5.41	5.41	7.3×10^{6}
10	Fe-55		1080	1080	2.4×10^{3}
11	Fe-59		21.6	21.6	5.0×10^{4}
12	Fe-60		1080	5.41	2.0×10^{-2}
13	Fm-255	Fermium (100)	1080	21.6	
14	Fm-257		270	2.16×10^{-1}	
15	Ga-67	Gallium (31)	162	162	6.0×10^{5}
16	Ga-68		8.11	8.11	4.1×10^{7}
17	Ga-72		10.8	10.8	3.1×10^{6}
18	Gd-146	Gadolinium (64)	10.8	10.8	1.9×10^{4}
19	Gd-148		81.1	8.11×10^{-3}	3.2×10^{1}
20	Gd-153		270	135	3.5×10^{3}
21	Gd-159		108	13.5	1.1×10^{6}
22	Ge-68	Germanium (32)	8.11	8.11	7.1×10^{3}
23	Ge-71		1080	1080	1.6×10^{5}

1	Ge-77		8.11	8.11	3.6×10^{6}
2	H-3	Hydrogen (1)			
3	Hf-172	Hafnium (72)	13.5	8.11	1.1×10^{3}
4	Hf-175		81.1	81.1	1.1×10^{4}
5	Hf-181		54.1	24.3	1.7×10^{4}
6	Hf-182		108	0.811	2.2×10^{-4}
7	Hg-194	Mercury (80)	27.0	27.0	3.5
8	Hg-195m		135	135	4.0×10^{5}
9	Hg-197m		270	24.3	6.7×10^{5}
10	Hg-197		270	270	2.5×10^{5}
11	Hg-203		108	24.3	1.4×10^{4}
12	Ho-163	Holmium (67)	1080	1080	7.6×10^{1}
13	Ho-166m		16.2	8.11	1.8
14	Ho-166		8.11	8.11	7.0×10^{5}
15	I-123	Iodine (53)	162	162	1.9×10^{6}
16	I-124		24.3	24.3	2.5×10^{5}
17	I-125		541	54.1	1.7×10^{4}
18	I-126		54.1	24.3	8.0×10^{4}
19	I-129		Unlimited	Unlimited	1.8×10^{-4}
20	I-131		81.1	13.5	1.2×10^{5}
21	I-132		10.8	10.8	1.0×10^{7}
22	I-133		16.2	13.5	1.1×10^{6}
23	I-134		8.11	8.11	2.7×10^{7}

1	I-135		16.2	13.5	$3.5x10^{6}$
2	In-111	Indium (49)	54.1	54.1	$4.2x10^{5}$
3	In-113m		108	108	$1.7x17^{7}$
4	In-114m		8.11	8.11	$2.3x14^{4}$
5	In-115m		162	24.3	$6.1x10^{6}$
6	Ir-189	Iridium (77)	270	270	$5.2x10^{4}$
7	Ir-190		18.9	18.9	$6.2x10^{4}$
8	Ir-192		27.0	13.5	$9.2x10^{3}$
9	Ir-193m		270	270	$6.4x10^{4}$
10	Ir-194		5.41	5.41	$8.4x10^{5}$
11	K-40	Potassium (19)	16.2	16.2	$6.4x10^{-6}$
12	K-42		5.41	5.41	$6.0x10^{6}$
13	K-43		27.0	13.5	$3.3x10^{6}$
14	Kr-81	Krypton (36)	1080	1080	$2.1x10^{-2}$
15	Kr-85m		162	162	$8.2x10^{6}$
16	Kr-85		541	270	$3.9x10^{2}$
17	Kr-87		5.41	5.41	$2.8x10^{7}$
18	La-137	Lanthanum (57)	1080	54.1	$4.4x10^{-2}$
19	La-140		10.8	10.8	$5.6x10^{5}$
20	Lu-172	Lutetium (71)	13.5	13.5	$1.1x10^{5}$
21	Lu-173		216	216	$1.5x10^{3}$
22	Lu-174m		541	216	$5.3x10^{3}$
23	Lu-174		216	108	$6.2x10^{2}$

1	Lu-177		811	24.3	1.1×10^{5}
2	MFP	For mixed fission products, use formula for mixtures or Table A-2			
3	Mg-28	Magnesium (12)	5.41	5.41	5.4×10^{6}
4	Mn-52	Manganese (25)	8.11	8.11	4.4×10^{5}
5	Mn-53		Unlimited	Unlimited	1.8×10^{-3}
6	Mn-54		27.0	27.0	7.7×10^{3}
7	Mn-56		5.41	5.41	2.2×10^{7}
8	Mo-93	Molybdenum (42)	1080	189	1.1
9	Mo-99		16.2	13.5	4.8×10^{5}
10	N-13	Nitrogen(7)	16.2	13.5	1.5×10^{9}
11	Na-22	Sodium (11)	13.5	13.5	6.3×10^{3}
12	Na-24		5.41	5.41	8.7×10^{6}
13	Nb-92m	Niobium (41)	18.9	18.9	1.4×10^{5}
14	Nb-93m		1080	162	2.4×10^{2}
15	Nb-94		16.2	16.2	1.9×10^{-1}
16	Nb-95		27.0	27.0	3.9×10^{4}
17	Nb-97		16.2	13.5	2.7×10^{7}
18	Nd-147	Neodymium (60)	108	13.5	8.1×10^{4}
19	Nd-149		16.2	13.5	1.2×10^{7}
20	Ni-59	Nickel (28)	1080	1080	8.0×10^{-2}
21	Ni-63		1080	811	5.7×10^{1}
22	Ni-65		8.11	8.11	1.9×10^{7}
23	Np-235	Neptunium (93)	1080	1080	1.4×10^{3}

1	Np-236		189	2.70×10^{-2}	1.3×10^{-2}
2	Np-237		54.1	5.41×10^{-3}	7.1×10^{-4}
3	Np-239		162	13.5	2.3×10^{5}
4	Os-185	Osmium (76)	27.0	27.0	7.5×10^{3}
5	Os-191m		1080	1080	1.3×10^{6}
6	Os-191		270	24.3	4.4×10^{4}
7	Os-193		16.2	13.5	5.3×10^{5}
8	Os-194		5.41	5.41	3.1×10^{2}
9	P-32	Phosphorus (15)	8.11	8.11	2.9×10^{5}
10	P-33		1080	24.3	1.6×10^{5}
11	Pa-230	Protactinium (91)	54.1	2.70	3.3×10^{4}
12	Pa-231		16.2	1.62×10^{-3}	4.7×10^{-2}
13	Pa-233		135	24.3	2.1×10^{4}
14	Pb-201	Lead (82)	27.0	27.0	1.7×10^{6}
15	Pb-202		1080	54.1	3.4×10^{-3}
16	Pb-203		81.1	81.1	3.0×10^{5}
17	Pb-205		Unlimited	Unlimited	1.2×10^{-4}
18	Pb-210		16.2	0.243	7.6×10^{1}
19	Pb-212		8.11	8.11	1.4×10^{6}
20	Pd-103	Palladium (46)	1080	1080	7.5×10^{4}
21	Pd-107		Unlimited	Unlimited	5.1×10^{-4}
22	Pd-109		16.2	13.5	2.1×10^{6}
23	Pm-143	Promethium (61)	81.1	81.1	3.4×10^{3}

1	Pm-144		16.2	16.2	2.5×10^{3}
2	Pm-145		811	189	1.4×10^{2}
3	Pm-147		1080	24.3	9.3×10^{2}
4	Pm-148m		13.5	13.5	2.1×10^{4}
5	Pm-149		16.2	13.5	4.0×10^{5}
6	Pm-151		81.1	13.5	7.3×10^{5}
7	Po-208	Polonium (84)	1080	0.541	5.9×10^{2}
8	Po-209		1080	0.541	1.7×10^{1}
9	Po-210		1080	0.541	4.5×10^{3}
10	Pr-142	Praseodymium (59)	5.41	5.41	1.2×10^{6}
11	Pr-143		108	13.5	6.7×10^{4}
12	Pt-188	Platinum (78)	16.2	16.2	6.8×10^{4}
13	Pt-191		81.1	81.1	2.4×10^{5}
14	Pt-193m		1080	243	1.6×10^{5}
15	Pt-193		1080	1080	3.7×10^{1}
16	Pt-195m		270	54.1	1.7×10^{5}
17	Pt-197m		270	24.3	1.0×10^{7}
18	Pt-197		541	13.5	8.7×10^{5}
19	Pu-236	Plutonium (94)	189	1.89×10^{-2}	5.3×10^{2}
20	Pu-237		541	541	1.2×10^{4}
21	Pu-238		189	5.41×10^{-3}	1.7×10^{1}
22	Pu-239		541	5.41×10^{-3}	6.2×10^{-2}
23	Pu-240		54.1	5.41×10^{-3}	2.3×10^{-1}

1	Pu-241		54.1	0.270	1.0×10^{2}
2	Pu-242		54.1	5.41×10^{-3}	3.9×10^{-3}
3	Pu-244		1080	5.41×10^{-3}	1.8×10^{-5}
4	Ra-223	Radium (88)	54.1	0.811	5.1×10^{4}
5	Ra-224		8.11	1.62	1.6×10^{5}
6	Ra-225		16.2	0.541	3.9×10^{4}
7	Ra-226		8.11	0.541	1.0
8	Ra-228		16.2	1.08	2.7×10^{2}
9	Rb-81	Rubidium (37)	54.1	24.3	8.4×10^{6}
10	Rb-83		54.1	54.1	1.8×10^{4}
11	Rb-84		27.0	24.3	4.7×10^{4}
12	Rb-86		8.11	8.11	8.1×10^{4}
13	Rb-87		Unlimited	Unlimited	8.6×10^{-8}
14	Rb (natural)		Unlimited	Unlimited	1.8×10^{8}
15	Re-183	Rhenium (75)	135	135	1.0×10^{4}
16	Re-184m		81.1	81.1	4.3×10^{3}
17	Re-184		27.0	27.0	1.9×10^{4}
18	Re-186		108	13.5	1.9×10^{5}
19	Re-187		Unlimited	Unlimited	3.8×10^{-8}
20	Re-188		5.41	5.41	9.8×10^{5}
21	Re-189		108	13.5	$6.8\ 10^{5}$
22	Re (natural)		Unlimited	Unlimited	2.4×10^{-8}
23	Rh-99	Rhodium (45)	54.1	54.1	8.2×10^{4}

1	Rh-101		108	108	1.1×10^{3}
2	Rh-102m		54.1	24.3	6.2×10^{3}
3	Rh-102		13.5	13.5	1.2×10^{3}
4	Rh-103m		1080	1080	3.3×10^{7}
5	Rh-105		270	24.3	8.4×10^{5}
6	Rn-222	Radon (86)	5.41	0.108	1.5×10^{5}
7	Ru-97	Ruthenium (44)	108	108	4.6×10^{5}
8	Ru-103		54.1	24.3	3.2×10^{4}
9	Ru-105		16.2	13.5	6.7×10^{6}
10	Ru-106		5.41	5.41	3.3×10^{3}
11	S-35	Sulfur (16)	1080	54.1	4.3×10^{4}
12	Sb-122	Antimony (51)	8.11	8.11	4.0×10^{5}
13	Sb-124		16.2	13.5	1.7×10^{4}
14	Sb-125		54.1	24.3	1.0×10^{3}
15	Sb-126		10.8	10.8	8.4×10^{4}
16	Sc-44	Scandium (21)	13.5	13.5	1.8×10^{7}
17	Sc-46		13.5	13.5	3.4×10^{4}
18	Sc-47		243	24.3	8.3×10^{5}
19	Sc-48		8.11	8.11	1.5×10^{6}
20	Se-75	Selenium (34)	81.1	81.1	1.5×10^{4}
21	Se-79		1080	54.1	7.0×10^{-2}
22	Si-31	Silicon (14)	16.2	13.5	3.9×10^{7}
23	Si-32		1080	5.41	1.1×10^{2}

1	Sm-145	Samarium (62)	541	541	2.6×10^{3}
2	Sm-147		Unlimited	Unlimited	2.3×10^{-8}
3	Sm-151		1080	108	2.6×10^{1}
4	Sm-153		108	13.5	4.4×10^{5}
5	Sn-113	Tin (50)	108	108	1.0×10^{4}
6	Sn-117m		162	54.1	8.2×10^{4}
7	Sn-119m		1080	1080	3.7×10^{3}
8	Sn-121m		1080	24.3	5.4×10^{1}
9	Sn-123		16.2	13.5	8.2×10^{3}
10	Sn-125		5.41	5.41	1.1×10^{5}
11	Sn-126		8.11	8.11	2.8×10^{-2}
12	Sr-82	Strontium (38)	5.41	5.41	6.2×10^{4}
13	Sr-85m		135	135	3.3×10^{7}
14	Sr-85		54.1	54.1	2.4×10^{4}
15	Sr-87m		81.1	81.1	1.3×10^{7}
16	Sr-89		16.2	13.5	2.9×10^{4}
17	Sr-90		5.41	2.70	1.4×10^{2}
18	Sr-91		8.11	8.11	3.6×10^{6}
19	Sr-92		21.6	13.5	1.3×10^{7}
20	T	Tritium(1)	1080	1080	9.7×10^{3}
21	Ta-178	Tantalum (73)	27.0	27.0	1.1×10^{8}
22	Ta-179		811	811	1.1×10^{3}
23	Ta-182		21.6	13.5	6.2×10^{3}

1	Tb-157	Terbium (65)	1080	270	1.5×10^{1}
2	Tb-158		27.0	18.9	1.5×10^{1}
3	Tb-160		24.3	13.5	1.1×10^{4}
4	Tc-95m	Technetium (43)	54.1	54.1	2.2×10^{4}
5	Tc-96m		10.8	10.8	3.8×10^{7}
6	Tc-96		10.8	10.8	3.2×10^{5}
7	Tc-97m		1080	1080	1.5×10^{4}
8	Tc-97		Unlimited	Unlimited	1.4×10^{-3}
9	Tc-98		18.9	18.9	8.7×10^{-4}
10	Tc-99m		216	216	5.3×10^{6}
11	Tc-99		1080	24.3	1.7×10^{-2}
12	Te-118	Tellurium (52)	5.41	5.41	1.8×10^{5}
13	Te-121m		135	135	7.0×10^{3}
14	Te-121		5.41	5.41	6.4×10^{4}
15	Te-123m		189	189	8.9×10^{3}
16	Te-125m		811	243	1.8×10^{4}
17	Te-127m		541	13.5	9.4×10^{3}
18	Te-127		541	13.5	2.6×10^{6}
19	Te-129m		16.2	13.5	3.0×10^{4}
20	Te-129		16.2	13.5	2.1×10^{7}
21	Te-131m		18.9	13.5	8.0×10^{5}
22	Te-132		10.8	10.8	8.0×10^{5}
23	Th-227	Thorium (90)	243	0.270	3.1×10^{4}

1	Th-228		8.11	1.08×10^{-2}	8.2×10^{2}
2	Th-229		8.11	8.11×10^{-4}	2.1×10^{-1}
3	Th-230		54.1	5.41×10^{-3}	2.1×10^{-2}
4	Th-231		1080	24.3	5.3×10^{5}
5	Th-232		Unlimited	Unlimited	1.1×10^{-7}
6	Th-234		5.41	5.41	2.3×10^{4}
7	Th (natural)		Unlimited	Unlimited	2.2×10^{-7}
8	Ti-44	Titanium (22)	13.5	5.41	1.7×10^{2}
9	Tl-200	Thallium (81)	21.6	21.6	6.0×10^{5}
10	Tl-201		270	270	2.1×10^{5}
11	Tl-202		54.1	54.1	5.3×10^{4}
12	Tl-204		108	13.5	4.6×10^{2}
13	Tm-167	Thalium (69)	189	189	8.5×10^{4}
14	Tm-168		21.6	21.6	8.5×10^{3}
15	Tm-170		108	13.5	6.0×10^{3}
16	Tm-171		1080	270	1.1×10^{3}
17	U-230	Uranium (92)	1080	0.270	2.7×10^{4}
18	U-232		81.1	8.11×10^{-3}	2.2×10^{1}
19	U-233		270	2.70×10^{-2}	9.7×10^{-3}
20	U-234		270	2.70×10^{-2}	6.2×10^{-3}
21	U-235		Unlimited	Unlimited	2.2×10^{-6}
22	U-236		270	2.70×10^{-2}	6.5×10^{-5}
23	U-238		Unlimited	Unlimited	3.4×10^{-7}

U (natural)		Unlimited	Unlimited	7.1×10^{-7}
U (enriched 5% or less).		Unlimited	Unlimited	(See Table A-3)
U (enriched more than 5%).		270	2.70×10^{-2}	(See Table A-3)
U (depleted)		Unlimited	Unlimited	(See Table A-3)
V-48	Vanadium (23)	8.11	8.11	1.7×10^{5}
V-49		1080	1080	8.1×10^{3}
W-178	Tungsten (74)	27.0	27.0	3.4×10^{4}
W-181		811	811	6.0×10^{3}
W-185		1080	24.3	9.4×10^{3}
W-187		54.1	13.5	7.0×10^{5}
W-188		5.41	5.41	1.0×10^{4}
Xe-122	Xenon (54)	5.41	5.41	1.3×10^{6}
Xe-123		5.41	5.41	1.2×10^{7}
Xe-127		108	108	2.8×10^{4}
Xe-131m		1080	1080	8.4×10^{4}
Xe-133		541	541	1.9×10^{5}
Xe-135		108	108	2.6×10^{6}
Y-87	Yttrium (39)	54.1	54.1	4.5×10^{5}
Y-88		10.8	10.8	1.4×10^{4}
Y-90		5.41	5.41	5.4×10^{5}

Y-91m		54.1	54.1	4.2×10^{7}
Y0-91		8.11	8.11	2.5×10^{4}
Y-92		5.41	5.41	9.6×10^{6}
Y-93		5.41	5.41	3.3×10^{6}
Yb-169	Yterbium (70)	81.1	81.1	2.4×10^{4}
Yb-175		54.1	54.1	1.8×10^{5}
Zn-65	Zinc (30)	54.1	54.1	8.2×10^{3}
Zn-69m		54.1	13.5	3.3×10^{6}
Zn-69		108	13.5	4.9×10^{7}
Zr-88	Zirconium (40)	81.1	81.1	1.8×10^{4}
Zr-93		1080	5.41	2.5×10^{-3}
Zr-95		27.0	24.32.1x10^{4}	
Zr-97		8.11	8.111.9x10^{6}	

[a]International shipments of Einsteinium require multilateral approval of A_1 and A_2 values.

[b]International shipments of Fermium require multilateral approval of A_1 and A_2 values.

[c]20 Ci for Mo99 for domestic use

(7) Table A-2: General values for A_1 and A_2

Contents	A_1 (Ci)	A_2 (Ci)
Only beta- or gamma-emitting nuclides are known to be present	5	0.5
Alpha-emitting nuclides are known		

to be present, or no relevant data are available | 2.70 | 5.41×10^{-4}

(8) Table A-3: Activity-mass relationships for uranium.

Uranium Enrichment[1] wt % U-235 present	Specific Activity Ci/g
0.45	5.0×10^{-7}
0.72	7.1×10^{-7}
1.0	7.6×10^{-7}
1.5	1.0×10^{-6}
5.0	2.7×10^{-6}
10.0	4.8×10^{-6}
20.0	1.0×10^{-5}
35.0	2.0×10^{-5}
50.0	2.5×10^{-5}
90.0	5.8×10^{-5}
93.0	7.0×10^{-5}
95.0	9.1×10^{-5}

[1]The figures for uranium include representative values for the activity of the uranium-234 that is concentrated during the enrichment process.

~~[Section 21. Table. The A_1 and A_2 values for radionuclides are as follows (see footnotes at end of table):~~

~~[Specific~~

Symbol of radionuclide	Element and atomic number	A_1(Ci)	A_2(Ci)	Activity (Ci/g)
^{227}Ac	Actinum (89)	1000	0.003	7.2×10^{1}
^{228}Ac		10	4	2.2×10^{6}
^{105}Ag	Silver (47)	40	40	3.1×10^{4}
^{110m}Ag		7	7	4.7×10^{3}
^{111}Ag		100	20	1.6×10^{5}
^{241}Am	Americium (95)	8	0.008	3.2
^{243}Am		8	0.008	1.9×10^{-1}
^{37}Ar	Argon (18)	1000	1000	1.0×10^{-5}
(Compressed or uncompressed)*				
^{41}Ar (uncompressed)*	20	20	4.3×10^{7}	
^{41}Ar (compressed)*		1	1	4.3×10^{7}
^{73}As	Arsenic (33)	1000	400	2.4×10^{4}
^{74}As		20	20	1.0×10^{5}
^{76}As		10	10	1.6×10^{6}
^{77}As		300	20	1.1×10^{6}
^{211}At	Astatine (85)	200	7	2.1×10^{6}
^{193}Au	Gold (79)	200	200	9.3×10^{5}
^{196}Au		30	30	1.2×10^{5}
^{198}Au		40	20	2.5×10^{5}
^{199}Au		200	25	2.1×10^{5}
^{131}Ba	Barium (56)	40	40	8.7×10^{4}

1	^{133}Ba		40	10	4.0×10^{2}
2	^{140}Ba		20	20	7.3×10^{4}
3	^{7}Be	Beryllium (4)	300	300	3.5×10^{5}
4	^{206}Bi	Bismuth (83)	5	5	9.9×10^{4}
5	^{207}Bi		10	10	2.2×10^{2}
6	^{210}Bi(RaE)		100	4	1.2×10^{5}
7	^{212}Bi		6	6	1.5×10^{7}
8	^{249}Bk	Berkelium (97)	1000	1	1.8×10^{3}
9	^{77}Br	Bromine (35)	70	25	7.1×10^{5}
10	^{82}Br		6	6	1.1×10^{6}
11	^{11}C	Carbon (6)	20	20	8.4×10^{8}
12	^{14}C		1000	60	4 x 6
13	^{45}Ca	Calcium (20)	1000	25	1.9×10^{4}
14	^{47}Ca		20	20	5.9×10^{5}
15	^{109}Cd	Cadmium (48)	1000	70	2.6×10^{3}
16	^{115m}Cd		30	30	2.6×10^{4}
17	^{115}Cd		80	20	5.1×10^{5}
18	^{139}Ce	Cerium (58)	100	100	6.5×10^{3}
19	^{141}Ce		300	25	2.8×10^{4}
20	^{143}Ce		60	20	6.6×10^{5}
21	^{144}Ce		10	7	3.2×10^{3}
22	^{249}Cf	Californium (98)	2	0.002	3 x 1
23	^{250}Cf		7	0.007	1.3×10^{2}

1	^{252}Cf		2	0.009	6.5×10^{2}
2	^{36}Cl	Chlorine (17)	300	10	3.2×10^{-2}
3	^{38}Cl		10	10	1.3×10^{8}
4	^{242}Cm	Curium (96)	200	0.2	3.3×10^{3}
5	^{243}Cm		9	0.009	4.2×10^{1}
6	^{244}Cm		10	0.01	8.2×10^{1}
7	^{245}Cm		6	0.006	1.0×10^{-1}
8	^{246}Cm		6	0.006	3.6×10^{-1}
9	^{56}Co	Cobalt (27)	5	5	3.0×10^{4}
10	^{57}Co		90	90	8.5×10^{3}
11	^{58m}Co		1000	1000	5.9×10^{6}
12	^{58}Co		20	20	3.1×10^{4}
13	^{60}Co		7	7	1.1×10^{3}
14	^{51}Cr	Chromium (24)	600	600	9.2×10^{4}
15	^{129}Cs	Cesium (55)	40	40	7.6×10^{5}
16	^{131}Cs		1000	1000	1.0×10^{5}
17	^{134m}Cs		1000	10	7.4×10^{6}
18	^{134}Cs		10	10	1.2×10^{3}
19	^{135}Cs		1000	25	8.8×10^{-4}
20	^{136}Cs		7	7	7.4×10^{4}
21	^{137}Cs		30	10	9.8×10^{1}
22	^{64}Cu	Copper (29)	80	25	3.8×10^{6}
23	^{67}Cu		200	25	7.9×10^{5}

1	~~^{165m}Dy~~	~~Dysprosium (66)~~	~~100~~	~~20~~	~~8.2×10^{6}~~
2	~~^{166}Dy~~		~~1000~~	~~200~~	~~2.3×10^{5}~~
3	~~^{169}Er~~	~~Erbium (68)~~	~~1000~~	~~25~~	~~8.2×10^{4}~~
4	~~^{171}Er~~		~~50~~	~~20~~	~~2.4×10^{6}~~
5	~~^{152m}Eu~~	~~Europium (63)~~	~~30~~	~~30~~	~~2.2×10^{6}~~
6	~~^{152}Eu~~		~~20~~	~~10~~	~~1.9×10^{2}~~
7	~~^{154}Eu~~		~~10~~	~~5~~	~~1.5×10^{2}~~
8	~~^{155}Eu~~		~~400~~	~~60~~	~~1.4×10^{3}~~
9	~~^{18}F~~	~~Fluorine (9)~~	~~20~~	~~20~~	~~9.3×10^{7}~~
10	~~^{52}Fe~~	~~Iron (26)~~	~~5~~	~~5~~	~~7.3×10^{6}~~
11	~~^{55}Fe~~		~~1000~~	~~1000~~	~~2.2×10^{3}~~
12	~~^{59}Fe~~		~~10~~	~~10~~	~~4.9×10^{4}~~
13	~~^{67}Ga~~	~~Gallium (31)~~	~~110~~	~~100~~	~~6.0×10^{5}~~
14	~~^{68}Ga~~		~~20~~	~~20~~	~~4.0×10^{7}~~
15	~~^{72}Ga~~		~~7~~	~~7~~	~~3.1×10^{6}~~
16	~~^{153}Gd~~	~~Gadolinium (64)~~	~~200~~	~~100~~	~~3.6×10^{3}~~
17	~~^{159}Gd~~		~~300~~	~~20~~	~~1.1×10^{6}~~
18	~~^{68}Ge~~	~~Germanium (32)~~	~~20~~	~~10~~	~~7.0×10^{3}~~
19	~~^{71}Ge~~		~~1000~~	~~1000~~	~~1.6×10^{5}~~
20	~~^{3}H~~	~~Hydrogen (1) see T-Tritium~~			
21	~~^{181}Hf~~	~~Hafnium (72)~~	~~30~~	~~25~~	~~1.6×10^{4}~~
22	~~^{197m}Hg~~	~~Mercury (80)~~	~~200~~	~~200~~	~~6.6×10^{5}~~
23	~~^{197}Hg~~		~~200~~	~~200~~	~~2.5×10^{5}~~

1	^{203}Hg		80	25	1.4×10^{4}
2	^{166}Ho	Holmium (67)	30	30	6.9×10^{5}
3	^{123}I	Iodine (53)	50	50	1.9×10^{6}
4	^{125}I		1000	70	1.7×10^{4}
5	^{126}I		40	10	7.8×10^{4}
6	^{129}I		1000	2	1.6×10^{-4}
7	^{131}I		40	10	1.2×10^{5}
8	^{132}I		7	7	1.1×10^{7}
9	^{133}I		30	10	1.1×10^{6}
10	^{134}I		8	8	2.7×10^{7}
11	^{135}I		10	10	3.5×10^{6}
12	^{111}In	Indium (49)	30	25	4.2×10^{5}
13	^{113m}In		60	60	1.6×10^{7}
14	^{114m}In		30	20	2.3×10^{4}
15	^{115m}In		100	20	6.1×10^{6}
16	^{190}Ir	Iridium (77)	10	10	6.2×10^{4}
17	^{192}Ir		20	10	9.1×10^{3}
18	^{194}Ir		10	10	8.5×10^{5}
19	^{42}K	Potassium (19)	10	10	6.0×10^{6}
20	^{43}K		20	10	3.3×10^{6}
21	^{85m}Kr (uncompressed)*	Krypton (36)	100	100	8.4×10^{6}
22	^{85m}Kr (compressed)*	3	3	8.4×10^{6}	
23	^{85}Kr (uncompressed)*	1000	1000	4.0×10^{2}	

1	$^{85}_{Kr}$ (compressed)*		5	5	4.0×10^{2}
2	$^{87}_{Kr}$ (uncompressed)*	20	20	2.8×10^{7}	
3	$^{87}_{Kr}$ (compressed)*		0.6	0.6	2.8×10^{7}
4	$^{140}_{La}$	Lanthanum (57)	30	30	5.6×10^{5}
5	$^{177}_{Lu}$	Lutetium (71)	300	25	1.1×10^{5}
6	MFP	Mixed fission products	10	0.4	
7	$^{28}_{Mg}$	Magnesium (12)	6	6	5.2×10^{6}
8	$^{52}_{Mn}$	Manganese (25)	5	5	4.4×10^{5}
9	$^{54}_{Mn}$		20	20	8.3×10^{3}
10	$^{56}_{Mn}$		5	5	2.2×10^{7}
11	$^{99}_{Mo}$	Molybdenum (42)	100	20	4.7×10^{5}
12	$^{13}_{N}$	Nitrogen (7)	20	10	1.5×10^{9}
13	$^{22}_{Na}$	Sodium (11)	8	8	6.3×10^{3}
14	$^{24}_{Na}$		5	5	8.7×10^{6}
15	$^{93m}_{Nb}$	Niobium (41)	1000	200	1.1×10^{3}
16	$^{95}_{Nb}$		20	20	3.9×10^{4}
17	$^{97}_{Nb}$		20	20	2.6×10^{7}
18	$^{147}_{Nd}$	Neodymium (60)	100	20	8.0×10^{4}
19	$^{149}_{Nd}$		30	20	1.1×10^{7}
20	$^{59}_{Ni}$	Nickel (28)	1000	900	8.1×10^{-2}
21	$^{63}_{Ni}$		1000	100	4.6×10^{1}
22	$^{65}_{Ni}$		10	10	1.9×10^{7}
23	$^{237}_{Np}$	Neptunium (93)	5	0.005	6.9×10^{-4}

1	~~239_{Np}~~		~~200~~	~~25~~	~~2.3×10^5~~
2	~~185_{Os}~~	~~Osmium (76)~~	~~20~~	~~20~~	~~7.3×10^3~~
3	~~191_{Os}~~		~~600~~	~~200~~	~~4.6×10^4~~
4	~~$191m_{Os}$~~		~~200~~	~~200~~	~~1.2×10^6~~
5	~~193_{Os}~~		~~100~~	~~20~~	~~5.3×10^5~~
6	~~32_{P}~~	~~Phosphorus (15)~~	~~30~~	~~30~~	~~2.9×10^5~~
7	~~230_{Pa}~~	~~Protactinum (91)~~	~~20~~	~~0.8~~	~~3.2×10^4~~
8	~~231_{Pa}~~		~~2~~	~~0.002~~	~~4.5×10^{-2}~~
9	~~233_{Pa}~~		~~100~~	~~100~~	~~2.1×10^4~~
10	~~201_{Pb}~~	~~Lead (82)~~	~~20~~	~~20~~	~~1.7×10^6~~
11	~~210_{Pb}~~		~~100~~	~~0.2~~	~~8.8×10~~
12	~~212_{Pb}~~		~~6~~	~~5~~	~~1.4×10^6~~
13	~~103_{Pd}~~	~~Palladium (46)~~	~~1000~~	~~700~~	~~7.5×10^4~~
14	~~109_{Pd}~~		~~100~~	~~20~~	~~2.1×10^6~~
15	~~147_{Pm}~~	~~Promethium (61)~~	~~1000~~	~~25~~	~~9.4×10^2~~
16	~~149_{Pm}~~		~~100~~	~~20~~	~~4.2×10^5~~
17	~~210_{Po}~~	~~Polonium (84)~~	~~200~~	~~0.2~~	~~4.5×10^3~~
18	~~142_{Pr}~~	~~Praseodymium (59)~~	~~10~~	~~10~~	~~1.2×10^4~~
19	~~143_{Pr}~~		~~300~~	~~20~~	~~6.6×10^4~~
20	~~191_{Pt}~~	~~Platinum (78)~~	~~100~~	~~100~~	~~2.3×10^5~~
21	~~$193m_{Pt}$~~		~~200~~	~~200~~	~~2.0×10^5~~
22	~~$197m_{Pt}$~~		~~300~~	~~20~~	~~1.2×10^7~~
23	~~197_{Pt}~~		~~300~~	~~20~~	~~8.8×10^5~~

^{238}Pu	Plutonium (94)	3	0.003	1.7×10^{1}
^{239}Pu		2	0.002	6.2×10^{-2}
^{240}Pu		2	0.002	2.3×10^{-1}
^{241}Pu		1000	0.1	1.1×10^{2}
^{242}Pu		3	0.003	3.9×10^{-3}
^{223}Ra	Radium (88)	50	0.2	5.0×10^{4}
^{224}Ra		6	0.5	1.6×10^{5}
^{226}Ra		10	0.05	1.0
^{228}Ra		10	0.05	2.3×10^{2}
^{81}Rb	Rubidium (37)	30	25	8.2×10^{6}
^{86}Rb		30	30	8.1×10^{4}
^{87}Rb		Unlimited	Unlimited	6.6×10^{-8}
Rb (Natural)		Unlimited	Unlimited	1.8×10^{-8}
^{186}Re	Rhenium (75)	100	20	1.9×10^{5}
^{187}Re		Unlimited	Unlimited	3.8×10^{-8}
^{188}Re		10	10	1.0×10^{6}
Re (Natural)		Unlimited	Unlimited	2.4×10^{-8}
^{103m}Rh	Rhodium (45)	1000	1000	3.2×10^{7}
^{105}Rh		200	25	8.2×10^{5}
^{222}Rn	Radon (86)	10	2	1.5×10^{5}
^{97}Ru	Ruthenium (44)	80	80	5.5×10^{5}
^{103}Ru		30	25	3.2×10^{4}
^{105}Ru		20	20	6.6×10^{6}

1	~~^{106}Ru~~		~~10~~	~~7~~	~~3.4×10^{3}~~
2	~~^{35}S~~	~~Sulphur (16)~~	~~1000~~	~~60~~	~~4.3×10^{4}~~
3	~~^{122}Sb~~	~~Antimony (51)~~	~~30~~	~~30~~	~~3.9×10^{5}~~
4	~~^{124}Sb~~		~~5~~	~~5~~	~~1.8×10^{4}~~
5	~~^{125}Sb~~		~~40~~	~~25~~	~~1.4×10^{3}~~
6	~~^{46}Sc~~	~~Scandium (21)~~	~~8~~	~~8~~	~~3.4×10^{4}~~
7	~~^{47}Sc~~		~~200~~	~~20~~	~~8.2×10^{5}~~
8	~~^{48}Sc~~		~~5~~	~~5~~	~~1.5×10^{6}~~
9	~~^{75}Se~~	~~Selenium (34)~~	~~40~~	~~40~~	~~1.4×10^{4}~~
10	~~^{31}Si~~	~~Silicon (14)~~	~~100~~	~~20~~	~~3.9×10^{7}~~
11	~~^{147}Sm~~	~~Samarium (62)~~	~~Unlimited~~	~~Unlimited~~	~~2.0×10^{-8}~~
12	~~^{151}Sm~~		~~1000~~	~~90~~	~~2.6×10^{1}~~
13	~~^{153}Sm~~		~~300~~	~~20~~	~~4.4×10^{5}~~
14	~~^{113}Sn~~	~~Tin (50)~~	~~60~~	~~60~~	~~1.0×10^{4}~~
15	~~^{119m}Sn~~		~~100~~	~~100~~	~~4.4×10^{3}~~
16	~~^{125}Sn~~		~~10~~	~~10~~	~~1.1×10^{5}~~
17	~~^{85m}Sr~~	~~Strontium (38)~~	~~80~~	~~80~~	~~3.2×10^{7}~~
18	~~^{85}Sr~~		~~30~~	~~30~~	~~2.4×10^{4}~~
19	~~^{87m}Sr~~		~~50~~	~~50~~	~~1.2×10^{7}~~
20	~~^{89}Sr~~		~~100~~	~~10~~	~~2.9×10^{4}~~
21	~~^{90}Sr~~		~~10~~	~~0.4~~	~~1.5×10^{2}~~
22	~~^{91}Sr~~		~~10~~	~~10~~	~~3.6×10^{6}~~
23	~~^{92}Sr~~		~~10~~	~~10~~	~~1.3×10^{7}~~

~~T (uncompressed)*~~	~~Tritium (1)~~	~~1000~~	~~1000~~	~~9.7×10^3~~
~~T (compressed)*~~		~~1000~~	~~1000~~	~~9.7×10^3~~
~~T (activated luminous paint)~~		~~1000~~	~~1000~~	~~9.7×10^3~~
~~T (adsorbed on solid carrier~~		~~1000~~	~~1000~~	~~9.7×10^3~~
~~T (tritiated water)~~	~~1000~~	~~1000~~	~~9.7×10^3~~	
~~T (other forms)~~		~~20~~	~~20~~	~~9.7×10^3~~
~~^{182}Ta~~	~~Tantalum (73)~~	~~20~~	~~20~~	~~6.2×10^3~~
~~^{160}Tb~~	~~Terbium (65)~~	~~20~~	~~10~~	~~1.1×10^4~~
~~^{96m}Tc~~	~~Technetium (43)~~	~~1000~~	~~1000~~	~~3.8×10^7~~
~~^{96}Tc~~		~~6~~	~~6~~	~~3.2×10^5~~
~~^{97m}Tc~~		~~1000~~	~~200~~	~~1.5×10^4~~
~~^{97}Tc~~		~~1000~~	~~400~~	~~1.4×10^{-3}~~
~~^{99m}Tc~~		~~100~~	~~100~~	~~5.2×10^6~~
~~^{99}Tc~~		~~1000~~	~~25~~	~~1.7×10^{-2}~~
~~^{125m}Te~~	~~Tellurium (52)~~	~~1000~~	~~100~~	~~1.8×10^4~~
~~^{127m}Te~~		~~300~~	~~20~~	~~4.0×10^4~~
~~^{127}Te~~		~~300~~	~~20~~	~~2.6×10^6~~
~~^{129m}Te~~		~~30~~	~~10~~	~~2.5×10^4~~
~~^{129}Te~~		~~100~~	~~20~~	~~2.0×10^7~~
~~^{131m}Te~~		~~10~~	~~10~~	~~8.0×10^5~~
~~^{132}Te~~		~~7~~	~~7~~	~~3.1×10^5~~
~~^{227}Th~~	~~Thorium (90)~~	~~200~~	~~0.2~~	~~3.2×10^4~~
~~^{228}Th~~		~~6~~	~~0.008~~	~~8.3×10^2~~

230_{Th}		3	0.003	1.9×10^{-2}
231_{Th}		1000	25	5.3×10^{5}
232_{Th}		Unlimited	Unlimited	1.1×10^{-7}
234_{Th}		10	10	2.3×10^{4}
Th (Natural)		Unlimited	Unlimited	2.2×10^{-7}
Th (irradiated)**				
200_{Tl}	Thallium (81)	20	20	5.8×10^{5}
201_{Tl}		200	200	2.2×10^{5}
202_{Tl}		40	40	5.4×10^{4}
224_{Tl}		300	10	4.3×10^{2}
170_{Tm}	Thulium (69)	300	10	6.0×10^{3}
171_{Tm}		1000	100	1.1×10^{3}
230_{U}	Uranium (92)	100	0.1	2.7×10^{4}
232_{U}		30	0.03	2.1×10
233_{U}		100	0.1	9.5×10^{-3}
234_{U}		100	0.1	6.2×10^{-3}
235_{U}		100	0.2	2.1×10^{-6}
236_{U}		200	0.2	6.3×10^{-5}
238_{U}		Unlimited	Unlimited	3.3×10^{-7}
U (natural)		Unlimited	Unlimited	(See Section 24)
U (enriched) less than 20%		Unlimited	Unlimited	(See Section 24)

~~U (enriched) 20% or greater~~		~~100~~	~~0.1~~	~~(See Section 24)~~
~~U (depleted)~~		~~Unlimited~~	~~Unlimited~~	~~(See Section 24)~~
~~U (irradiated)***~~				
~~48_V~~	~~Vanadium (23)~~	~~6~~	~~6~~	~~1.7×10^5~~
~~181_W~~	~~Tungsten (74)~~	~~200~~	~~100~~	~~5.0×10^3~~
~~185_W~~		~~1000~~	~~25~~	~~9.7×10^{-3}~~
~~187_W~~		~~40~~	~~20~~	~~7.0×10^5~~
~~127_{Xe} (uncompressed)*~~	~~Xenon (54)~~	~~70~~	~~70~~	~~2.8×10^4~~
~~127_{Xe} (compressed)*~~	~~5~~	~~5~~	~~2.8×10^4~~	
~~$131m_{Xe}$ (compressed)*~~	~~10~~	~~10~~	~~1.0×10^5~~	
~~$131m_{Xe}$ (uncompressed)*~~		~~100~~	~~100~~	~~1.0×10^5~~
~~133_{Xe} (uncompressed)*~~	~~1000~~	~~1000~~	~~1.9×10^5~~	
~~133_{Xe} (compressed)*~~	~~5~~	~~5~~	~~1.9×10^5~~	
~~135_{Xe} (uncompressed)*~~	~~70~~	~~70~~	~~2.5×10^5~~	
~~135_{Xe} (compressed)*~~	~~2~~	~~2~~	~~2.5×10^5~~	
~~87_Y~~	~~Yttrium (39)~~	~~20~~	~~20~~	~~4.5×10^1~~
~~90_Y~~		~~10~~	~~10~~	~~2.5×10^5~~
~~$91m_Y$~~		~~30~~	~~30~~	~~4.1×10^7~~
~~91_Y~~		~~30~~	~~30~~	~~2.5×10^4~~
~~92_Y~~		~~10~~	~~10~~	~~9.5×10^6~~
~~93_Y~~		~~10~~	~~10~~	~~3.2×10^6~~

~~$^{169}_{Yb}$~~	~~Ytterbium (70)~~	~~80~~	~~80~~	~~2.3×10^{5}~~
~~$^{175}_{Yb}$~~		~~400~~	~~25~~	~~1.8×10^{5}~~
~~$^{65}_{Zn}$~~	~~Zinc (30)~~	~~30~~	~~30~~	~~8.0×10^{3}~~
~~$^{69m}_{Zn}$~~		~~40~~	~~40~~	~~3.3×10^{6}~~
~~$^{69}_{Zn}$~~		~~300~~	~~20~~	~~5.3×10^{7}~~
~~$^{93}_{Zr}$~~	~~Zirconium (40)~~	~~1000~~	~~200~~	~~3.5×10^{-3}~~
~~$^{95}_{Zr}$~~		~~20~~	~~20~~	~~2.1×10^{4}~~
~~$^{97}_{Zr}$~~		~~20~~	~~20~~	~~2.0×10^{6}~~

~~*For the purpose of this section, compressed gas means at a pressure which exceeds the ambient atmospheric pressure at the location where the containment system was closed.~~

~~**The values of A_1 and A_2 must be calculated in accordance with the procedure specified in Section 20(2)(c) of this administrative regulation, taking into account the activity of the fission products and of the uranium-233 in addition to that of the thorium.~~

~~***The values of A_1 and A_2 must be calculated in accordance with the procedure specified in Section 20(2)(c) of this administrative regulation, taking into account the activity of the fission products and plutonium isotopes in addition to that of the uranium.]~~

~~Section 22. Table. The following table is to be used for the:~~

~~RELATIONSHIP BETWEEN A_1 AND E_{max} FOR BETA EMITTERS~~

~~E_{max} (MeV)~~	~~A_1 (Ci)~~
~~less than 0.5~~	~~1000~~
~~0.5 - less than 1.0~~	~~300~~
~~1.0 - less than 1.5~~	~~100~~

~~1.5 - less than 2.0 30~~

~~greater than or equal to 2.0 10~~

~~Section 23. Table. The following is to be used for the:~~

~~RELATIONSHIP BETWEEN A_3~~

~~AND THE ATOMIC NUMBER OF THE RADIONUCLIDE~~

~~A_3~~

~~Half-life~~

~~Atomic Number~~	~~Half-life less than 1000 days~~	~~Half-life to 10^6 years~~	~~Half-life greater than 10^6 years~~
~~1 to 81~~	~~3 Ci~~	~~0.5 Ci~~	~~3 Ci~~
~~82 and above~~	~~.002 Ci~~	~~.002 Ci~~	~~3 Ci~~

~~Section 24. Table. The following table is to be used for the:~~

~~ACTIVITY-MASS RELATIONSHIPS~~

~~FOR URANIUM/THORIUM~~

~~Thorium and Uranium enrichment*~~	~~Specific Activity~~	
~~wt% ^{235}U present~~	~~Ci/g~~	~~g/Ci~~
~~0.45~~	~~5.0×10^{-7}~~	~~2.0×10^6~~
~~0.72 (natural)~~	~~7.06×10^{-7}~~	~~1.42×10^6~~
~~1.0~~	~~7.6×10^{-7}~~	~~1.3×10^6~~
~~1.5~~	~~1.0×10^{-6}~~	~~1.0×10^6~~
~~5.0~~	~~2.7×10^{-6}~~	~~3.7×10^5~~

~~10.0 — 4.8×10^{-6} — 2.1×10^{5}~~

~~20.0 — 1.0×10^{-5} — 1.0×10^{5}~~

~~35.0 — 2.0×10^{-5} — 5.0×10^{4}~~

~~50.0 — 2.5×10^{-5} — 4.0×10^{4}~~

~~90.0 — 5.8×10^{-5} — 1.7×10^{4}~~

~~93.0 — 7.0×10^{-5} — 1.4×10^{4}~~

~~95.0 — 9.1×10^{-5} — 1.1×10^{4}~~

~~Natural Thorium — 2.2×10^{-7} — 4.6×10^{6}~~

~~*The figures for uranium include representative values for the activity of the uranium-234 which is concentrated during the enrichment process. The activity for thorium includes the equilibrium concentration of thorium-228.~~]

Section 14. Material Incorporated by Reference. (1) The following are incorporated by reference:

(a) Chapter 49 Code of Federal Register Part 170 through 189;

(b) U.S. Postal Service in the Postal Service Manual (Domestic Mail Manual), Section C-023-90;

(c) 10 C.F.R. 71.43, 71.45, 71.47, 71.53; and

(d) 10 C.F.R. 73.37.

(2) The Code of Federal Register citations and to the U.S. Postal Service citation in subsection (1) of this section may be viewed or copied at the Office of the Commissioner of Public Health, 275 East Main Street, Frankfort, Kentucky 40621, 8 a.m. until 4:30 p.m., Monday through Friday.

Cabinet for Health Services

Department for Public Health

Division of Public Health Protection and Safety

(Amendment)

902 KAR 100:085. Exempt concentrations.

RELATES TO: KRS 211.842 to 211.852, 211.990(4), 13B.170, 10 C.F.R. 30.70

STATUTORY AUTHORITY: KRS 194.050, 211.090, 211.844, 13B.170, 10 C.F.R. 30.70

NECESSITY, FUNCTION, AND CONFORMITY: The Cabinet for Health Services[~~Human Resources~~] is mandated[~~authorized~~] by KRS 211.844 to provide by administrative regulation for the registration and licensing of the possession or use of sources of ionizing or electronic product radiation and to regulate the handling and disposal of radioactive waste. This administrative regulation provides a list of concentrations for specific radionuclides, which are exempted from the requirements of 902 KAR Chapter 100[~~these administrative regulations~~].

[~~Section 1. Applicability. This administrative regulation exempts certain concentrations of radionuclides from the requirements of the cabinet's radiation administrative regulations.~~]

Section 1[~~2~~]. Table. (1) In the following table values are given in Column I only for those materials normally used as gases. Values given in Column II are equivalent values for microcuries per gram if applicable to solids.

(2) Except as provided in other applicable provisions of these administrative regulations, a person is exempt to the extent that the person receives, possesses, uses, transfers, owns or acquires products or materials containing radioactive material in concentrations not in excess of those listed in the following table:

EXEMPT CONCENTRATIONS

Element (atomic number)	Isotopes	Column I Gas concentration μCi/ml	Column II Liquid and Solid concentration μCi/ml
Antimony (51)	Sb-122		$3x10^{-4}$
	Sb-124		$2x10^{-4}$
	Sb-125		$1x10^{-3}$
Argon (18)	Ar-37	$1x10^{-3}$	
	Ar-41	$4x10^{-7}$	
Arsenic (33)	As-73		$5x10^{-3}$
	As-74		$5x10^{-4}$
	As-76		$2x10^{-4}$
	As-77		$8x10^{-4}$
Barium (56)	Ba-131		$2x10^{-3}$
	Ba-140		$3x10^{-4}$
Beryllium (4)	Be-7		$2x10^{-2}$
Bismuth (83)	Bi-206		$4x10^{-4}$
Bromine (35)	Br-82	$4x10^{-7}$	$3x10^{-3}$

1	Cadmium (48)	Cd-109		$2x10^{-3}$
2		Cd-115m		$3x10^{-4}$
3		Cd-115		$3x10^{-4}$
4	Calcium (20)	Ca-45		$9x10^{-5}$
5		Ca-47		$5x10^{-4}$
6	Carbon (6)	C-14	$1x10^{-6}$	$8x10^{-3}$
7	Cevium (58)	Ce-141		$9x10^{-4}$
8		Ce-143		$4x10^{-4}$
9		Ce-144		$1x10^{-4}$
10	Cesium (55)	Cs-131		$2x10^{-2}$
11		Cs-134m		$6x10^{-2}$
12		Cs-134		$9x10^{-5}$
13	Chlorine (17)	Cl-38	$9x10^{-7}$	$4x10^{-3}$
14	Chromium (24)	Cr-51		$2x10^{-2}$
15	Cobalt (27)	Co-57		$5x10^{-3}$
16		Co-58		$1x10^{-3}$
17		Co-60		$5x10^{-4}$
18	Copper (29)	Cu-64		$3x10^{-3}$
19	Dysprosium (66)	Dy-165		$4x10^{-3}$
20		Dy-166		$4x10^{-4}$
21	Erbium (68)	Er-169		$9x10^{-4}$
22		Er-171		$1x10^{-3}$
23	Europium (63)	Eu-152		$6x10^{-4}$

1	(9.2 h)			
2		Eu-155		$2x10^{-3}$
3	Fluorine (9)	F-18	$2x10^{-6}$	$8x10^{-3}$
4	Gadolinium (64)	Gd-153		$2x10^{-3}$
5		Gd-159		$8x10^{-4}$
6	Gallium (31)	Ga-72		$4x10^{-4}$
7	Germanium (32)	Ge-71		$2x10^{-2}$
8	Gold (79)	Au-196		$2x10^{-3}$
9		Au-198		$5x10^{-4}$
10		Au-199		$2x10^{-2}$
11	Hafnium (72)	Hf-181		$7x10^{-4}$
12	Hydrogen (1)	H-3	$5x10^{-6}$	$3x10^{-2}$
13	Indium (49)	In-113m		$1x10^{-2}$
14		In-114m		$2x10^{-4}$
15	Iodine (53)	I-126	$3x10^{-9}$	$2x10^{-5}$
16		I-131	$3x10^{-9}$	$2x10^{-5}$
17		I-132	$8x10^{-8}$	$6x10^{-4}$
18		I-133	$1x10^{-8}$	$7x10^{-5}$
19		I-134	$2x10^{-7}$	$1x10^{-3}$
20	Iridium (77)	Ir-190		$2x10^{-3}$
21		Ir-192		$4x10^{-3}$
22		Ir-194		$3x10^{-4}$
23	Iron (26)	Fe-55		$8x10^{-3}$

		Fe-59		$6x10^{-4}$
	Krypton (36)	Kr-85m	$1x10^{-6}$	[~~$1x10^{-6}$~~]
		Kr-85	$3x10^{-6}$	[~~$3x10^{-6}$~~]
	Lanthanum (57)	La-140		$2x10^{-4}$
	Lead (82)	Pb-203		$4x10^{-3}$
	Lutetium (71)	Lu-177		$1x10^{-3}$
	Manganese (25)	Mn-52		$3x10^{-4}$
		Mn-54		$1x10^{-3}$
		Mn-56		$1x10^{-3}$
	Mercury (80)	Hg-197m		$2x10^{-3}$
		Hg-197		$3x10^{-3}$
		Hg-203		$2x10^{-4}$
	Molybdenum (42)	Mo-99		$2x10^{-3}$
	Neodymium (60)	Nd-147	[~~$6x10^{-4}$~~]	$6x10^{-4}$
		Nd-149	[~~$3x10^{-3}$~~]	$3x10^{-3}$
	Nickel (28)	Ni-65		$1x10^{-3}$
	Niobium (41)	Nb-95		$1x10^{-3}$
	(Columbium)			
		Nb-97		$9x10^{-3}$
	Osmium (76)	Os-185		$7x10^{-4}$
		Os-191m		$3x10^{-2}$
		Os-191		$2x10^{-3}$
		Os-193		$6x10^{-4}$

1	Palladium (46)	Pd-103	$3x10^{-3}$
2		Pd-109	$9x10^{-4}$
3	Phosphorus (15)	P-32	$2x10^{-4}$
4	Platinum (78)	Pt-191	$1x10^{-3}$
5		Pt-193m	$1x10^{-2}$
6		Pt-197m	$1x10^{-2}$
7		Pt-197	$1x10^{-3}$
8	Potassium (19)	K-42	$3x10^{-3}$
9	Praseodymium (59)	Pr-142	$3x10^{-4}$
10		Pr-143	$5x10^{-4}$
11	Promethium (61)	Pm-147	$2x10^{-3}$
12		Pm-149	$4x10^{-4}$
13	Rhenium (75)	Re-183	$6x10^{-3}$
14		Re-186	$9x10^{-4}$
15		Re-188	$6x10^{-4}$
16	Rhodium (45)	Rh-103m	$1x10^{-1}$
17		Rh-105	$1x10^{-3}$
18	Rubidium (37)	Rb-86	$7x10^{-4}$
19	Ruthenium (44)	Ru-97	$4x10^{-3}$
20		Ru-103	$8x10^{-4}$
21		Ru-105	$1x10^{-3}$
22		Ru-106	$1x10^{-4}$
23	Samarium (62)	Sm-153	$8x10^{-4}$

1	Scandium (21)	Sc-46		$4x10^{-4}$
2		Sc-47		$9x10^{-4}$
3		Sc-48		$3x10^{-4}$
4	Selenium (34)	Se-75		$3x10^{-3}$
5	Silicon (14)	Si-31		$9x10^{-3}$
6	Silver (47)	Ag-105		$1x10^{-3}$
7		Ag-110m		$3x10^{-4}$
8		Ag-111		$4x10^{-4}$
9	Sodium (11)	Na-24		$2x10^{-3}$
10	Strontium (38)	Sr-85		$1x10^{-3}$
11		Sr-89		$1x10^{-4}$
12		Sr-91		$7x10^{-4}$
13		Sr-92		$7x10^{-4}$
14	Sulfur (16)	S-35	$9x10^{-8}$	$6x10^{-4}$
15	Tantalum (73)	Ta-182		$4x10^{-4}$
16	Technetium (43)	Tc-96m		$1x10^{-1}$
17		Tc-96		$1x10^{-3}$
18	Tellurium (52)	Te-125m		$2x10^{-3}$
19		Te-127m		$6x10^{-4}$
20		Te-127		$3x10^{-3}$
21		Te-129m		$3x10^{-4}$
22		Te-131m		$6x10^{-4}$
23		Te-132		$3x10^{-4}$

1	Terbium (65)	Tb-160		$4x10^{-4}$
2	Thallium (81)	Tl-200		$4x10^{-3}$
3		Tl-201		$3x10^{-3}$
4		Tl-202		$1x10^{-3}$
5		Tl-204		$1x10^{-3}$
6	Thulium (69)	Tm-170		$5x10^{-4}$
7		Tm-171		$5x10^{-3}$
8	Tin (50)	Sn-113		$9x10^{-4}$
9		Sn-125		$2x10^{-4}$
10	Tungsten			
11	(Wolfram) (74)	W-181		$4x10^{-3}$
12		W-187		$7x10^{-4}$
13	Vanadium (23)	V-48		$3x10^{-4}$
14	Xenon (54)	Xe-131m	$\underline{4x10^{-6}}$	[~~$4x10^{-6}$~~]
15		Xe-133	$\underline{3x10^{-6}}$	[~~$3x10^{-6}$~~]
16		Xe-135	$\underline{1x10^{-6}}$	[~~$1x10^{-6}$~~]
17	Yttebium (70)	Yb-175		$1x10^{-3}$
18	Yttrium (39)	Y-90		2.10^{-4}
19		Y-91m		$3x10^{-2}$
20		Y-91		$3x10^{-4}$
21		Y-92		$6x10^{-4}$
22		Y-93		$3x10^{-4}$
23	Zinc (30)	Zn-65		$1x10^{-3}$

	Zn-69m		$7x10^{-4}$
	Zn-69		$2x10^{-2}$
Zirconium (40)	Zr-95		$6x10^{-4}$
	Zr-97		$2x10^{-4}$
Beta or gamma emitting radioactive material not list above with half-life less than 3 years		$1x10^{-10}$	$1x10^{-6}$

Section 2[3]. Special Cases. The following applies to the combination of nuclides: (1) In expressing the concentrations in Section 2 of this administrative regulation, the activity stated is that of the parent nuclide and takes into account the daughters; and

(2) For purposes of 902 KAR 100:045, Section 3, if there is involved a combination of nuclides, the limit for the combination shall be derived by determining for each nuclide in the product, the ratio between the radioactivity concentration present in the product and the exempt radioactivity concentration established in Section 2 of this administrative regulation for the specific nuclide if not in combination. The sum of such ratios may not exceed one ("1") (i.e., "unity").

CABINET FOR HEALTH SERVICES

DEPARTMENT FOR PUBLIC HEALTH

DIVISION OF PUBLIC HEALTH PROTECTION AND SAFETY

(Amendment)

902 KAR 100:165. Notices, reports and instructions to employees.

RELATES TO: KRS 211.842 to 211.852, 211.990(4), 13B.170, 10 C.F.R. 19.11 through 19.17 and 10 C.F.R. 30.7 and 30.10

STATUTORY AUTHORITY: KRS 13B.170, 194.050, 211.090, 211.844, 13B.170, 10 C.F.R. 19.11 through 19.17 and 10 C.F.R. 30.7 and 30.10

NECESSITY, FUNCTION, AND CONFORMITY: [~~Executive Order 96-862, effective July 2, 1996, reorganizes the Cabinet for Human Resources and places the Department for Public Health and its programs under the Cabinet for Health Services.~~] The Cabinet for Health Services is mandated[~~authorized~~] by KRS 211.844 to provide by administrative regulation for the registration and licensing of the possession or use of sources of ionizing or electronic product radiation and the handling and disposal of radioactive waste. This administrative regulation provides notices, instructions, and reports for the protection of workers who may be exposed to radiation in their employment.

Section 1. Posting of Notices to Workers. (1) A licensee or registrant shall post current copies of the following documents:

(a) The requirements of this administrative regulation and 902 KAR 100:019,

relating to standards for protection against radiation;

(b) The license, certificate of registration, conditions or documents incorporated into the license by reference and amendments to the license;

(c) The operating procedures applicable to work under the license or registration; and

(d) A notice of violation involving radiological working conditions, proposed imposition of civil penalty, or order issued as authorized by 902 KAR 100:170, and responses from the licensee or registrant.

(2) If posting of a document specified in subsection (1)(a), (b), or (c) of this section is not practicable, the licensee or registrant may post a notice which describes the document and states where it may be examined.

(3) Cabinet form KR-441 "Notice to Employees" shall be prominently posted by a licensee or registrant. The form may be obtained from the cabinet at 275 East Main Street, Frankfort, Kentucky 40621, between 8 a.m. and 4:30 p.m., Monday through Friday.

(4) Documents, notices or forms posted as required by this section shall:

(a) Appear in a sufficient number of places to permit individuals engaged in work under the license or registration to observe them on the way to or from a particular work location to which the document applies;

(b) Be conspicuous; and

(c) Be replaced if defaced or altered.

(5)(a) Cabinet documents posted as required by subsection (1)(d) of this section shall be posted within two (2) working days after receipt of the documents from the

cabinet;

(b) The licensee's or registrant's response shall be posted within two (2) working days after dispatch from the licensee or registrant; and

(c) The documents shall remain posted for a minimum of five (5) working days or until action correcting the violation has been completed, whichever is later.

Section 2. Instructions to Workers. (1) Individuals, in the course of employment, likely to receive in a year an occupational dose in excess of 100 millirems (one (1) mSV) shall be:

(a) Kept informed of the storage, transfer, or use of sources of radiation in the licensee's or registrant's workplace;

(b) Instructed in the health protection problems associated with exposure to radioactive material or radiation to the individual and potential offspring, in precautions or procedures to minimize exposure, and in the purposes and functions of protective devices employed;

(c) Instructed in, and instructed to observe, to the extent within the worker's control, the applicable requirements of 902 KAR Chapter 100 and licenses for the protection of personnel from exposures to radiation or radioactive material;

(d) Instructed of their responsibility to report promptly to the licensee or registrant a condition which may lead to or cause a violation of the Act, 902 KAR Chapter 100 or license conditions, or unnecessary exposure to radiation or radioactive material;

(e) Instructed in the appropriate response to warnings made in the event of an unusual occurrence or malfunction that may involve exposure to radiation or

radioactive material; and

(f) Advised as to the radiation exposure reports which workers may request as authorized by Section 3 of this administrative regulation.

(2) In determining the individuals subject to the requirements of this section, licensees or registrants shall take into consideration assigned activities during normal and abnormal situations involving exposure to radioactive material or radiation, which can reasonably be expected to occur during the life of a licensed or registered facility. The extent of these instructions shall be commensurate with potential radiological health protection problems in the workplace.

Section 3. Notifications and Reports to Individuals. (1) Radiation exposure data for an individual and the results of measurements, analyses, and calculations of radioactive material deposited or retained in the body of an individual shall be reported to the individual as specified in this section.

(2) The information reported shall include data and results obtained as required by 902 KAR Chapter 100, orders, or license conditions, as shown in records maintained by the licensee or registrant as required by 902 KAR 100:019, Section 34.

(3) A notification and report shall:

(a) Be in writing;

(b) Include appropriate identifying data such as:

1. The name of the licensee or registrant;

2. The name of the individual; and

3. The individual's identification number or Social Security number.

(c) The individual's exposure information; and

(d) Contain the following statement: "This report is furnished to you under the provisions of the Kentucky Cabinet for Health Services' radiation administrative regulations, 902 KAR 100:165. [~~You should~~] P[~~p~~]reserve this report for further reference."

(4) A licensee or registrant shall advise the worker annually of the worker's exposure to radiation or radioactive material as shown in records maintained by the licensee or registrant required by 902 KAR 100:019, Section 34.

(5) At the request of a worker formerly engaged in work controlled by the licensee or the registrant, a licensee or registrant shall furnish to the worker a report of the worker's exposure to radiation or radioactive material. The report shall:

(a) Be furnished within thirty (30) days from the time request is made, or within thirty (30) days after the exposure of the individual has been determined by the licensee or registrant, whichever is later;

(b) Cover the period of time the worker's activities involved exposure to radiation from radioactive materials licensed by, or radiation machines registered with the cabinet; and

(c) Include the dates and locations of work under the license or registration in which the worker participated during this period.

(6) If a licensee or registrant is required, pursuant to 902 KAR 100:019, Sections 40, 41 and 42, to report to the cabinet an exposure of an individual to radiation or radioactive material, the licensee or the registrant shall also provide the individual a report on the exposure data included in the report to the cabinet. The reports shall be transmitted to the individual at a time not later than the transmittal to the cabinet.

(7)(a) At the request of a worker who is terminating employment, with the licensee or registrant in work involving exposure to radiation or radioactive material, during the current year, the licensee or registrant shall provide to the worker, or to the worker's designee, at termination, a written report regarding the radiation dose received by that worker from operations of the licensee or registrant during the current year or fraction thereof.

(b) If the most recent individual personnel monitoring results are not available at that time, a written estimate of the dose shall be provided.

(c) Estimated doses shall be clearly indicated as estimated doses.

Section 4. Presence of Representatives of Licensees or Registrants and Workers during Inspection. (1) A licensee or registrant shall afford to the cabinet at all reasonable times opportunity to inspect materials, machines, activities, facilities, premises, and records required by 902 KAR Chapter 100.

(2) During an inspection, cabinet inspectors may consult privately with workers as specified in Section 5 of this administrative regulation. The licensee or registrant may accompany cabinet inspectors during other phases of an inspection.

(3) If, during the inspection, an individual has been authorized by the workers to represent them during cabinet inspections, the licensee or registrant shall notify the inspectors of the authorization and shall give the workers' representative an opportunity to accompany the inspectors during the inspection of physical working conditions.

(4) The workers' representative shall be routinely engaged in work under control of the licensee or registrant and shall have received instructions as specified in Section 2 of this administrative regulation.

(5) Different representatives of licensees or registrants and workers may accompany the inspectors during different phases of an inspection if there is no resulting interference with the conduct of an inspection. However, only one (1) workers' representative at a time may accompany the inspectors.

(6) With the approval of the licensee or registrant and the workers' representative, an individual who is not routinely engaged in work under control of the licensee or registrant, for example, a consultant to the licensee or registrant or to the workers' representative, shall be afforded the opportunity to accompany cabinet inspectors during the inspection of physical working conditions.

(7) In addition to the other requirements of this section, cabinet inspectors are authorized to refuse to permit accompaniment by an individual who deliberately interferes with a fair and orderly inspection.

(8) With regards to areas containing information classified by an agency of the U.S. government in the interest of national security, an individual who accompanies an inspector shall have access to such information only if authorized to do so.

(9) With regard to an area containing proprietary information, the workers' representative for that area shall be an individual previously authorized by the licensee or registrant to enter that area.

Section 5. Consultation with Workers during Inspection.

(1) Cabinet inspectors may consult privately with workers concerning matters of occupational radiation protection and other matters related to 902 KAR Chapter 100 and licenses or registrations to the extent the inspectors deem necessary for the conduct of an effective and thorough inspection.

(2) During the course of an inspection a worker may bring privately to the attention of the inspectors, either orally or in writing, a past or present condition which he has reason to believe may have contributed to or caused a violation of the Act, 902 KAR Chapter 100, or license condition, or an unnecessary exposure of an individual to radiation from licensed radioactive material or a registered radiation machine under the licensee's or registrant's control. A written notice shall comply with the requirements of Section 6(1) of this administrative regulation.

(3) The requirements of subsection (2) of this section shall not be interpreted as authorization to disregard instructions required by Section 2 of this administrative regulation.

Section 6. Requests by Workers for Inspections. (1)(a) A worker or representative of workers who believes that a violation of the Act, 902 KAR Chapter 100 or license conditions exists or has occurred in work under a license or registration with regard to radiological working conditions in which the worker is engaged, may request an inspection by giving notice of the alleged violation to the Cabinet for Health Services, Radiation Control.

(b) The notice shall:

1. Be in writing;

2. Set forth the specific grounds for the notice; and

3. Be signed by the worker or representative of the workers.

(c) A copy shall be provided to the licensee or registrant by the cabinet no later than at the time of inspection. If the worker giving the notice requests, his name and the name of individuals referred to in the notice shall not appear in the copy or on a

record published, released, or made available by the cabinet, except for good cause shown.

(2) If, upon receipt of the notice, the Manager, Radiation Health and Toxic Agents Branch[~~Control~~], determines that the complaint meets the requirements set forth in subsection (1) of this section, and that there are reasonable grounds to believe that the alleged violation exists or has occurred, he shall cause an inspection to be made as soon as practicable, to determine if the alleged violation exists or has occurred. Inspections authorized by this section need not be limited to matters referred to in the complaint.

(3) A licensee or registrant or contractor or subcontractor of a licensee or registrant shall not discharge or in a[~~any~~] manner discriminate against a worker because the worker has:

(a) Filed a complaint;

(b) Instituted or caused to be instituted a proceeding under 902 KAR 100:170;

(c) Testified or is about to testify in a proceeding; or

(d) Exercised an option on behalf of himself or others afforded by this administrative regulation.

Section 7. Inspections not Warranted; Informal Review. (1)(a) If the Cabinet for Health Services, Radiation Health and Toxic Agents Branch[~~Control~~] determines, with respect to a complaint under Section 6 of this administrative regulation, that an inspection is not warranted because there are no reasonable grounds to believe that a violation exists or has occurred, the cabinet shall notify the complainant in writing of the determination.

(b) The complainant may obtain a review of the determination by submitting a written statement of position with the Commissioner, Department for Public Health. The commissioner shall provide the licensee or registrant with a copy of the statement by certified mail, excluding, at the request of the complainant, the name of the complainant.

(c) The licensee or registrant may submit an opposing written statement of position with the commissioner, who shall provide the complainant with a copy of the statement by certified mail.

(2) Upon the request of the complainant, the commissioner shall hold an administrative hearing in accordance with 902 KAR 1:400.

(3) If Radiation Health and Toxic Agents Branch[~~Control~~] determines that an inspection is not warranted because the requirements of Section 6(1) of this administrative regulation have not been met, the complainant shall be notified, in writing, of the determination. The determination shall be without prejudice to the filing of a new complaint meeting the requirements of Section 6(1) of this administrative regulation.

Section 8. Employee Protection. (1) Discrimination by a cabinet licensee, an applicant for a cabinet license, a registrant or a contractor or subcontractor of a cabinet licensee, registrant or applicant against an employee for engaging in certain protected activities is prohibited. Discrimination includes discharge and other actions that relate to compensation, terms, conditions, or privileges of employment.

(a) The protected activities include but are not limited to:

1. Providing the cabinet or his or her employer information about alleged violations or possible violations of requirements of 902 KAR Chapter 100;

2. Refusing to engage in a practice made unlawful under or under these requirements if the employee has identified the alleged illegality to the employer;

3. Requesting the cabinet to institute action against his or her employer for the administration or enforcement of these requirements;

4. Testifying in a cabinet proceeding, or before Congress, or at a Federal or State proceeding regarding a provision (or proposed provision) of 902 KAR Chapter 100.

5. Assisting or participating in, or is about to assist or participate in, these activities.

(b) These activities are protected even if no formal proceeding is actually initiated as a result of the employee assistance or participation.

(c) This section has no application to an employee alleging discrimination prohibited by this section who, acting without direction from his or her employer (or the employer's agent), deliberately causes a violation of a requirement of the Act or the administrative regulations promulgated under the Act.

(2) An employee who believes that he or she has been discharged or discriminated against by a person for engaging in protected activities specified in subsection (1)(a) of this section may seek a remedy for the discharge or discrimination through an administrative proceeding in the Department of Labor. The administrative proceeding shall be initiated within 180 days after an alleged violation occurs. The employee may do this by filing a complaint alleging the violation with the Department of Labor, Employment Standards Administration, Wage and Hour Division.

The Department of Labor may order reinstatement, back pay, and compensatory damages.

(3) A violation of subsections (1)and (6) of this section by a cabinet licensee, an applicant for a cabinet license, or a contractor or subcontractor of a cabinet licensee or applicant may be grounds for:

(a) Denial, revocation, or suspension of the license.

(b) Imposition of a penalties on the licensee or applicant.

(c) Other enforcement action.

(4) Actions taken by an employer, or others, which adversely affect an employee may be predicated upon nondiscriminatory grounds. The prohibition applies if the adverse action occurs because the employee has engaged in protected activities. An employee's engagement in protected activities does not automatically render him or her immune from discharge or discipline for legitimate reasons or from adverse action dictated by nonprohibited considerations.

(5) Agreement affecting the compensation, terms, conditions, or privileges of employment, including an agreement to settle a complaint filed by an employee with the Department of Labor may not contain a provision which may prohibit, restrict, or discourage an employee from participating in protected activity as defined in subsection (1)(a) of this section including, but not limited to, providing information to the cabinet or to his or her employer on potential violations or other matters within cabinet's regulatory responsibilities.

Section 9. Deliberate Misconduct. (1) A licensee, certificate of registration holder, applicant for a license, registrant or certificate of registration, employee of a licensee,

certificate of registration holder, or applicant; or a contractor (including a supplier or consultant), subcontractor, employee of a contractor or subcontractor of a licensee or certificate of registration holder or applicant for a license or certificate of registration, who knowingly provides to a licensee, registrant, applicant, certificate holder, contractor, or subcontractor, components, equipment, materials, or other goods or services that relate to a licensee's, certificate holder's or applicant's activities in 902 KAR Chapter 100, may not:

(a) Engage in deliberate misconduct that causes or may have caused, if not detected, a licensee, registrant, certificate of registration holder, or applicant to be in violation of a rule, regulation, or order; or a term, condition, or limitation of a license issued by the cabinet; or

(b) Deliberately submit to the cabinet, a licensee, registrant, certificate of registration holder, an applicant, or a licensee's, certificate holder's or applicant's, contractor or subcontractor, information that the person submitting the information knows to be incomplete or inaccurate in some respect material to the cabinet.

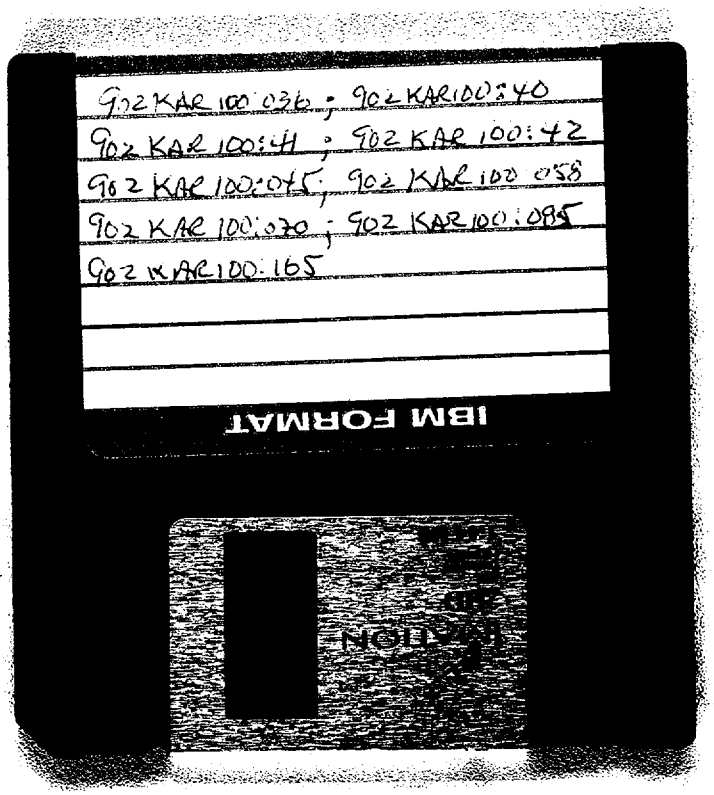
(2) A person who violates subsection (1)(a) or (1)(b) of this section may be subject to enforcement action in accordance with the procedures in 902 KAR 100:170.

(3) For the purposes of subsection (1)(a) of this section, deliberate misconduct by a person means an intentional act or omission that the person knows:

(a) May cause a licensee, registrant, certificate of registration holder or applicant to be in violation of a rule, regulation, or order; or a term, condition, or limitation, of a license or registration issued by the cabinet; or

(b) Constitutes a violation of a requirement, procedure, instruction,

contract, purchase order, or policy of a licensee, registrant certificate of registration holder, applicant, contractor, or subcontractor.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