



Arkansas Department of Health

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Fay W. Boozman, M.D. Director
Mike Huckabee, Governor

-VIA FEDERAL EXPRESS-

October 31, 2000

Mr. Paul H. Lohaus, Director
Office of State and Tribal Programs
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852-2738

Dear Mr. Lohaus:

Please find enclosed a copy of the Arkansas Department of Health's DRAFT Revisions for the Arkansas Rules and Regulations for Control of Sources of Ionizing Radiation. These particular DRAFT revisions relate only to the control of radioactive materials.

The Division will present its Rules and Regulation revisions to the Arkansas Board of Health on January 25, 2001. At that time, permission to proceed through the Arkansas Administrative Procedures Act process (i.e., public comments, public hearing(s), Legislative Committee reviews, etc.) will be requested. In order to the Board of Health meeting requirements, forty-five (45) copies of the DRAFT Revisions have to be provided for distribution on or before January 11, 2001.

A review by the U.S. Nuclear Regulatory Commission (NRC) of the attached Revisions is requested. Please note that in addition to a Table of Contents, a NRC Compatibility Listing has been prepared to assist in your review. You will note that our Revisions encompass more than regulations necessary to remain compatible with the NRC. The Department's Transportation Regulations have been restructured to meet current regulatory requirements. A new Section has been established to address the use of radionuclides in the Healing Arts.

Thank you for your and your staff's time and assistance in this review. If you have any questions regarding this requested review, please call Bernie Bevill or me. Our telephone number is (501) 661-2301.

Sincerely,

David D. Snellings, CHP, Director
Division of Radiation Control &
Emergency Management Programs

Attachment

pc: Bolling (NRC)

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OSP

Keeping Your Hometown Healthy

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RDS Code: SP08

**NRC REVIEW DRAFT
2000 REVISIONS
RULES & REGULATIONS FOR CONTROL OF
SOURCES OF IONIZING RADIATION**

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 2 OF 173

TABLE OF CONTENTS

<u>REGULATION TOPIC</u>	<u>PAGE NUMBER(S)</u>
Table of Contents	2-7
NRC Compatibility Listing	8-9
Typo Correction Table of Contents	11
C-14 Urea Exemption	11
Addition to Applications for a Specific License	11-13
C-14 Urea Manufacture	13-15
Low-Level Waste QA Program Change	15
Decommissioning Funding	15-16
Decommissioning Recordkeeping	17
Expansion of Expiration and Termination of Licenses	17-24
Record Requirement	24-26
DECOMMISSIONING FUNDING	
Appendix C: Criteria Related to Use of Financial Testing ... Companies Without Bonds	27-29
Appendix D: Criteria Related to Use of Financial Testing ... Nonprofit Colleges, etc.	30-32

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 3 OF 173

TABLE OF CONTENTS

<u>REGULATION TOPIC</u>	<u>PAGE NUMBER(S)</u>
Major Modification to schedule D	33-38
Radiation Protection Program/ALARA	39
Additional "Standard For Protection Against Radiation" Definitions	40-45
Minor Changes in Occupational Dose Limits	45
Minor Changes in Planned Special Exposure	46
Minor Changes in Dose to Embryo/Fetus	46-47
Dose Limits to Individual Members of the Public	47
Criteria For Release of Individuals Administered RAM	48-49
Radiological Criteria for License Termination	49-54
Survey Requirements	55
Individual Monitoring Requirements	55-56
Respiratory Protection	57-66
Exceptions From Posting	67
Transfer For Disposal and Manifests	68

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 4 OF 173

TABLE OF CONTENTS

<u>REGULATION TOPIC</u>	<u>PAGE NUMBER(S)</u>
Record Requirement Changes	69-70
Notification of Incidents	70-71
Resolution of Dual Regulation of Airborne Effluent of RAM (Clean Air Act)	72
Medical Administration of Radiation and RAM (misadministration)	73-76
Deliberate Misconduct	77
Records Required at Temporary Job Sites	78
Teletherapy Calibration References	78
INDUSTRIAL RADIOGRAPHY	
Definitions	79-83
Recordkeeping Requirements (RH-1800)	84-91
Performance Requirements For Equipment (RH-1801)	92-106
Conducting Radiographic Operations (RH-1802)	106-117
Conducting Radiographic Operations (con't) (RH-1803)	118-120

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 5 OF 173

TABLE OF CONTENTS

<u>REGULATION TOPIC</u>	<u>PAGE NUMBER(S)</u>
INDUSTRIAL RADIOGRAPHY	
Training -- Subjects To Be Covered (RH-1804)	120-122
Certification Appendix "IRC"	123-126
WELL LOGGING	
Definitions	127
Agreements With Well Owner	127-128
Radiation Detection Instruments	129
Leak Testing	130-131
Design and Performance Criteria	132-133
Uranium Sinker Bars	134
Energy Compensation Sources	134
Tritium Neutron Generator Target Source	134
Notification of Incidents and Lost Sources	135-136
"Instructions to Workers" Changes	137
TRANSPORTATION	
Part A. General Purpose & Scope	138-139
Part B. Definitions	140-148

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 6 OF 173

TABLE OF CONTENTS

<u>REGULATION TOPIC</u>	<u>PAGE NUMBER(S)</u>
TRANSPORTATION (Con't)	
Part C. General Regulation Provisions	
Requirements for License	149
Exemptions	150
Transportation of RAM	151
Part D. General Licenses	
For Carriers	152
For Approved NRC Packages	152-153
For Previously Approved Type B Packages	153
For DOT Specification Containers	153-154
For Use of Foreign Approved Packages	154
For Fissile Material	
Limited Qualities Per Package	154-156
Controlled Shipment	156-158
Part E. Operating Control and Procedures	
Control and Procedure	158
Routine Determination	158-161
Air Transport of Plutonium	162
Records	162-163
Reports	163
Advance Notification Of Transport of Nuclear Waste	163-165

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

TABLE OF CONTENTS

PAGE 7 OF 173

<u>REGULATION TOPIC</u>	<u>PAGE NUMBER(S)</u>
TRANSPORTATION (Con't)	
Part F. Quality Assurance	166
Irradiators (Typo Correction)	167
Use of Radionuclides In the Healing Arts	
Part A. General	168
Part B. Additional Requirements	
Visiting Authorized User	168
Part C. Specific Requirements	
Possession, use, calibration, Check of Dose Calibrator	169-170
Measurement of Dosages	170
Permissible MO-99 Concentration	171
Part D. Specific Requirements for the Use of Radiopharmaceuticals for Therapy	
Safety Instruction For Hospitalized Radiopharmaceutics for Therapy	172
Part E. Specific Requirements for the Use of Sources for Brachytherapy	
Use of Sources of Brachytherapy	173
Release of Patients Treated With Temporary Implants	173

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 8 OF 173

NRC COMPATIBILITY LISTING

<u>RATS ID</u>	<u>COMPATIBILITY TOPIC</u>	<u>PAGE NUMBER(S)</u>
1995-4	Performance Requirements for Radiography Equipment Part 34	92-106
1995-5	Radiation Protection Requirements: Amended Definitions and Criteria Parts 19, 20	40-45
1995-6	Clarification of Decommissioning Funding Requirements Parts 30, 40, 70	15-16; 27-32
1995-7	Medical Administration of Radiation and Radioactive Materials Parts 20, 35	73-76
1996-1	10 CFR Part 71: Compatibility with the International Atomic Energy Agency Part 71	138-139; 140-148
1997-1	Resolution of Dual Regulation of Airborne Effluents of Radioactive Materials; Clean Air Act Part 20	72
1997-2	Recognition of Agreement State Licenses in Areas Under Exclusive Federal Jurisdiction Within an Agreement State Part 150	VIA LICENSE CONDITION
1997-3	Criteria for the Release of Individuals Administered Radioactive Material Parts 20, 35	48-49

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 9 OF 173

NRC COMPATIBILITY LISTING

<u>RATS ID</u>	<u>COMPATIBILITY TOPIC</u>	<u>PAGE NUMBER(S)</u>
1997-4	Fissile Material Shipments and Exemptions Part 71	154-156; 156-158
1997-5	Licenses for Industrial Radiography and Radiation Safety Requirements for Industrial Radiography Operations Parts 30, 34, 71, 150	106-117; 118-120
1997-6	Radiological Criteria for License Termination Parts 20, 30, 40, 70	49-54
1997-7	Exempt Distribution of a Radioactive Drug Containing One Microcurie of Carbon-14 Urea Part 30	11; 13-15
1998-1	Deliberate Misconduct by Unlicensed Persons - Parts 30, 40, 61, 70, 150	77
1998-2	Self-Guarantee of Decommissioning Funding by Nonprofit and Non-Bond-Issuing Licensees Parts 30, 40, 70	27-29; 30-32
1998-4	Licenses for Industrial Radiography and Radiation Safety Requirements for Industrial Radiographic Operations Part 34	106-117 118-120
1998-5	Minor Corrections, Clarifying Changes, and a Minor Policy Change Parts 20, 35, 36	45-47

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 10 OF 173

NRC COMPATIBILITY LISTING

<u>RATS ID</u>	<u>COMPATIBILITY TOPIC</u>	<u>PAGE NUMBER(S)</u>
1998-6	Transfer for Disposal and Manifests: Minor Technical Conforming Amendment Part 20	68
1999-3	Respiratory Protection and Controls to Restrict Internal Exposure Part 20	57-66
2000-1	Energy Compensation Sources for Well Logging and Other Regulatory Clarifications Part 39	127; 134

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 11 OF 173

TABLE OF CONTENTS (typo correction)

In Table of Contents; on Page iii; Under RH-905. Schedule F; Quantities is MISSPELLED.

~~Quantities~~ Quantities of Radioactive Material Requiring Consideration of the Need for an Emergency Plan for Responding to a Release

ADD C-14 Urea Exemption to reflect NRC's 30.21.

- RH-301.f.1. Radioactive drug: Capsules containing carbon-14 urea for "in vivo" diagnostic use for humans. Except as provided in paragraphs RH-301.f.2. and RH-301.f.3., any person is exempt from the requirements for a license set forth in Section 5(c) of the Atomic Energy Act of 1954, as amended and from the regulations in this Section provided that such 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. Any person who desires to use the capsules for research involving human subjects shall apply for and receive a specific license pursuant to this Section.
 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 pursuant to RH-405.o.
 4. Nothing in this Section relieves persons from complying with applicable Food & Drug Administration (FDA), other Federal, and State requirements governing receipt, administration, and use of drugs.

Addition to "Application for Specific License" to reflect NRC's 30.32(g).

- RH-403.h. 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 either:
1. Identify the source or device by manufacturer and model number as registered with the U.S. Nuclear Regulatory Commission under RH-403.i. or with an Agreement State; or
 2. Contains the information identified in RH-403.i.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 12 OF 173

Addition to "Application for Specific License" to reflect NRC's 32.210.

RH-403.i. Registration of product information.

1. Any manufacturer or initial distributor of a sealed source or device containing a sealed source whose product is intended for use under a specific license may submit a request to the U.S. Nuclear Regulatory Commission (NRC) for evaluation of radiation safety information about its product and for its registration.
2. The request for review must be made in duplicate and sent to the U.S. Nuclear Regulatory Commission; Division of Industrial and Medical Nuclear Safety; Medical, Academic, and Commercial Use Safety Branch; Washington, D.C. 20555.
3. The request for review of a sealed source or a device must include sufficient information about the design, manufacture, prototype testing, quality control program, labeling, proposed uses and leak testing and, for a device, the request must also include sufficient information about installation, service and maintenance, operating and safety instructions, and its potential hazards, 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.
4. The NRC normally evaluates a sealed source or a device using radiation safety criteria in accepted industry standards. If these standards and criteria do not readily apply to a particular case, the NRC formulates reasonable standards and criteria with the help of the manufacturer or distributor. The NRC 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.
5. After completion of the evaluation, the Commission 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.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 13 OF 173

Addition to "Application for Specific License" to reflect NRC's 32.210

RH-403.i. Registration of product information. (Con't)

6. The person submitting the request for evaluation and registration of safety information about the product in accordance with:
 - i. The statements and representations, including quality control program, contained in the request; and
 - ii. The provisions of the registration certificate.

C-14 Urea Manufacture to reflect NRC's 32.21

RH-405.o. Radioactive drug: Manufacture, preparation, or transfer for commercial distribution of capsules containing carbon-14 urea for "in vivo" diagnostic use for humans to persons exempt from licensing; Requirements for a license.

1. An application for a specific license to manufacture, prepare, produce, package, repackage, or transfer for commercial distribution of capsules containing carbon-14 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, to persons exempt from licensing under RH-301.f. or the equivalent regulations of the Nuclear Regulatory Commission or of an Agreement State will be approved if:
 - a. The applicant satisfies the general requirements specified in RH-404, provided that the requirements of RH-404.a.1. and a.2. do not apply to an application for a license to transfer radioactive material manufactured, prepared, processed, produced, packaged, or repackaged pursuant to license issued by the Nuclear Regulatory Commission or another Agreement State;
 - b. The applicant meets the requirements under RH-405.1.1.B. of this Section;

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 14 OF 173

C-14 Urea Manufacture to reflect NRC's 32.21

RH-405.o. Radioactive drug: Manufacture, preparation, Requirements for a license (Con't)

- c. The applicant provides evidence that each capsule contains one (1) microcurie (37 kBq) carbon-14 urea (allowing for nominal variation that may occur during the manufacturing process);
 - d. The carbon -14 urea is not contained in any food, beverage, cosmetic, drug (except as describe in this Section) or other commodity designed for ingestion or inhalation by, or topical application to, a human being;
 - e. The carbon -14 urea is in the form of a capsule, identified as radioactive, and to be used for its radioactive properties, but is not incorporated into any manufactured or assembled commodity, product, or device intended for commercial distribution; and
 - f. The applicant submits copies of prototype labels and brochures and the Department approves these labels and brochures.
2. Nothing in this Section relieves the licensee from complying with applicable Food & Drug Administration (FDA), other Federal, and State requirements governing drugs.

C-14 Urea Manufacture to reflect NRC's 32.21(a)

RH-405.p. Radioactive drug: Manufacture, preparation, or transfer for commercial distribution of capsules containing carbon-14 urea for "in vivo" diagnostic use for humans to persons exempt from licensing; Conditions of license.

Each license issued under RH-405.o. is subject to the following conditions:

1. The immediate container of the capsule(s) must bear a durable, legible label which:
 - a. Identifies the radioisotope, the physical and chemical form, the quantity of radioactivity of each capsule at a specific date; and
 - b. Bears the words "Radioactive Material".

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 15 OF 173

C-14 Urea Manufacture to reflect NRC's 32.21(a)

RH-405.p. Radioactive drug: Manufacture, preparation, Conditions of license. (Con't)

2. In addition to the labeling information required by RH-405.p.1., the label affixed to the immediate container, or an accompanying brochure also must:
 - a. State that the contents are exempt from NRC or Agreement State licensing requirements; and
 - b. Bear the words "Radioactive Material. For "In Vivo" Diagnostic Use Only. This Material Is Not To Be Used for Research Involving Human Subjects and Must Not Be Introduced into Foods, Beverages, Cosmetics, or Other Drugs or Medicinals, or into Products Manufactured for Commercial Distribution. This Material May Be Disposed of in Ordinary Trash."

Low Level Waste (LLW) Quality Assurance Program to reflect NRC's 61.12(j).

RH-407.b.2.J.

- J. A description of the quality control assurance program, tailored to LLW disposal, developed and applied by the applicant for the determination of natural disposal site characteristics and for quality control assurance during the design, construction, operation and closure of the land disposal facility and the receipt, handling and emplacement of waste. Audits and managerial controls must be included

Decommissioning Funding to reflect NRC's 30.35(e).

RH-409.h.5.

5. Each The decommissioning funding plan must also contain a certification by the licensee that financial assurance cost/estimate 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 RH-409.h.6. and a description of the method of assuring funds for decommissioning from RH-409.h.6. including means of adjusting cost/estimates as associated funding levels periodically over the life of the facility

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 16 OF 173

Decommissioning Funding. (Con't)

RH-409.h.6.B. to reflect NRC's 30.35(f)(2).

- B. A surety method, insurance, or other guarantee method. These methods guarantee that decommissioning costs will be paid ~~should the licensee default~~. A surety method may be in the form of a surety bond, letter of credit, or line of credit. A parent company guarantee of funds for decommissioning costs based on a financial test may be used if the guarantee and test are as contained in Appendix A of this Part. A parent company guarantee may not be used in combination with other financial methods to satisfy the requirements of this Section.

For commercial corporations that issue bonds, a guarantee of funds by the applicant or licensee for decommissioning costs based on a financial test may be used if the guarantee and test are as contained in Appendix B of this Section. For commercial corporations that do not issue bonds, a guarantee of funds by the applicant or licensee for decommissioning costs may be used if the guarantee and test are as contained in Appendix C of this Section. For nonprofit entities, such as colleges, universities, and nonprofit hospitals, a guarantee of funds by the applicant or licensee may be used if the guarantee and test are as contained in Appendix D of this Section.

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 contained in Appendix B of this Part. A guarantee by the applicant or licensee may not be used in combination with any other financial methods to satisfy the requirements of this Section or in any situation where the applicant or licensee has a parent company holding majority control of the voting stock of the company. Any surety method ~~of~~ or insurance used to provide financial assurance for decommissioning must contain the following conditions:

ADD TO RH-409.h.6. to reflect NRC's 30.35(f)(5).

- E. When a governmental entity is assuming custody and ownership of a site, an arrangement by such governmental entity.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 17 OF 173

Decommissioning Recordkeeping.

AMENDMENT TO RH-409.h.7. to reflect NRC's 30.35(g).

7. ~~Facilities/individuals~~ Each person licensed under Section 2 shall keep records of information important to ~~the/safe/and/effective~~ decommissioning of a facility in an identified location until ~~the license/is/terminated/by/the/Department~~ the site is released for unrestricted use. Before licensed activities are transferred or assigned in accordance with RH-409.b., licensees shall transfer all records described in this paragraph to the new licensee. In this case, the new licensee will be responsible for maintaining these records until the license is terminated. If records ~~of/relevant information~~ important to the decommissioning of a facility are kept for other purposes, reference to these records and their locations may be used. Information the Department considers important to decommissioning consists of:

AMENDMENT TO RH-409.h.7.iv. to reflect 30.35(g)(3)(iv).

- iv. All areas outside of restricted areas which contain material such that, if the license expired, the licensee would be required to either decontaminate ~~the/dred/to/unrestricted/release/levels/to meet~~ the criteria for decommissioning in RH-410 or apply for approval for disposal under RH-1401.

Expansion of Expiration and Termination of License Regulations Adopting additional NRC Requirements (30.36 (b))

RH-410. Expiration and Termination of Licenses and Decommissioning of Sites and Separate Buildings or Outdoor Areas.

- a. Except as provided in Part D, RH-411.b, each specific license shall expire at the end of the day, in the month and year stated therein.
- b. Each specific license revoked by the Department expires with the Department's final determination to revoke the license, or the expiration date stated in the determination, or as otherwise provided by Department Order.
- b.c./ Each specific license continues in effect, beyond the expiration date if necessary, with respect to possession of radioactive material until the Department notifies the licensee in writing that the license is terminated. During this time, the licensee shall:

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 18 OF 173

Expansion of Expiration and Termination of License Regulations Adopting
additional NRC Requirements (30.36)

RH-410. Expiration and Termination of Licenses and Decommissioning of
Sites and Separate Buildings or Outdoor Areas. (Con't)

b.c./ (Con't)

1. Limit actions involving radioactive material to those related to decommissioning; and
2. Continue to control entry to restricted areas until they are suitable for release in accordance with Department requirements.

d./d. Within ~~60/(sixty)~~ (60) days of the occurrence of any of the following, each licensee shall provide notification to the Department in writing of such occurrence, and either 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 Department requirements, or submit within ~~12/(twelve)~~ (12) months of notification a decommissioning plan, if required by RH-410.f., and begin decommissioning upon approval of that plan if:

1. The license has expired pursuant to RH-410/a, or RH-410.b.; or
2. The licensee has decided to permanently cease principal activities, as defined in this Part, 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 Department requirements; or
3. No principal activities under the license have been conducted for a period of ~~24/(twenty-four)~~ (24) months; or
4. No principal activities under the license have been conducted for a period of ~~24/(twenty-four)~~ (24) months in any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for release in accordance with Department requirements.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 19 OF 173

Expansion of Expiration and Termination of License Regulations Adopting
additional NRC Requirements (30.36)

RH-410. Expiration and Termination of Licenses and Decommissioning of
Sites and Separate Buildings or Outdoor Areas. (Con't)

e. Coincident with the notification required by RH-410.c., the licensee shall maintain in effect all decommissioning financial assurances established by the licensee pursuant to RH-409.h. in conjunction with a license issuance or renewal or as required by RH-410. The amount of the financial assurance must be increased, or may be decreased, as appropriate, to cover the detailed cost estimate for decommissioning established pursuant to RH-410.g.4.v.

1. Any licensee who has not provided financial assurance to cover the detailed cost estimate submitted with the decommissioning plan shall do so when this regulation becomes effective.

2. 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 Department.

f. The Department may grant a request to extend the time periods established in RH-410.c. if the Department determines that this relief is not detrimental to the public health and safety and is otherwise in the public interest. The request must be submitted no later than thirty (30) days notification pursuant to RH-410.c. The schedule for decommissioning set forth in RH-410.c. may not commence until the Department has made a determination on the request.

g. 1. A decommissioning plan must be submitted if required by license conditions or if the procedures and activities necessary to carry out decommissioning of the site or separate building or outdoor area have not been previously approved by the Department and these procedures could increase potential health and safety impacts to workers or to the public, such as in any of the following cases:

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 20 OF 173

Expansion of Expiration and Termination of License Regulations Adopting
additional NRC Requirements (30.36)

RH-410. Expiration and Termination of Licenses and Decommissioning of
Sites and Separate Buildings or Outdoor Areas. (Con't)

g.1. (Con't)

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

(ii) Workers would be entering areas not normally occupied
where surface contamination and radiation levels are
significantly higher than routinely encountered during
operation;

(iii) Procedures could result in significantly greater
airborne concentrations of radioactive materials than
are present during operation; or

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

2. The Department may approve an alternate schedule for submittal of a
decommissioning plan required in RH-410.c. if the Department
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 otherwise
in the public interest.

3. Procedures such as those listed in RH-410.g. with potential health
and safety impacts may not be carried out prior to approval of the
decommissioning plan.

4. The proposed decommissioning plan for the site or separate building
or outdoor area must include:

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

(ii) A description of planned decommissioning activities;

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 21 OF 173

Expansion of Expiration and Termination of License Regulations Adopting
additional NRC Requirements (30.36)

RH-410. Expiration and Termination of Licenses and Decommissioning of
Sites and Separate Buildings or Outdoor Areas. (Con't)

g.4. (Con't)

- (iii) A description of methods used to ensure protection of
workers and the environment against radiation hazards
during decommissioning;
- (iv) A description of the planned final radiation survey;
and
- (v) An updated detailed cost estimate for decommissioning,
comparison of that estimate with present funds set
aside for decommissioning, and a plan for assuring the
availability of adequate funds for completion of
decommissioning.
- (vi) For decommissioning plans calling for completion of
decommissioning later than 24 months after plan
approval, the plan shall include a justification for
the delay based on the criteria in RH-410.h.

5. The proposed decommissioning plan will be approved by the Department
if the information therein demonstrates that the decommissioning will
be completed as soon as practicable and that the health and safety of
workers and the public will be adequately protected.

- h. 1. Except as provided in RH-410.h., licensees shall complete
decommissioning of the site or separate building or outdoor area
as soon as practicable but no later than 24 months following the
initiation of decommissioning.
- 2. Except as provided in RH-410.h., when decommissioning involves
the entire site, the licensee shall request license termination
as soon as practicable but no later than 24 months following the
initiation of decommissioning.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 22 OF 173

Expansion of Expiration and Termination of License Regulations Adopting
additional NRC Requirements (30.36)

RH-410. Expiration and Termination of Licenses and Decommissioning of
Sites and Separate Buildings or Outdoor Areas. (Con't)

- i. The Department 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
Department determines that the alternative is warranted by
consideration of the following:
 - 1. Whether it is technically feasible to complete decommissioning
within the allotted 24-month period;
 - 2. Whether sufficient waste disposal capacity is available to allow
completion of decommissioning within the allotted 24-month
period;
 - 3. Whether a significant volume reduction in wastes requiring
disposal will be achieved by allowing short-lived radionuclides
to decay;
 - 4. Whether a significant reduction in radiation exposure to workers
can be achieved by allowing short-lived radionuclides to decay;
and
 - 5. Other site-specific factors which the Department may consider
appropriate on a case-by-case basis, such as the regulatory
requirements of other government agencies, lawsuits,
ground-water treatment activities, monitored natural
ground-water restoration, actions could result in more
environmental harm than deferred cleanup, and other factors
beyond the control of the licensee.

- i. As the final step in decommissioning, the licensee shall
 - 1. Certify the disposition of all licensed material, including
accumulated wastes, by submitting a completed ADH FORM 314 or
equivalent information; and

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 23 OF 173

Expansion of Expiration and Termination of License Regulations Adopting additional NRC Requirements (30.36)

RH-410. Expiration and Termination of Licenses and Decommissioning of Sites and Separate Buildings or Outdoor Areas. (Con't)

j. As the final step in decommissioning, the licensee shall (Con't)

2. Conduct a radiation survey of the premises where the licensed activities were carried out and submit a report of the results of this survey, unless the licensee demonstrates in some other manner that the premises are suitable for release in accordance with the criteria for decommissioning in RH-1216, RH-1217, and/or RH-1218. The licensee shall, as appropriate:

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

(ii) Specify the survey instrument(s) used and certify that each instrument is properly calibrated and tested.

k. Specific licenses, including expired licenses, will be terminated by written notice to the licensee when the Department determines that:

1. Radioactive material has been properly disposed;

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

3. (i) A radiation survey has been performed which demonstrates that the premises are suitable for release in accordance with the criteria for decommissioning in RH-1216, RH-1217, and/or RH-1218; or

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 24 OF 173

Expansion of Expiration and Termination of License Regulations Adopting additional NRC Requirements (30.36)

RH-410. Expiration and Termination of Licenses and Decommissioning of Sites and Separate Buildings or Outdoor Areas. (Con't)

k.3. (Con't)

ii. Other information submitted by the licensee is sufficient that the premises are suitable for release in accordance with the criteria for decommissioning in RH-1216, RH-1217, and/or RH-1218.

4. Records required by RH-600 have been received.

Modification of Record Requirements Which Adopt Additional NRC Requirements as detailed in 30.51.

RH-600 Records.

a. Each person who receives a source of radiation pursuant to a license or registration under this Section shall keep records showing the receipt, transfer and disposal of such sources of radiation as follows:

1. The licensee or registrant shall retain record of receipt of radioactive material or a source of ionizing radiation as long as the material or source is possessed and for three (3) years following transfer or disposal of the material or source of radiation.

2. The licensee or registrant who transferred the material or source of radiation shall maintain each record of transfer for three (3) years after each transfer unless a specific requirement in another part of the regulations in this Section dictates otherwise.

3. The licensee or registrant who disposed of the material or source of radiation shall retain each record of disposal of radioactive material or source of radiation until the Department terminates each license or registration that authorizes disposal of the material or source of radiation.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 25 OF 173

Modification of Record Requirements Which Adopt Additional NRC Requirements as detailed in 30.51.

RH-600 Records. (Con't)

- b. Each licensee or registrant shall retain each record that is required by this Section for the period specified by the appropriate regulation or license condition. If a retention period is not otherwise specified by regulation or license condition, the record must be retained until the Department terminates each license or registration that authorizes the activity that is subject to the recordkeeping requirement.
- c.

 - 1. Records which must be maintained pursuant to this Section may be the original or a reproduced copy or microform if such reproduced copy or microform is duly authenticated by authorized personnel and the microform is capable of producing a clear and legible copy after storage for the period specified by Department regulations. The record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records such as letters, drawings, specifications, must include all pertinent information such as stamps, initials, and signatures. The licensee or registrant shall maintain adequate safeguards against tampering with and loss of records.
 - 2. If there is a conflict between the Department's regulations in this Section, license condition, or other written Department approval or authorization pertaining to the retention period for the same type of record, the retention period specified in the regulations in this Section for such records shall apply unless the Department, pursuant to RH-304, has granted a specific exemption from the record retention requirements specified in this Section.
- d. Prior to license termination, each 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 Department:

 - 1. Records of disposal of licensed material made under RH-1401, RH-1402, RH-1404, RH-1405; and
 - 2. Records required by RH-1500.c.2.D.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 26 OF 173

Modification of Record Requirements Which Adopt Additional NRC Requirements as detailed in 30.51.

RH-600 Records. (Con't)

e. If licensed activities are transferred or assigned in accordance with RH-409.b., each 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 and the new licensee will be responsible for maintaining these records until the license is terminated:

1. Records of disposal of licensed material made under RH-1401, RH-1402, RH-1404, RH-1405; and

2. Records required by RH-1500.c.2.D.

f/ Prior to license termination, each licensee shall forward the records required by RH-409(h)(7) to the Department.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 27 OF 173

Decommissioning Funding

NOTE: APPENDIX C to be placed after CURRENT Rules & Regulations Page 136d to reflect the new requirements in RH-409.h.6.B.

APPENDIX C: Criteria Relating to Use of Financial Tests and Self Guarantees for Providing Reasonable Assurance of Funds for Decommissioning by Commercial Companies That Have no Outstanding Rated Bonds

I. Introduction

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

II. Financial Test

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

- i. Tangible net worth greater than \$10 million, 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 all decommissioning activities for which the company is responsible as self-guaranteeing licensee and as parent-guarantor.
- ii. Assets located in the United States amounting to at least 90 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 all decommissioning activities for which the company is responsible as self-guaranteeing licensee and as parent-guarantor.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 28 OF 173

Decommissioning Funding

APPENDIX C (Con't)

II. Financial Test (Con't)

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

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

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

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

iii. If the licensee no longer meets the requirements of Section II.A of APPENDIX C, the licensee must send notice to the Department of its intent to establish alternate financial assurance as specified in the Department's Regulations. The notice must be sent by certified mail, return receipt requested, within 90 days after the end of the fiscal year for which the year end financial data show that the licensee no longer meets the financial test requirements. The licensee must provide alternative financial assurance within 120 days after the end of such fiscal year.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 29 OF 173

Decommissioning Funding

APPENDIX C (Con't)

III. Company Self-Guarantee

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

- A. The guarantee will remain in force unless the licensee sends notice of cancellation by certified mail, return receipt requested, to the Department. Cancellation may not occur until an alternative financial assurance mechanism is in place.
- B. The licensee shall provide alternative financial assurance as specified in the Department's regulations within 90 (ninety) days following receipt by the Department of a notice of cancellation of the guarantee.
- C. The guarantee and financial test provisions must remain in effect until the Department has terminated the license or until another financial assurance method acceptable to the Department has been put in effect by the licensee.
- D. The applicant or licensee must provide to the Department a written guarantee (a written commitment by a corporate officer) which states that the licensee will fund and carry out the required decommissioning activities or, upon issuance of an order by the Department, the licensee will set up and fund a trust in the amount of the current cost estimates for decommissioning.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 30 OF 173

Decommissioning Funding

NOTE: APPENDIX D will follow APPENDIX C after CURRENT Rules & Regulations Ppage 136d to reflect the new requirements in RH-409.h.6.B.

APPENDIX D: Criteria Relating to Use of Financial Tests and Self Guarantees for Providing Reasonable Assurance of Funds for Decommissioning by Nonprofit Colleges, Universities, and Hospitals

I. Introduction

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

II. Financial Test

- A. For colleges and universities, to pass the financial test, a college or university must meet either the criteria in Paragraph II.A.i. or the criteria in Paragraph II.A.ii. of this Appendix.
- i. 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.
- ii. For applicants or licensees that do not issue bonds, unrestricted endowment consisting of assets located in the United States of at least \$50 million, at least thirty (30) times the total current decommissioning cost estimate (or the current amount required if certification is used), whichever is greater, for all decommissioning activities for which the college or university is responsible as self-guaranteeing licensee and as parent-guarantor.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 31 OF 173

Decommissioning Funding

APPENDIX D (Con't)

II. Financial Test (Con't)

B. For hospitals, to pass the financial test, a hospital must meet either the criteria in Paragraph II.B.i. or the criteria in Paragraph II.B.ii. of this Appendix.

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

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

i. (Total Revenues less total expenditures) divided by total revenues must be equal to or greater than 0.04.

ii. Long term debt divided by net fixed assets must be less than or equal to 0.67

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

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

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

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

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 32 OF 173

Decommissioning Funding

APPENDIX D (Con't)

II. Financial Test (Con't)

- ii. After the initial financial test, the licensee must repeat the passage of the test within ninety (90) days after the close of each succeeding fiscal year.
- iii. If the licensee no longer meets the requirements of Section I of APPENDIX D, the licensee must send notice to the Department of its intent to establish alternate financial assurance as specified in the Department's Regulations. The notice must be sent by certified mail, return receipt requested, within 90 days after the end of the fiscal year for which the year end financial data show that the licensee no longer meets the financial test requirements. The licensee must provide alternative financial assurance within 120 days after the end of such fiscal year.

III. Self-Guarantee

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

- A. The guarantee will remain in force unless the licensee sends notice of cancellation by certified mail, and/or return receipt requested, to the Department. Cancellation may not occur unless an alternate financial assurance mechanism is in place.
- B. The licensee shall provide alternative financial assurance as specified in the Department's regulations within ninety (90) days following receipt by the Department of a notice of cancellation of the guarantee.
- C. The guarantee and financial test provisions must remain in effect until the Department has terminated the license or until another financial assurance method acceptable to the Department has been put in effect by the licensee.
- D. The applicant or licensee must provide to the Department a written guarantee (a written commitment by a corporate officer or officer of the institution) which states that the licensee will fund and carry out the required decommissioning activities or, upon issuance of an order by the Department, the licensee will set up and fund a trust in the amount of the current cost estimates for decommissioning.
- E. If, at any time, the licensee's most recent bond issuances ceases to be rated in any category of "A" or above by either Standard and Poors or Moodys, the licensee will provide notice in writing of such fact to the Department within twenty (20) days after publication of the change by the rating service.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 33 OF 173

AMEND RH-903 SCHEDULE D

RH-903 **Schedule D. Groups of Diagnostic Uses of Radioactive Material in Humans.**

Group I. Uptake, dilution and excretion studies (does not include imaging or tumor localizations).

- 11/ Chromium-51/as/labeled/human/serum/albumin/for
gastrointestinal/protein/loss/studies/
- 12/ Chromium-51/as/sodium/chromate/for/determination/of
red/blood/cell/volumes/and/studies/of/red/blood/cell
survival/time/
- 13/ Cobalt-57/Cobalt-58/or/Cobalt-60/as/labeled/cyanoh-
cobalamin/(vitamin/B12)/for/intestinal/absorption
studies/
- 14/ Iodine-123/as/sodium/iodide/for/measurement/of/thyroid
uptake/
- 15/ Iodine-123/as/sodium/iodohippurate/for/renal/function
studies/
- 16/ Iodine-125/as/iodohalate/sodium/for/the/evaluation/of
glomerular/filtration/
- 17/ Iodine-131/or/Iodine-125/as/labeled/fats/or/fatty
acids/for/fat/absorption/studies/
- 18/ Iodine-131/or/Iodine-125/as/iodinated/human/serum
albumin/(INSA)/for/determination/of/blood/and/blood
plasma/volume/
- 19/ Iodine-131/or/Iodine-125/as/labeled/iodopyracet/
sodium/iodohippurate/sodium/diazotate/diazotate
methyglucamine/sodium/dipropionate/sodium
acetate/or/sodium/iodohalate/for/kidney/function
studies/
- 10/ Iodine-131/or/Iodine-125/as/labeled/rose/bengal/for
liver/function/studies/
- 11/ Iodine-131/or/Iodine-125/as/sodium/iodide/for/thyroid
function/studies/
- 12/ Iron-59/as/chloride/citrate/or/sulfate/for/iron
turnover/studies/
- 13/ Mercury-197/as/chloromerodrin/for/kidney/function
studies/
- 14/ Potassium-42/as/chloride/for/potassium/space
determination/
- 15/ Sodium-24/as/chloride/for/sodium/space/determination/
- 16/ Technetium-99m/as/pertechnate/for/blood/flow/studies/

Any radioactive material in a radiopharmaceutical for uptake, dilution, or excretion studies. A licensee may use any of the material in a radiopharmaceutical for a diagnostic use involving measurements of uptake, dilution, or excretion for which the Food and Drug Administration (FDA) has a "Notice of Claimed Investigational Exemption for New Drug"(IND) or approved a "New Drug Application" (NDA).

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 34 OF 173

AMEND RH-903 SCHEDULE D (Con't)

Group I. Uptake, dilution and excretion studies (does not include imaging or tumor localizations).

NOTE: Group I is comparable to 10 CFR 35.100.

Group II. Imaging and tumor localizations.

- 11/ Chromium-51/as/sodium/chromate/for/spleen/imaging/
- 12/ Fluorine-18/as/fluoride/for/bone/imaging/agent/to
define/areas/of/altered/osteogenic/activity/
- 13/ Gallium-67/as/citrate/for/soft/tumor/localization/and
acute/inflammation/lesions/
- 14/ Gold-198/in/collodial/for/for/liver/imaging/
- 15/ Indium-111/chloride/as/indicator/for/colorectal/or
ovarian/imaging/
- 16/ Indium-111/as/pentate/indium/di-sodium/(DTPA)/for
cisternography/
- 17/ Indium-111/as/oxiquinolone/(oxine)/for/radiolabeling
of/ductal/glands/leukocytes/for/detection/of/inflammation
processes/
- 18/ Indium-113m/as/chloride/for/blood/pool/imaging
inclusion/placenta/localization/
- 19/ Iodine-123/as/iodide/for/thyroid/imaging/
- 20/ Iodine-123/as/sodium/iodohippurate/for/renal/imaging
and/renal/function/urinary/tract/di-stention/
- 11/ Iodine-123/as/iodofluorine/injection/(spectamine)/for
brain/imaging/and/evaluation/of/nodular/stroke/
- 12/ Iodine-125/as/sodium/iodohalamate/for/evaluation/of
glomerular/filtration/in/kidney/diagnosis/of/nodular
of/patients/renal/disease/
- 13/ Iodine-125/as/iodinated/for/blood/and/plasma/volume
determination/
- 14/ Iodine-125/as/fibrinogen/for/detection/and/nodular
of/develoing/deep vein/thrombosis/
- 15/ Iodine-131/as/collodial/(microaggregated)/iodinated
human/serum/albumin/for/liver/imaging/
- 16/ Iodine-131/as/iodinated/human/serum/albumin/(HSA)/for
brain/tumor/localizations/and/cardiac/imaging/
- 17/ Iodine-131/as/iodopyracet./sodium/iodohippurate/
sodium/diatrizoate./diatrizoate/methylglucamine/
sodium/di-pyrophosphate/or/sodium/acetate/for/kidney
imaging/
- 18/ Iodine-131/as/microaggregated/iodinated/human/serum
albumin/for/lung/imaging/
- 19/ Iodine-131/as/labelled/yose/bengal/for/liver/imaging/
- 20/ Iodine-131/or/iodine-125/as/sodium/iodide/for/thyroid
imaging/

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NRC REVIEW DRAFT OF 2000 REVISIONS
RULES & REGULATIONS FOR CONTROL OF
SOURCES OF IONIZING RADIATION

PAGE 35 OF 173

AMEND RH-903 SCHEDULE D (Con't)

Group II. Imaging and tumor localizations (Con't)

- 21/ Iodine-131/as/sodium/iodipamide/for/cardiac/imaging/
22/ Mercury-197/as/chloromerodrin/for/kidney/and/brain
imaging/
23/ Mercury-203/as/chloromerodrin/for/brain/imaging/
24/ Phosphorus-32/as/sodium/phosphate/for/localizing
ocular/tumors/or/cerebral/tumors/
25/ Selenium-75/as/labeled/selenonethionine/for/pancreas
imaging/
26/ Strontium-85/as/nitrate/or/chloride/for/bone/imaging
in/patients/with/suspected/or/diagnosed/cancer/
27/ Strontium-87m/as/chloride/for/bone/imaging/
28/ Technetium-99m/as/labeled/red/blood/cells/(ultracy)
for/blood/pool/imaging/including/cardiac/first/pass
and/gated/equilibrium/imaging/and/for/detection/of
sites/of/gastrointestinal/bleeding/
29/ Ithallium-201/as/chloride/for/myocardial/perfusion
imaging/and/parathyroid/hyperactivity/
30/ Xenon-127/as/gas/for/the/evaluation/of/pulmonary
function/and/for/imaging/the/lungs/
31/ Xenon-133/as/saline/solution/for/diagnosis/of
cardiac/abnormalities/cerebral/flood/flow/studies/
pulmonary/function/studies/muscle/blood/flow
studies/and/skin/blood/flow/
32/ Ytterbium-169/as/labeled/penetate/calcium/trisodium
(DTPA)/for/cisternography/
33/ Any/radioactive/material/in/a/radiopharmaceutical
prepared/from/a/reagent/kit/used/in/RH-903,
Schedule/D,/Group/III,/for/uses/used/in/Group/III/

Any radioactive material in a diagnostic radiopharmaceutical, except aerosol or gaseous form, or any generator or reagent kit for preparation and diagnostic use of a radiopharmaceutical containing radioactive material for which the Food and Drug Administration (FDA) has a "Notice of Claimed Investigational Exemption for New Drug" (IND) or approved a "New Drug Application" (NDA).

NOTE: Group II is comparable to 10 CFR 35.200.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS
RULES & REGULATIONS FOR CONTROL OF
SOURCES OF IONIZING RADIATION

PAGE 36 OF 173

AMEND RH-903 SCHEDULE D (Con't)

Group III. Generators and Reagent Kits.

- /1/ Molybdenum-99/Technetium-99m/generators/for/the
elution/of/Technetium-99m/as/pertechnetate/for/
a/ Brain/imaging/
b/ Thyroid/imaging/
c/ Salivary/gland/imaging/
d/ Blood/pool/imaging/incloding/placenta
localization/
e/ Blood/flow/studies/
f/ Direct/isotope/cystography/
g/ Urinary/bladder/imaging/for/detection/of
vesicoureteral/reflux/
h/ Nasolacrimal/imaging/
i/ Labeled/shunt/imaging/
j/ Use/with/reagent/kits/for/preparation/and/use
of/radiopharmaceuticals/containing/Technetium-99m
as/provided/in/subparagraph/B/of/Group/III/

/2/ Technetium-99m/as/pertechnetate/for/use/with/reagent
kits/for/preparation/and/use/of/radiopharmaceuticals
containing/Technetium-99m/as/provided/in/subpara-
graph/B/of/Group/III/

/3/ Reagent/kits/for/preparation/of/Technetium-99m/labeled/
a/ Albumin/colloid/for/reticuloendothelial/(RE)
system/imaging/of/liver/spleen/and/bone/marrow/
b/ Diethylenetriamine/pentaacetic/acid/(Sb)/for
brain/imaging/
c/ Diethylenetriamine/pentaacetic/acid/(Sb)/for
kidney/imaging/and/kidney/function/studies/
d/ Disofenin/for/hepatobiliary/imaging/
e/ Disulfonate/etidronate/complex/for/bone/imaging/
f/ Etidronate/for/bone/or/skeletal/imaging/agent/
g/ Exametazime/for/the/detection/of/regional
cerebral/perfusion/
h/ Glucetate/sodium/for/brain/imaging/and/renal
perfusion/studies/
i/ Human serum/albumin/for/heart/blood/pool/imaging/
j/ Human serum/albumin/microspheres/for/lung
imaging/radiounclide/venography/of/deep/vein
thrombosis/

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 37 OF 173

AMEND RH-903 SCHEDULE D (Con't)

Group III. Generators and Reagent Kits. (con't)

- /3/ Reagent/kits/for/preparation/of/Technetium-99m
labeled/(con't)
- K/ Iron/ascorbate/diethylenetriamine/pentaacetic
acid/complex/for/kidney/imaging;
- I/ Lidofenil/for/hepatobiliary/imaging;
- m/ Macroaggregated/human/serum/albumin/for/lung
imaging;/and/LaVeén/shunt/imaging;
- n/ Mertiatide/(MAG-3)/for/renal/imaging;
- o/ Mebrofenil/for/hepatobiliary/imaging;
- p/ Medronate/sodium/for/bone/imaging;
- q/ Oxidronate/sodium/for/bone/imaging;
- r/ Polyposphates/for/bone/imaging;
- s/ Pyro/and/Triphosphates/for/bone/and
cardiac/imaging;/gated/cardiac/bllood/pool
imaging;/gastrointestinal/bllood/studies;
- t/ Succimer/(DMSA)/for/renal/imaging;
- u/ Sulfur/diolid/for/liver;/spleen/and/bone
marrow/imaging;/for/esophageal/transit/and
gastrointestinal/reflux/studies;/for/gastroin-
testinal/imaging;/for/LaVeén/shunt/imaging;
for/detection/of/pulmonary/aspiration/of
gastriic/contents;
- v/ Sestamibi/as/myocardial/imaging/agent;
- w/ Tetroxime/as/myocardial/imaging/agent.

- /4/ Strontium-85/as/nitrate/used/as/a/bone/imaging/agent.

- /5/ Tin-113/Indium-113m/as/chloride/for/bllood/pool
imaging/ineluiding/placenta/labelization!

- /6/ Yttrium-87/Strontium-87m/generators/for/the/elution
of/Strontium-87m!

- /7/ Krypton-81m/gas/generator/for/the/study/of/pulmonary
ventilation!

Any radioactive material in a diagnostic radiopharmaceutical, except aerosol or gaseous form, or any generator or reagent kit for preparation and diagnostic use of a radiopharmaceutical containing radioactive material for which the Food and Drug Administration (FDA) has a "Notice of Claimed Investigational Exemption for New Drug"(IND) or approved a "New Drug Application" (NDA).

NOTE: Group III is comparable to 10 CFR 35.200.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 38 OF 173

AMEND RH-903 SCHEDULE D (Con't)

Group IV. Prepared Radiopharmaceuticals for Certain
Therapeutic Uses That Do Not Normally Require
Hospitalization for Purposes of Radiation Safety.

1. Iodine-131 as iodide for treatment of hyperthyroidism and cardiac dysfunction.
2. Phosphorus-32 as soluble phosphate for treatment of polycythemia vera, leukemia, bone metastases and localization of ocular tumors and cerebral tumors.
3. Phosphorus-32 as colloidal chromic phosphate for intracavitary treatment of malignant effusions.

NOTE: Group IV is comparable to 10 CFR 35.300. |

Group V. Prepared Radiopharmaceuticals for Certain
Therapeutic Uses That Normally Require
Hospitalization for Purposes of Radiation Safety.

1. Gold-198 as colloid for intracavitary treatment of malignant effusions and palliative management of ascites and pleural effusion.
2. Iodine-131 as iodide for treatment of thyroid carcinoma.

NOTE: Group V is comparable to 10 CFR 35.300. |

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 39 OF 173

Radiation Protection Programs/ALARA (Expansion to cover X-ray Programs)

RH-1004 Radiation Protection Programs

- a. Each licensee or registrant shall develop, document, and implement a radiation protection program commensurate with the scope and extent of licensed activities or x-ray equipment use and sufficient to ensure compliance with the provisions of this Part. (See RH-1500 for recordkeeping requirements relating to these programs.)
- b. The licensee or registrant shall use, to the extent ~~practicable~~ practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA).
- c. The licensee or registrant shall periodically (at least annually) review the radiation protection program content and implementation.

ADDITION TO REFLECT the NRC requirements in 20.1101(d) (61FR65120)

- d. To implement the ALARA requirements in RH-1004.b., and not withstanding the requirements in RH-1208, a constraint on air emissions of radioactive material to the environment, excluding Radon-222 and its daughters, shall be established by licensees such that the individual member of the public likely to receive the highest dose will not be expected to receive a total effective dose equivalent in excess of ten (10) mrem (0.1 mSv) per year from these emissions. If a licensee subject to this requirement exceeds this dose constraint, the licensee shall report the exceedance as provided in RH-1504 and promptly take appropriate corrective action to ensure against recurrence.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 40 OF 173

ADDITIONAL DEFINITIONS AND/OR CHANGES TO TO REFLECT NRC requirements in Part 20
"Radiation Protection Requirement: Amended Definitions and Criteria
10CFR parts 19 & 20 (60FR36038).

RH-1100 Definitions

- h. Air-purifying Respirator -- A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
- h/i. ALARA (acronym for "as low as is reasonably achievable") - Making every reasonable effort to maintain exposures to radiation as far below the dose limits in this Part as is practical consistent with the purpose for which the licensed activity or x-ray equipment use is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of x-ray equipment, nuclear energy and licensed materials in the public interest.
- i. Assigned protection factor (APF) -- The expected workplace level of respiratory protection that would be provided by a properly functioning respirator or a class of respirators to properly fitted and trained users. Operationally, the inhaled concentration can be estimated by dividing the ambient airborne concentration by the APF.
- m. Atmosphere-supplying respirator -- A respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.
- K/n. Background radiation - Radiation from cosmic sources, naturally occurring radioactive materials, including Radon (except as a decay product of source or special nuclear material) and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the control of the licensee or registrant.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 41 OF 173

RH-1100 Definitions (con't)

- u. Constraint (dose constraint) - a value above which specified licensee or registrant actions are required.
- w. Critical Group - the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances.
- §/x. Declared pregnant woman - A woman who has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception. The declaration remains in effect until the declared woman withdraws the declaration in writing or is no longer pregnant.
- y. Decommission - to remove a facility or site safely from service and reduce residual radioactivity to a level that permits --
- (1) Release of the property for unrestricted use and termination of the license; or
 - (2) Release of the property under restricted conditions and termination of the license.
- aa. Demand respirator -- An atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.
- ag. Disposable respirator -- A respirator for which maintenance is not intended and that is designed to be discarded after excessive breathing resistance, sorbent exhaustion, physical damage, or end-of-service-life renders it unsuitable for use. Examples of this type of respirator are a disposable half-mask respirator or a disposable escape-only self-contained breathing apparatus (SCBA).
- ah. Distinguishable from background - the detectable concentration of a radionuclide is statistically different from the background concentration of that radionuclide in the vicinity of the site or, in the case of structures, in similar materials using adequate measurement technology, survey, and statistical techniques.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 42 OF 173

RH-1100 Definitions (con't)

- av. Helmet -- A rigid respirator inlet covering that also provides head protection against impact and penetration.
- aw. High radiation area - An area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 0.1 rem (1 mSv) in one (1) hour at thirty 30 centimeters from the radiation source or thirty (30) centimeters from any surface that the radiation penetrates.
- ax. Hood -- A respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.
- bc. Lens/dose/equivalent (LDE)/-applies to the external exposure of the lens of the eye and is taken as the dose/equivalent at a tissue depth of 0.3 centimeter (300 mg/cm²).
- bh. Loose-fitting facepiece -- A respiratory inlet covering that is designed to form a partial seal with the face.
- bj. Member of the public - An individual except when that individual is receiving an occupational dose, in a controlled or unrestricted area. However, an individual is not a member of the public during any period in which the individual receives an occupational dose.
- bn. Negative pressure respirator (tight fitting) -- A respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.
- bg. Occupational dose - The dose received by an individual in a restricted area or in the course of employment in which the individual's assigned duties involve exposure to radiation and/or radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee or other person. Occupational dose does not include dose received from background radiation, as a patient from medical practices, from voluntary participation in medical research programs, or as a member of the general public.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 43 OF 173

RH-1100 Definitions (con't)

- bt. Positive pressure respirator -- a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
- bv. Powered air-purifying respirator (PADR) -- an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.
- bx. Pressure demand respirator -- a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.
- bzbz. Public dose - The dose received by a member of the public from exposure to radiation and/or radioactive material released by a licensee, or to any other source of radiation either within a licensee's controlled area or in unrestricted areas under the control of a licensee or registrant. It does not include occupational dose or doses received from background radiation, as a patient from medical practices, or from voluntary participation in medical research programs. Public dose does not include occupational dose or doses received from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released in accordance with RH-1214, or from voluntary participation in medical research programs.
- cd. Qualitative fit test -- a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.
- ce Quantitative fit test (QNFT) -- an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 44 OF 173

RH-1100 Definitions (con't)

- cp. Residual radioactivity - radioactivity in structures, materials, soils, groundwater, and other media at a site resulting from activities under the licensee's control. This includes radioactivity from all licensed and unlicensed sources used by the licensee, but, excludes background radiation. It also includes radioactive materials remaining at the site as a result of routine or accidental releases of radioactive material at the site even if those burials were made in accordance with the provision of Section 3. Part E. Waste Disposal.
- ct. Self-contained breathing apparatus (SCBA) -- an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.
- dc. Supplied-air respirator (SAR) or airline respirator -- an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.
- df. Temporary jobsite -- a location to which radioactive materials or x-ray equipment have been dispatched to perform one (1) or more of the following service operations:
- (1) Moisture/density measurements;
 - (2) Level measurements;
 - (3) Any portable devices containing radioactive materials; and/or
 - (3) Consulting services included, but not limited to:
 - i. Calibration of instruments;
 - ii. Repair of devices or sources;
 - iii. Sealed source installation and/or exchange;
 - iv. Decommissioning of sealed sources.
- dg. Tight-fitting facepiece -- a respiratory inlet covering that forms a complete seal with the face.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 45 OF 173

RH-1100 Definitions (con't)

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

dKd1. Very high radiation area - An area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of 500 rads (5 grays) in one (1) hour at one (1) meter from a radiation source or from any surface that the radiation penetrates.

Note: At very high doses received at high dose rates, units of absorbed dose (e.g., rads and grays) are appropriate, rather than units of dose equivalent (e.g., rems and sieverts).

CHANGES TO RH-1200. Occupational Dose Limits for Adults.

RH-1200. a.:

- a. The licensee or registrant shall control the occupational dose to individual adults, except for planned special exposures under RH-1205, to the following dose limits.
 1. An annual limit, which is the more limiting of:
 - i. The total effective dose equivalent being equal to 5 rems (0.05 Sv), or
 - ii. The sum of the deep-dose equivalent and the committed dose equivalent to any individual organ or tissue other than the lens of the eye being equal to 50 rems (0.5 Sv).
 2. The annual limits to the lens of the eye, to the skin, and to the extremities which are:
 - i. An eye lens dose equivalent of 15 rems (0.15 Sv), and
 - ii. A shallow-dose equivalent of 50 rems (0.50 Sv) to the skin or to each of the extremities.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 46 OF 173

CHANGES TO RH-1200. Occupational Dose Limits for Adults. (Con't)

RH-1200. b. thru c.:

- b. Doses received in excess of the annual limits, including doses received during accidents, emergencies, and planned special exposures, must be subtracted from the limits for planned special exposures that the individual may receive during the current year (See RH-1205.e.1.) and during the individual's lifetime (See RH-1205.e.2.).
- c. The assigned deep-dose equivalent and shallow-dose equivalent must be for the part of the body receiving the highest exposure. The deep-dose equivalent, ~~eye lens~~ eye lens dose equivalent, and shallow-dose equivalent may be assessed from surveys or other radiation measurements for the purpose of demonstrating compliance with the occupational dose limits, if the individual monitoring device was not in the region of highest potential exposure, or the results of individual monitoring are unavailable.

CHANGES TO RH-1205 Planned Special Exposures.

RH-1205 Planned Special Exposures.

A licensee or registrant may authorize an adult worker to receive doses in addition to and accounted for separately from the doses received under the limits specified in RH-1201 provided that each of the following conditions is satisfied:

- a. The licensee or registrant authorizes a planned special exposure only in an exceptional situation when alternatives that might avoid the ~~highest exposure~~ dose estimated to result from the planned special exposure are unavailable or impractical.

CHANGES TO RH-1207 Dose to an Embryo/Fetus.

RH-1207 Dose to an Embryo/Fetus.

- a. The licensee or registrant shall ensure that the dose equivalent to ~~in~~ the embryo/fetus during the entire pregnancy, due to occupational exposure of a declared pregnant woman, does not exceed 0.5 rem (5 mSv). (For recordkeeping requirements, see RH-1500.g.)

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 47 OF 173

CHANGES TO RH-1207 Dose to an Embryo/Fetus. (Con't)

- b. The licensee or registrant shall make efforts to avoid substantial variation above a uniform monthly exposure rate to a declared pregnant woman so as to satisfy the limit in Paragraph a of this Section.
- c. The dose equivalent to ~~the~~ the embryo/fetus ~~shall be taken as~~ is the sum of:
 1. The deep-dose equivalent to the declared pregnant woman; and
 2. The dose equivalent to the embryo/fetus resulting from radionuclides in the embryo/fetus and radionuclides in the declared pregnant woman.
- d. If the dose equivalent to the embryo/fetus is found to have exceeded 0.5 rem (5 mSv), or is within 0.05 rem (0.5 mSv) of this dose, by the time the woman declares the pregnancy to the licensee or registrant, the licensee or registrant shall be deemed to be in compliance with RH-1207.a., if the additional dose equivalent to the embryo/fetus does not exceed 0.05 rem (0.5 mSv) during the remainder of the pregnancy.

RH-1208 Dose Limits for Individual Members of the Public on page 170 to reflect the NRC requirements in 20.1301 (62FR4120).

RH-1208 Dose Limits for Individual Members of the Public.

- a. Each licensee or registrant shall conduct operations so that:
 1. The total effective dose equivalent to individual members of the public from the licensed or registered operation does not exceed 0.1 rem (1 ~~mSv~~ millisievert) in a year, exclusive of the dose contribution from the background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released in accordance with RH-1214, from voluntary participation in medical research program, and from licensee's disposal of radioactive material into sanitary sewerage in accordance with RH-1402; and
 2. The dose in any unrestricted area from external sources, exclusive of the dose contributions from patients administered radioactive material and released in accordance with RH-1214, does not exceed 0.002 rem (0.02 ~~mSv~~ millisievert) in any one hour.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 48 OF 173

Criteria for the Release of Individuals Administered Radioactive Material.

RH-1214. Release of Individuals containing radiopharmaceuticals or permanent implants.

- a. The licensee may authorize the release from its control of any individual who has been administered Iodine 131 as Sodium Iodide if the total patient concentration has been determined to be to be thirty (30) millicuries or less.
- b. The licensee may authorize the release from its control of any individual who has been administered radiopharmaceuticals with the exception of Iodine 131 as Sodium Iodide as referenced in RH-1214.a. or permanent implants containing radioactive material if the total effective dose equivalent to any other individual from exposure to the released individual is not likely to exceed 0.5 rem (5 millisieverts).^x
- c. The licensee shall provide the released individual with instructions, including written instructions, on actions recommended to maintain doses to other individuals as low as is reasonably achievable if the total effective dose equivalent to any other individual is likely to exceed 0.1 rem (one (1) millisieverts). If the dose to a breast-feeding infant or child could exceed 0.1 rem (one (1) millisieverts) assuming there were no interruption of breast-feeding, the instructions shall also include:
 1. Guidance on the interruption or discontinuation of breast-feeding and
 2. Information on the consequences of failure to follow the guidance.
- d. The licensee shall maintain a record of the basis for authorizing the release of an individual, for three (3) years after the date of release, if the total effective dose equivalent is calculated by:
 1. Using the retained activity rather than the activity administered,
 2. Using an occupancy factor less than 0.25 at one (1) meter,
 3. Using the biological or effective half-life, or
 4. Considering the shielding by tissue.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 49 OF 173

Criteria for the Release of Individuals Administered Radioactive Material.

RH-1214. Release of Individuals containing radiopharmaceuticals or permanent implants. (Con't)

- e. The licensee shall maintain a record, for three (3) years after the date of release, that instructions were provided to a breast-feeding woman if the radiation dose to the infant or child from continued breast-feeding could result in a total effective dose equivalent exceeding 0.5 rem (five (5) millisieverts).

FOOTNOTE x: U.S. Nuclear Regulatory Commission Regulatory Guide 8.39, "Release of Patients Administered Radioactive Materials," describes methods for calculating doses to other individuals and contains tables of activities not likely to cause doses exceeding 0.5 rem (five (5) millisieverts).

"Radiological Criteria for License Termination".

RH-1216. Radiological Criteria for Unrestricted Use.

A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 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 must take into account consideration of any detriments, such as deaths from transportation accidents, expected to potentially result from decontamination and waste disposal.

RH-1217. Criteria for License Termination Under Restricted Conditions.

A site will be considered acceptable for license termination under restricted conditions if:

- a. The licensee can demonstrate that further reductions in residual radioactivity necessary to comply with the provisions of RH-1217 would 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 any detriments, such as traffic accidents, expected to potentially result from decontamination and waste disposal;

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 50 OF 173

"Radiological Criteria for License Termination".

RH-1217. Criteria for License Termination Under Restricted Conditions.
(Con't)

- b. The licensee has made provisions for legally enforceable institutional controls that provide reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group will not exceed 25 mrem (0.25 mSv) per year;
- c. The licensee has provided sufficient financial assurance to enable an independent third party, including a governmental custodian of a site, to assume and carry out responsibilities for any necessary control and maintenance of the site. Acceptable financial assurance mechanisms are:
 - 1. Funds placed into an account segregated from the licensee's assets and outside the licensee's administrative control as described in RH-409.h.6.A.;
 - 2. Surety method, insurance, or other guarantee method as described in RH-409.h.6.B.;
 - 3. A statement of intent in the case of State or local Government licensees, as described in RH-409.h.6.D. or;
 - 4. When a government entity is assuming custody and ownership of a site, an arrangement that is deemed acceptable by such governmental entity.
- d. The licensee has submitted a decommissioning plan or License Termination Plan (LTP) to the Department indicating the licensee's intent to decommission in accordance with RH-410.d. 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.
 - 1. 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:

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 51 OF 173

Radiological Criteria for License Termination.

RH-1217. Criteria for License Termination Under Restricted Conditions.
(Con't)

d.1. Continued

- i. Whether provisions for institutional controls proposed by the licensee:
 - A. Will provide reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group will not exceed 25 mrem (0.25 mSv) TEDE per year;
 - B. Will be enforceable; and
 - C. Will not impose undue burdens on the local community or other affected parties.
- ii. Whether the licensee has provided sufficient financial assurance to enable an independent third party, including a governmental custodian of a site, to assume and carry out responsibilities for any necessary control and maintenance of the site;
2. In seeking advice on the issues identified in RH-1217.d.1., the licensee shall provide for:
 - i. Participation by representatives of a broad cross section of community interest who may be affected by the decommissioning;
 - ii. An opportunity for a comprehensive, collective discussion on the issues by the participants represented; and
 - iii. A publicly available summary of the results of all such 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

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 52 OF 173

Radiological Criteria for License Termination.

RH-1217. Criteria for License Termination Under Restricted Conditions.
(Con't)

- e. 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 would not exceed either:
1. 100 mrem (1mSv) per year; or
 2. 500 mrem (1mSv) per year provided the licensee
 - i. Demonstrates that further reductions in residual radioactivity necessary to comply with the 100 mrem/yr (1mSv/y) value of RH-1217.e.1. are not technically achievable, would be prohibitively expensive, or would result in net public or environmental harm;
 - ii. Makes provisions for durable institutional controls;
 - iii. Provides sufficient financial assurance to enable a responsible government entity or independent third party, including a governmental custodian of a site, both to carry out periodic rechecks of the site no less frequently than every five (5) years to assure that the institutional controls remain in place as necessary to meet the criteria of RH-1217.b. and to assume and carry out responsibilities for any necessary control and maintenance of those controls. Acceptable financial assurance mechanisms are those in RH-1217.c.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 53 OF 173

Radiological Criteria for License Termination.

RH-1218. Alternate Criteria for License Termination.

a. The Department may terminate a license using alternate criteria greater than the dose criterion of RH-1216, RH-1217.b., and RH-1217.d.1.i.A, if the licensee:

1. Provides assurance that public health and safety would continue to be protected, and that it is unlikely that the dose from all man-made sources combined, other than medical, would be more than the 100 mrem/y (1 mSv/y) limit of Part C (RH-1208 and RH-1209), by submitting an analysis of possible sources of exposure;
2. Has employed to the extent practical restrictions on site use according to the provisions of RH-1217 in minimizing exposures at the site; and
3. Reduces doses to ALARA levels, taking into consideration any detriments such as traffic accidents expected to potentially result from decontamination and waste disposal.
4. Has submitted a decommissioning plan or License Termination Plan (LTP) to the Department indicating the licensee's intent to decommission in accordance with RH-410.d. 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:
 - i. Participation by representatives of a broad cross section of community interests who may be affected by the decommissioning;
 - ii. An opportunity for a comprehensive, collective discussion on the issues by the participants represented; and

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 54 OF 173

Radiological Criteria for License Termination

RH-1218. Alternate Criteria for License Termination.

a.4. (Con't)

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

b. The use of alternate criteria to terminate a license requires the approval of the Department after consideration of the Department's staff recommendations that will address any comments provided by the U.S. Environmental Protection Agency, any other State Governmental organization, and any public comments submitted pursuant to RH-1219.

RH-1219. 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 RH-1217 or RH-1218, or whenever the Department deems such notice to be in the public interest, the Department shall:

a. Notify and solicit comments from:

1. Local and State government organizations in the vicinity of the site and any Indian Nation or any other indigenous people that have treaty or statutory rights that could be affected by the decommissioning; and
2. the Environmental Protection Agency (EPA) for cases where the licensee proposes to release a site pursuant to RH-1218.

b. 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.

RH-1220. Minimization of contamination.

Applicants for licenses, other than renewals, shall describe in the application how facility design and procedures for operation will minimize, to the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 55 OF 173

Survey Requirements.

RH-1300.b. Surveys.

- b. Each licensee or registrant shall make or cause to be made, surveys that:
1. May be necessary for the licensee or registrant to comply with the Regulations in this Part; and
 2. Are reasonable under the circumstances to evaluate:
 - i. The magnitude and extent of radiation levels,
 - ii. Concentrations or quantities of radioactive material, and
 - iii. The potential radiological hazards ~~that could be present.~~

Individual Monitoring Requirements.

RH-1302. Conditions Requiring Individual Monitoring of External and Internal Occupational Dose.

Each licensee or registrant shall monitor exposures to radiation and radioactive material at levels sufficient to demonstrate compliance with the occupational dose limits of this Part. As a minimum:

- a. Each licensee or registrant shall monitor occupational exposure to radiation from licensed and unlicensed radiation sources under the control of the licensee or registrant and shall supply and require the use of individual monitoring devices by:
1. Adults likely to receive, in one (1) year from sources external to the body, a dose in excess of ~~10~~ ten (10) percent of the limits in RH-1200.a;
 2. Minors ~~and declared pregnant women~~ likely to receive, in one (1) year, from radiation sources external to the body, a deep dose equivalent in excess of ~~10 percent of any of the applicable limits in RH-1206 or RH-1207~~ 0.1 rem (1 mSv), a lens dose equivalent in excess of 0.15 rem (1.5 mSv), or a shallow dose equivalent to the skin or the extremities in excess of 0.5 rem (5 mSv);

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 56 OF 173

Individual Monitoring Requirements

RH-1302. Conditions Requiring Individual Monitoring of External and Internal Occupational Dose. (Con't)

a. (Con't)

3. Declared pregnant women likely to receive during the entire pregnancy, from radiation sources external to the body, a deep dose equivalent in excess of 0.1 rem (1 mSv)* and

FOOTNOTE

(*)= All of the occupational doses in RH-1200 continues to be applicable to the declared pregnant worker as long as the embryo/fetus dose limit is not exceeded.

3/4. Individuals entering a high or very high radiation area.

b. Each licensee or registrant shall monitor (See RH-1203) the occupational intake of radioactive material by and assess the committed effective dose equivalent to:

1. Adults likely to receive, in one (1) year, an intake in excess of ~~70~~ ten (10) percent of the applicable ALI(s) in Table 1, Columns 1 and 2, of Appendix G to RH-1000 through RH-2110; and
2. Minors and declared pregnant women likely to receive, in one (1) year, a committed effective dose equivalent in excess of 0.05 rem (0.5 mSv).

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 57 OF 173

Respiratory Protection and Controls to Restrict Internal Exposure.

CHANGE RH-1303.f.4.Use of other controls.

4. Use of other controls.

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

Ai. Control of access;

Bii. Limitation of exposure times;

Ciii. Use of respiratory protection equipment; or

Div. Other controls.

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

CHANGE RH-1303.f.5. Use of individual respiratory protection equipment.

A. If the licensee uses assigns or permits the use of respiratory protection equipment to limit intakes pursuant to RH-1303.f.4.1 the intake of radioactive material.

i. The licensee shall use only respiratory protection equipment that is tested and certified or had certification extended by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration (NIOSH/MSHA) except as otherwise noted in this Part.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 58 OF 173

Respiratory Protection and Controls to Restrict Internal Exposure.

CHANGE RH-1303.f.5. Use of individual respiratory protection equipment.

CHANGE RH-1303.f.5.A. (Con't)

- ii. If the licensee wishes to use equipment that has not been tested or certified by NIOSH/MSHA, ~~has not had certification extended by NIOSH/MSHA,~~ or for which there is no schedule for testing or certification, the licensee shall submit an application for authorized use of ~~that~~ this equipment, ~~including a demonstration by testing or a demonstration on the basis of reliable test information, that the material and performance characteristics of the equipment are capable of providing the proposed degree of protection under anticipated conditions of use~~ except as provided in this Part. The application must include evidence that the material and performance characteristics of the equipment are capable of providing the proposed degree of protection under anticipated conditions of use. This must be demonstrated either by licensee testing or on the basis of reliable test information.
- iii. The licensee shall implement and maintain a respiratory protection program that includes:
 - (a). Air sampling sufficient to identify the potential hazard, permit proper equipment selection, and estimate ~~exposures~~ doses;
 - (b). Surveys and bioassays, as ~~appropriate~~ necessary, to evaluate actual intakes;
 - (c). Testing of respirators for operability (user seal check for face sealing devices and functional check for others) immediately prior to each use;

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 59 OF 173

Respiratory Protection and Controls to Restrict Internal Exposure.

CHANGE RH-1303.f.5. Use of individual respiratory protection equipment.

CHANGE RH-1303.f.5.A.iii. (Con't)

(d). Written procedures regarding: selection/fitting/issuance/maintenance/and/testing of respirators/including/testing for operability/immediately prior to each use/supervision/and/training of personnel/monitoring/including/air/sampling/and/bioassays/and/recordkeeping/and

(i) Monitoring, including air sampling and bioassays;

(ii) Supervision and training of respirator users;

(iii) Fit testing;

(iv) Respirator selection;

(v) Breathing air quality;

(vi) Inventory and control;

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

(viii) Recordkeeping; and

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

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 60 OF 173

Respiratory Protection and Controls to Restrict Internal Exposure.

CHANGE RH-1303.f.5. Use of individual respiratory protection equipment.

CHANGE RH-1303.f.5.A.iii. (Con't)

(e). Determination by a physician prior to initial fitting of respirators, and at least every twelve (12) months thereafter or periodically at a frequency determined by a physician, that the individual user is medically fit to use the respiratory protection equipment.

(f). Fit testing, with fit factor greater than or equal to (>) 10 times the APF for negative pressure devices, and a fit factor greater than or equal to (>) 500 for any positive pressure, continuous flow, and pressure-demand devices, before the first field use of tight fitting, face-sealing respirators and periodically thereafter at a frequency not to exceed one (1) year. Fit testing must be performed with the facepiece operating in the negative pressure mode.

DELETE CURRENT RH-1303.f.5.A.iv.

iv) The licensee shall issue a written policy statement on respirator usage covering:

(a) The use of process or other engineering controls, instead of respirators;

(b) The routine, non-routine, and emergency use of respirators; and

(c) The periods of respirator use and relief from respirator use.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 61 OF 173

Respiratory Protection and Controls to Restrict Internal Exposure.

CHANGE RH-1303.f.5. Use of individual respiratory protection equipment.

RENUNBER CURRENT RH-1303.f.5.A.v.

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

ADD NEW RH-1303.f.5.A.v.

v. The licensee shall also consider limitations appropriate to the type and mode of use. When selecting respiratory devices the licensee shall provide for vision correction, adequate communication, low temperature work environments, and the concurrent use of other safety or radiological protection equipment. The licensee shall use equipment in such a way as not to interfere with the proper operation of the respirator.

DELETE CURRENT RH-1303.f.5.A.vi.

~~*vi. The licensee shall use equipment within limitations for type and mode of use and shall provide proper visual, communication, and other special capabilities (such as adequate skin protection) when needed.*~~

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 62 OF 173

Respiratory Protection and Controls to Restrict Internal Exposure.

CHANGE RH-1303.f.5. Use of individual respiratory protection equipment.

ADD NEW RH-1303.f.5.A.vi.

vi. Standby rescue persons are required whenever one-piece atmosphere-supplying suits, or any combination of supplied air respiratory protection device and personnel protective equipment are used from which an unaided individual would have difficulty extricating himself or herself. The standby persons must be equipped with respiratory protection devices or other apparatus appropriate for the potential hazards. The standby rescue persons shall observe or otherwise maintain continuous communication with the workers (visual, voice, signal line, telephone, radio, or other suitable means), and be immediately available to assist them in case of a failure of the air supply or for any other reason that requires relief from distress. A sufficient number of standby rescue persons must be immediately available to assist all users of this type of equipment and to provide effective emergency rescue if needed.

ADD NEW RH-1303.f.5.A.vii.

viii. Atmosphere-supplying respirators must be supplied with respirable air of grade D quality or better as defined by the Compressed Gas Association in publication G-7.1, "Commodity Specification for Air," 1997 and included in the regulations of the Occupational Safety and Health Administration (29 CFR 1910.134(i)(1)(ii)(A) through (E). Grade D quality air criteria include:

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 63 OF 173

Respiratory Protection and Controls to Restrict Internal Exposure.

CHANGE RH-1303.f.5. Use of individual respiratory protection equipment.

ADD NEW RH-1303.f.5.A.viii. (Con't)

- (1) Oxygen content (v/v) of 19.5-23.5%;
- (2) Hydrocarbon (condensed) content of five (5) milligrams per cubic meter of air or less;
- (3) Carbon monoxide (CO) content of ten (10) ppm or less;
- (4) Carbon dioxide content of 1,000 ppm or less;
and
- (5) Lack of noticable odor.

ADD NEW RH-1303.f.5.A.ix.

- ix. The licensee shall ensure that no objects, materials or substances, such as facial hair, or any conditions that interfere with the face-facepiece seal or valve function, and that are under the control of the respirator wearer, are present between the skin of the wearer's face and the sealing surface of a tight-fitting respirator facepiece.

ADD NEW RH-1303.f.5.A.x.

- x. In estimating the dose to individuals from intake of airborne radioactive materials, the concentration of radioactive material in the air that is inhaled when respirators are worn is initially assumed to be the ambient concentration in air without respiratory protection, divided by the assigned protection factor. If the dose is later found to be greater than the estimated dose, the corrected value must be used. If the dose is later found to be less than the estimated dose, the corrected value may be used.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 64 OF 173

Respiratory Protection and Controls to Restrict Internal Exposure.

CHANGE RH-1303.f.5. Use of individual respiratory protection equipment.

DELETE OLD RH-1303.f.5.B.

B/ In estimating exposure of individuals to airborne radioactive materials, the licensee may make allowance for respiratory protection equipment used to limit intakes pursuant to RH-1303.f.4.i, provided that the following conditions, in addition to those in RH-1303.f.5.A, are satisfied:

i/ The licensee selects respiratory protection equipment that provides a protection factor (See Appendix E to RH-1000 through RH-2110) greater than the multiple by which peak concentrations of airborne radioactive materials in the working area are expected to exceed the values specified in Appendix G to RH-1000 through RH-2110, Table 1, Column 3. If the selection of a respiratory protection device with a protection factor greater than the peak concentration is inconsistent with the goal specified in RH-1303.f.4.i of keeping the total effective dose equivalent ALARA, the licensee may select respiratory protection equipment with a lower protection factor only if such a selection would result in keeping the total effective dose equivalent ALARA. The concentration of radioactive material in the air that is inhaled when respirators are worn may be initially estimated by dividing the average concentration in air during each period of uninterrupted use by the protection factor. If the exposure is later found to be greater than estimated, the corrected value must be used; if the exposure is later found to be less than estimated, the corrected value may be used.

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NRC REVIEW DRAFT OF 2000 REVISIONS
RULES & REGULATIONS FOR CONTROL OF
SOURCES OF IONIZING RADIATION

PAGE 65 OF 173

Respiratory Protection and Controls to Restrict Internal Exposure.

CHANGE RH-1303.f.5. Use of individual respiratory protection equipment.

DELETE OLD RH-1303.f.5.B. (Con't)

111. The licensee shall obtain authorization from the Department before assigning respiratory protection factors in excess of those specified in Appendix E to RH-1000 through RH-2110. The Department may authorize a licensee to use higher protection factors on receipt of an application that:

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

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

DELETE OLD RH-1303.f.5.C.

C1. The licensee shall use as emergency devices only respiratory protection equipment that has been specifically certified or had certification extended for emergency use by NIOSH/MSHA.

DB. The licensee shall notify, in writing, the Director of the Division of Radiation Control and Emergency Management at least 30 thirty (30) days before the date that respiratory protection equipment is first used under the provisions of RH-1303.f.5.A.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 66 OF 173

Respiratory Protection and Controls to Restrict Internal Exposure.

CHANGE RH-1303.f.6. Further restrictions on the use of respiratory protection equipment.

CHANGE RH-1303.f.6. TO READ:

RH-1303.f.6. Further restrictions on the use of respiratory protection equipment.

The Department may impose restrictions in addition to those in RH-1303.f.4 and RH-1303.f.5 and Appendix E to RH-1000 through RH-2110 to:

- A. Ensure that the respiratory protection program of the licensee is adequate to limit ~~exposures of~~ doses to individuals to from intakes of airborne radioactive materials consistent with maintaining total effective dose equivalent ALARA; and
- B. Limit the extent to which a licensee may use respiratory protection equipment instead of process or other engineering controls.

ADD RH-1303.f.7.

f.7. Application for use of higher assigned protection factors.

The licensee shall obtain authorization from the Department before using assigned protection factors in excess of those specified in Appendix E to RH-1000 through RH-2110. The Department may authorize a licensee to use higher assigned protection factors on receipt of an application that:

- A. Describes the situation for which a need exists for higher protection factors; and
- B. Demonstrates that the respiratory protection equipment provides these higher protection factors under the proposed conditions of use.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 67 OF 173

CHANGES TO RH-1304. Exceptions From Posting Requirements. to reflect NRC 20.1903.

- a. A room or area is not required to be posted with a caution sign because of the presence of a sealed source, provided the radiation level 12 twelve (12) inches (30 centimeters) from the surface of the source container or housing does not exceed five (5) millirems (0.05 mSv) per hour.
- b. Rooms or other areas in hospitals that are occupied by patients are not required to be posted with caution signs ~~and control of entrance or access thereto~~ pursuant to RH-1303 ~~is not required, because of the presence of patients containing radioactive material provided that there are personnel in attendance who will take the precautions necessary to prevent the exposure of any individual to radiation or radioactive material in excess of the limits established in these Regulations in this Part~~ provided that the patient could be released from licensee control pursuant to RH-1214.
- c. Caution signs are not required to be posted in areas or rooms containing radioactive materials for periods of less than eight (8) hours provided that:
 1. The materials are constantly attended during such periods by an individual who shall take the precautions necessary to prevent the exposure of any individual to radiation or radioactive materials in excess of the limits established in this Part; and
 2. Such area or room is subject to the licensee's control.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 68 OF 173

Transfer for Disposal and Manifests.

CHANGES TO RH--1406. Transfer for Disposal and Manifests.

DELETE CURRENT RH-1406.a.2.

2/ Beginning March 1, 1998, all affected licensees must use Appendix G to 10 CFR Part 20, prior to March 1, 1998, a LLW disposal facility operator or its regulatory authority may require the shipper to use Appendix F or Appendix G to 10 CFR Part 20. Licensees using Appendix F to 10 CFR Part 20 shall comply with RH-1406.b. of this Section. Licensees using Appendix G to 10 CFR Part 20 shall comply with RH-1406.b.2. of this Section.

AMEND CURRENT RH-1406.b. thru d.

b. 1/ Each shipment of radioactive waste intended for disposal at a licensed land disposal facility must be accompanied by a shipment manifest in accordance with Section II of Appendix F to 10 CFR Part 20.

2/ Any licensee shipping radioactive waste intended for ultimate disposal at a licensed land disposal facility must document the information required on the NRC's Uniform Low-Level Radioactive Waste Manifest and transfer this recorded manifest information to the intended consignee in accordance with Appendix G to 10 CFR Part 20.

c. Each shipment manifest must include a certification by the waste generator as specified in Section II of Appendix F or Appendix G to 10 CFR Part 20, as appropriate. See RH-1406.d.2. of this Section to determine the appropriate Appendix.

d. Each person involved in the transfer for disposal and disposal of waste, including the waste generator, waste collector, waste processor, and disposal facility operator, shall comply with the requirements specified in Section III of Appendix F or Appendix G to 10 CFR Part 20, as appropriate. See RH-1406.d.2. of this Section to determine the appropriate Appendix.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 69 OF 173

CHANGES TO RH-1500. a. General provisions.

1. Each licensee or registrant shall use the units: curie, rad, rem, including multiples and subdivisions, and shall clearly indicate the units of all quantities on records required by this Part.
2. In the records required by this Part, the licensee may record quantities in International System of Units (SI) units in parentheses following each of the units specified in RH-1500.a.1. of this section. However, all quantities must be recorded as stated in RH-1500.a.1. of this section.
23. Notwithstanding the requirements of RH-1500.a.1. of this Section when recording information on shipment manifests, as required in RH-1406.b. informations must be recorded in the International System of Units (SI) or; in SI and units as specified in RH-1500.a.1. of this Section.
24. The licensee or registrant shall make a clear distinction among the quantities entered on the records required by this Part (e.g., total effective dose equivalent, shallow-dose equivalent, eye dose equivalent, deep-dose equivalent, committed effective dose equivalent).

CHANGES TO RH-1500.f. Records of individual monitoring results.

1. Recordkeeping requirement. Each licensee or registrant shall maintain records of doses received by all individuals for whom monitoring was required pursuant to RH-1302, and records of doses received during planned special exposures, accidents, and emergency conditions. These records^{Z/} must include, when applicable:
 - A. The deep-dose equivalent to the whole body, eye dose equivalent, shallow-dose equivalent to the skin, and shallow-dose equivalent to the extremities;
 - B. The estimated intake ~~of body burden~~ of radionuclides (See RH-1201);

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 70 OF 173

CHANGES TO RH-1500.f. Records of individual monitoring results.

- C. The committed effective dose equivalent assigned to the intake or body burden of radionuclides;
- D. The specific information used to calculate the committed effective dose equivalent pursuant to RH-1203.c;
- E. The total effective dose equivalent when required by RH-1202; and
- F. The total of the deep-dose equivalent and the committed dose to the organ receiving the highest total dose.

CHANGES TO RH-1502. Notification of Incidents.

CHANGE RH-1502.a.1.

- a. Immediate notification. Each licensee or registrant shall immediately notify the Division of Radiation Control and Emergency Management, Arkansas Department of Health, 4815 West Markham, Mail Slot 30, Little Rock, Arkansas 72205-3867, by telephone and confirming letter of any incident involving any source of radiation possessed by the licensee or registrant and which may have caused or threatens to cause:
 - 1. An individual to receive:
 - A. A total effective dose equivalent of 25 rems (0.25 Sv) or more; or
 - B. ~~An/eye~~ A lens dose equivalent of 75 rems (0.75 Sv) or more; or
 - C. A shallow-dose equivalent to the skin or extremities of 250 rads (2.5 Gy) or more; or

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 71 OF 173

CHANGES TO RH-1502. Notification of Incidents.

CHANGE RH-1502.b.

b. Twenty-four hour notification. Each licensee or registrant shall within twenty-four (24) hours notify the Division of Radiation Control and Emergency Management, Arkansas Department of Health, 4815 West Markham, Mail Slot 30, Little Rock, Arkansas 72205-3867, by telephone and confirming letter of any incident involving any source of radiation possessed by the licensee or registrant and which may have caused or threatens to cause:

1. An individual to receive, in a period of ~~24~~ twenty-four (24) hours:
 - A. A total effective dose equivalent exceeding ~~5~~ five (5) rems (0.05 Sv); or
 - B. ~~An/eye~~ A lens dose equivalent exceeding ~~15~~ fifteen (15) rems (0.15 Sv); or
 - C. A shallow-dose equivalent to the skin or extremities exceeding ~~50~~ fifty (50) rems (0.5 Sv); or

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 72 OF 173

Resolution of Dual Regulation of Airborne Effluents of Radioactive Materials:
Clean Air Act.

AMEND RH-1504. Reports of Exposures, Radiation Levels, and Concentrations
of Radioactive Material Exceeding the Limits.

ADD TO RH-1504.a.2.

F. The ALARA constraints for air emissions established under
RH-1004.d.

AMEND RH-1504.b. Contents of reports.

CHANGE RH-1504.b.1.D.

D. Corrective steps taken or planned to ensure against a recurrence, including the schedule for achieving conformance with applicable limits, ALARA constraints, generally applicable environmental standards, and associated license conditions.

CHANGE RH-1504.b.2.

2. Each report filed pursuant to RH-1504.a of this Section must include for each occupationally overexposed⁹ individual: the name, Social Security account number, and date of birth. The report must be prepared so that this information is stated in a separate and detachable part of the report.

NOTE: FOOTNOTE #9 on page 510 reflects the NRC footnote pertaining to the limit for the embryo-fetus (RH-1027), the identifiers should be those of the declared pregnant woman.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 73 OF 173

Medical Administration of Radiation and Radioactive Materials.

NOTE: Close inspection of RH-1507.a. thru g. will indicate similar duplication of reporting requirements. RH-1507.e. thru g. are more recent additions of the Misadministration Requirements. In fact the current RH-1507.e. thru g. more closely reflect the NRC Part 35 Requirements as stated in 35.33.

RH-1507. Records and Reports of Misadministrations.

- a/ The licensee or registrant shall notify the Department by telephone and shall also notify the referring physician of the affected patient and the patient or a responsible relative (or guardian), unless the referring physician agrees to inform the patient or believes, based on medical judgment, that telling the patient or the patient's responsible relative (or guardian) would be harmful to one or the other, respectively. These notifications must be made within 24 hours after the licensee or registrant discovers the misadministration. If the referring physician, patient, or the patient's responsible relative (or guardian) cannot be reached within 24 hours, the licensee shall notify them as soon as practicable. The licensee is not required to notify the patient or patient's responsible relative (or guardian) without first consulting the referring physician, however, the licensee or registrant shall not delay medical care for the patient because of this.
- b/ Within 15 days after an initial misadministration report to the Department, the licensee or registrant shall report, in writing, to the Department and to the referring physician, and furnish a copy of the report to the patient or the patient's responsible relative (or guardian) if either was previously notified by the licensee or registrant under RH-1507.a. The written report must include the licensee's or registrant's name, the referring physician's name, a brief description of the event, the effect on the patient, the action taken to prevent recurrence, whether the licensee or registrant informed the patient or the patient's responsible relative (or guardian), and if not, why not. The report must not include the patient's name or other information that could lead to identification of the patient.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 74 OF 173

Medical Administration of Radiation and Radioactive Materials.

RH-1507. Records and Reports of Misadministrations.

c/ Each licensee or registrant shall retain a record of each misadministration for ten (10) years. The record must contain the names of all individuals involved in the event (including the physician, allied health personnel, the patient, and the patient's referring physician), the patient's social security number or identification number if one has been assigned, a brief description of the event, the effect on the patient, and the action taken, if any, to prevent recurrence.

d/ Aside from the notification requirement, nothing in this section affects any rights or duties of licensees or registrant and physicians in relation to each other, patients, or responsible relatives (or guardian).

ea. For a medical use misadministration:

1. The licensee or registrant shall notify the Department by telephone no later than the next calendar day after the discovery of the misadministration.
2. The licensee or registrant shall submit a written report to the Department within 15 fifteen (15) days after the discovery of the misadministration. The written report must include the licensee's or registrant's name; the prescribing physician's name; a brief description of the event; why the event occurred; the effect on the individual who received the misadministration; what improvements are needed to prevent recurrence; actions taken to prevent recurrence; whether the licensee or registrant notified the individual patient, or the patient's responsible relative or guardian (or the individual's responsible relative or guardian), (This person will be subsequently referred to as the patient in this section) and if not, why not; and if the patient was notified, if there was notification, what information was provided to the patient. The report must not include the patient's individual's name or any other information that could lead to identification of the patient individual. To meet the requirements of this section, the notification of the individual receiving the misadministration may be made instead to that individual's responsible relative or guardian when appropriate.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 75 OF 173

Medical Administration of Radiation and Radioactive Materials.

RH-1507. Records and Reports of Misadministrations.

ea. For a medical/used misadministration: (con't)

3. The licensee or registrant shall notify the referring physician and also notify the patient/of the misadministration individual receiving the misadministration no later than 24 hours after its discovery, unless the referring physician personally informs the licensee or registrant either that he/she will inform the patient individual or that, based on medical judgment, telling the patient individual would be harmful. The licensee or registrant is not required to notify the patient individual without first consulting the referring physician. If the referring physician or patient the individual receiving the misadministration cannot be reached within 24 twenty-four (24) hours, the licensee or registrant shall notify the patient individual as soon as possible thereafter. The licensee or registrant may not delay any appropriate medical care for the patient individual, including any necessary remedial care as a result of the misadministration, because of any delay in notification.

4. If the patient individual was notified, the licensee or registrant shall also furnish, within 15 fifteen (15) days after discovery of the misadministration, a written report to the patient individual by sending either:
 - A. A copy of the report that was submitted to the Department; or
 - B. A brief description of both the event and the consequences as they may affect the individual, provided a statement is included that the report submitted to the Department can be obtained from the licensee or registrant.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 76 OF 173

Medical Administration of Radiation and Radioactive Materials.

- ea. For a ~~medical/use~~ misadministration: (con't)
- b. Each licensee or registrant shall retain a record of each misadministration for five (5) years. The record must contain the names of all individuals involved (including the prescribing physician, allied health personnel, the ~~patient individual who received the misadministration~~, and the ~~patient's individual's referring physician, if applicable~~), the ~~patient's individual's~~ social security number or other identification number if one has been assigned, a brief description of the misadministration, why it occurred, the effect on the ~~patient individual~~, what improvements are needed to prevent recurrence, and the actions taken to prevent recurrence.
- c. Aside from the notification requirement, nothing in this Section affects any rights or duties of licensees or registrants and physicians in relation to each other, to ~~patients individuals receiving misadministrations~~, or that ~~patient's individual's~~ responsible relatives or guardians.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 77 OF 173

Deliberate Misconduct by Unlicensed Persons.

AMEND RH-1511 -- "Deliberate Misconduct"

- a. Any licensee, registrant, certificate of registration holder, applicant for a license or certificate of registration, employee of a licensee or registrant, certificate of registration holder or applicant; or any contractor (including a supplier or consultant), subcontractor, employee of a contractor or subcontractor, of any licensee, registrant or certificate of registration holder or applicant for a license, registration, or certificate of registration, who knowingly provides to any licensee, registrant, applicant, certificate holder, contractor or subcontractor, any components, equipment, materials or other goods or services that relate to a licensee's, registrant's, certificate holder's or applicant's activities subject to this Part may not:
 1. Engage in deliberate misconduct that causes or ~~is the cause of~~ detection, would have caused, if not detected, a licensee, registrant, certificate of registration holder, or applicant to be in violation of any rule, regulation, or order; or any term, condition, or limitation of any license, issued by the Department; or
 2. Deliberately submit to the Department, a licensee, registrant, certificate of registration holder, an applicant, or a licensee's or registrant's contractor or subcontractor, information that the person submitting the information knows to be incomplete or inaccurate in some respect material to the Department.
- b. A person who violates RH-1511.a.1 or 2 of this Section may be subject to enforcement action in accordance with the procedures in RH-2110.
- c. For purposes of RH-1511.a.1, deliberate misconduct by a person means an intentional act or omission that the person knows:
 1. Would cause a licensee, registrant, certificate of registration holder, or applicant to be in violation of any rule, regulation, or order; or any term, condition, or limitation, of any license issued by the Department; or
 2. Constitutes a violation of a requirement, procedure, instruction, contract, purchase order or policy of a licensee, registrant, certificate of registration holder, contractor, or subcontractor.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 78 OF 173

RECORDS REQUIRED AT TEMPORARY JOBSITES.

ADD RH-1512 -- "Records Required at Temporary Jobsites"

RH-1512. Records Required at Temporary Jobsites

- a. Each licensee or registrant conducting activities as defined in RH-1100.df. shall have the following records available at the temporary jobsite for inspection by the Department:
1. Current copy of appropriate license issued by the Department, the U.S. Nuclear Regulatory Commission, or an Agreement State.
 2. A copy of these regulations.
 3. Operating and Emergency Procedures.
 4. The latest instrument calibration, if applicable.
 5. Survey records required pursuant to RH-1803.c. for the period of operation at the jobsite, if applicable.
 6. The latest leak test record for the device(s) in use at the jobsite.
 7. Daily pocket dosimeter record for the period of operation at the jobsite, if applicable.

TELE THERAPY CALIBRATION: MISPLACED REFERENCES

RH-1702 e. Requirement to Perform Full Calibration Measurements of Teletherapy Units.

2. Full calibration measurements required by RH-1702.~~g~~.1 of this Section shall include determination of:

RH-1702 h. Qualified Expert.

2. Licensees that have their teletherapy units calibrated by individuals that do not meet these criteria for minimum training and experience may request a license amendment excepting them from RH-1702.h.1. The request should include the name of the proposed expert, a description of the individual's training and experience including information similar to that specified in RH-1100.~~h~~ca., reports of at least one calibration and spot-check program based on measurements personally made by the proposed expert within the last 10 years and written endorsement of the technical qualifications of the proposed expert from the personal knowledge by a physicist certified by the American Board of Radiology in one of the specialties listed in RH-1100.~~h~~ca.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 79 OF 173

Licenses for Industrial Radiography and Radiation Safety - Requirements for Industrial Radiography Operations.

ADD OR AMEND DEFINITIONS TO RH-1800.c THAT ARE EQUIVALENT TO NRC 34.3.

2. ALARA (acronym for "as low as is reasonably achievable") - Making every reasonable effort to maintain exposures to radiation as far below the dose limits specified in Part C. PERMISSIBLE DOSES, LEVELS, AND CONCENTRATIONS as is practical consistent with the purpose for which the licensed or registered activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvement in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy, licensed materials, and x-ray equipment in the public interest.
3. Annual refresher safety training - A review conducted or provided by the licensee or registrant for its employees on radiation safety aspects of industrial radiography. The review may include, as appropriate, the results of internal inspections, new procedures or equipment, new or revised regulations, accidents or errors that have been observed, and should also provide opportunities for employees to ask safety questions.
4. Associated equipment - Equipment that is used in conjunction with a radiographic exposures device to make radiographic exposures that drives, guides, or comes in contact with the source, (e.g., guide tube, control tube, control (drive) cable, removable source stop, "J" tube and collimator when it is used as an exposure head.
6. Becquerel (Bq) - One disintegration per second.
10. Certifying Entity - An independent certifying organization meeting the requirements in Appendix "IRC" or an Agreement State meeting the requirements in Appendix "IRC", Parts II and III of this Part.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 80 OF 173

Licenses for Industrial Radiography and Radiation Safety - Requirements for Industrial Radiography Operations.

ADD OR AMEND DEFINITIONS TO RH-1800.c THAT ARE EQUIVALENT TO NRC 34.3.

11. Collimator - A device used to limit the size and direction of the primary beam radiation shield that is placed on the end of the guide tube or directly onto a radiographic exposure device to restrict the size of the radiation beam when the sealed source is cranked into position to make a radiographic exposure.
12. Control (drive) cable - The cable that is connected to the source assembly and used to drive the source to and from the exposure location.
13. Control drive mechanism - A device that enables the source assembly to be moved to and from the exposure device.
14. Control tube - A protective sheath for guiding the control cable. The control tube connects the control drive mechanism to the radiographic exposure device.
17. Exposure head - A device that locates the gamma radiography sealed source in the selected working position. (An exposure head is also known as a source stop).
19. Field station - A facility where licensed material or registered x-ray equipment may be stored or used and from which equipment is dispatched.
21. Gray - The SI unit of absorbed dose. A gray is equal to an absorbed dose of one (1) Joule/kilogram. It is also equal to 100 rads.
22. Guide tube (Projection sheath) - A flexible or rigid tube (i.e., "J" tube) for guiding the source assembly and the attached control cable from the exposure device and to the exposure head.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 81 OF 173

Licenses for Industrial Radiography and Radiation Safety - Requirements for Industrial Radiography Operations.

ADD OR AMEND DEFINITIONS TO RH-1800.c THAT ARE EQUIVALENT TO NRC 34.3.

24. Hands-on experience - Experience in all of those areas considered to be directly involved in the radiography process.
25. Independent Certifying Organization - An independent organization that meets all the criteria of Appendix "IRC".
1226. Industrial radiography (radiography) - ~~The~~ An examination of the ~~macroscopic~~ structure of materials by non-destructive methods, utilizing ~~sources of radiation~~ ionizing radiation to make radiographic images.
27. Lay-barge radiography - Industrial radiography performed on any water vessel used for laying pipe.
1228. Permanent radiographic installation - ~~A shielded installation of structure designed or intended for radiography~~ An enclosed shielded room, cell, or vault, not located at a temporary jobsite, in which radiography is ~~regularly~~ performed.
33. Practical Examination - A demonstration through practical application of the safety rules and principles in industrial radiography including use of all appropriate equipment and procedures.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 82 OF 173

Licenses for Industrial Radiography and Radiation Safety - Requirements for Industrial Radiography Operations.

ADD OR AMEND DEFINITIONS TO RH-1800.c THAT ARE EQUIVALENT TO NRC 34.3.

35. Radiation Safety Officer for industrial radiography - An individual with the responsibility for the overall radiation safety program on behalf of the licensee or registrant and who meets the requirements of RH-1802.d.
1837. Radiographer's assistant - Any individual who, under the personal direct supervision of a radiographer, uses sources of radiation radiographic exposure devices, sealed sources or related handling tools, or radiation survey instruments instrumentation in industrial radiography.
38. Radiographer certification - Written approval received from a certifying entity stating that an individual has satisfactorily met certain established radiation safety, testing, and experience criteria.
41. Radiographic operations - All activities associated with the presence of radioactive sources in a radiographic exposure device or x-ray equipment during use of the device or transport (except when being transported by a common or contract transport), to include surveys to confirm the adequacy of boundaries, setting up equipment and any activity inside restricted area boundaries.
43. S-tube - A tube through which the radioactive source travels when inside a radiographic exposure device.
45. Sealed source - Any radioactive material that is encased in a capsule designed to prevent leakage or escape of the radioactive material.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 83 OF 173

Licenses for Industrial Radiography and Radiation Safety - Requirements for Industrial Radiography Operations.

ADD OR AMEND DEFINITIONS TO RH-1800.c THAT ARE EQUIVALENT TO NRC 34.3.

2446. Shielded position - The location within the radiographic exposure device or storage source changer which/by manufacturer's/design/is/the/proper/location/for/storage/of/the sealed/source where the sealed source is secured and restricted from movement.
48. Sievert - The SI unit of any of the quantities expressed as dose equivalent. The dose equivalent in sieverts is equal to the absorbed dose in grays multiplied by the quality factor (1Sv = 100 rems).
49. Source Assembly - An assembly that consists of the sealed source and a connector that attaches the source to the control cable. The source assembly may also include a stop ball used to secure the source in the shielded position.
2050. Storage container - A container in which sealed sources are transported/or secured and stored.
2053. Temporary job site - Any A location where industrial/radiography is/performed/other/than/specific/locations/listed/in/a/license or/certificate/of/registration radiographic operations are conducted and where licensed material may be stored other than the location(s) of use authorized on the license or registration.
55. Underwater radiography - Industrial radiography performed when the radiographic exposure device and/or related equipment are beneath the surface of the water.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 84 OF 173

Licenses for Industrial Radiography and Radiation Safety - Requirements for Industrial Radiography Operations.

AMEND RH-1800.d. to reflect the NRC's Part 34 Recordkeeping Requirements

d. Maintenance of records.

Each record required by this Part must be legible throughout the retention period specified by each Department Regulation. The record may be the original of a reproduced copy of a microform, provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of producing a clear copy throughout the required retention period. The record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records such as letters, drawings, and specifications must include all pertinent information such as stamps, initials, and signatures. The licensee or registrant shall retain adequate safeguards against tampering with and loss of records.

AMEND TO READ

d. Recordkeeping Requirements.

1. Records of the specific license for industrial radiography.

Each licensee shall maintain a copy of its license, license conditions, documents incorporated by reference, and amendments to each of these items until superseded by new documents approved by the Department or until the Department terminates the license.

2. Records of receipt and transfer of sealed sources.

(i) Each licensee shall maintain records showing the receipts and transfers of sealed sources and devices using depleted uranium (DU) for shielding and retain each record for three (3) years after it is made.

(ii) These records must include the date, the name of the individual making the record, radionuclide, number of curies (becquerels) or mass (for depleted uranium (DU)) and manufacturer, model, and serial number of each sealed source and/or device, as appropriate.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 85 OF 173

Licenses for Industrial Radiography and Radiation Safety - Requirements for Industrial Radiography Operations".

AMEND RH-1800.d. to reflect the NRC's Part 34 Recordkeeping Requirements.

d. Recordkeeping Requirements.

3. Records of radiation survey instruments

Each licensee or registrant shall maintain records of the calibrations of its radiation survey instruments that are required in RH-1801.e. and retain each record for three (3) years after it is made.

4. Records of leak testing of sealed sources and devices containing depleted uranium (DU)

Each licensee shall maintain records of leak test results for sealed sources and for devices containing depleted uranium (DU). The results must be stated in units of microcuries (becquerels). The licensee shall retain each record for three (3) years after it is made or until the source in storage is removed.

5. Records of quarterly inventory.

i. Each licensee shall maintain records of the quarterly inventory of sealed sources and of devices containing depleted uranium (DU) as required by RH-1801.g. and retain each record for three (3) years after it is made.

ii. The record must include the date of the inventory, name of the individual conducting the inventory, radionuclide, number of curies (becquerels) or mass (for DU) in each device, location of sealed source and/or devices, and manufacturer, model, and serial number of each sealed source and/or device, as appropriate.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 86 OF 173

Licenses for Industrial Radiography and Radiation Safety - Requirements for Industrial Radiography Operations.

AMEND RH-1800.d. to reflect the NRC's Part 34 Recordkeeping Requirements.

d. Recordkeeping Requirements.

6. Utilization Logs

i. Each licensee or registrant shall maintain utilization logs showing for each sealed source or x-ray unit the following information:

(1) A description, including the make, model, and serial number of the radiographic exposure device or transport or storage container in which the sealed source or x-ray tube is located;

(2) The identity and signature of the radiographer to whom assigned; and

(3) The plant or site where used and dates of use, including the dates removed and returned to storage.

ii. The licensee or registrant shall retain the logs required by RH-1800.d.6.i. for three (3) years after the log is made.

7. Records of inspection and maintenance of radiographic exposure devices, transport and storage containers, associated equipment, source changers, and survey instruments.

i. Each licensee or registrant shall maintain records specified in RH-1801.i. of equipment problems found in daily checks and quarterly inspections of radiographic exposure devices, transport and storage containers, associated equipment, source changers, and survey instruments; and retain each record for three (3) years after it is made.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 87 OF 173

Licenses for Industrial Radiography and Radiation Safety - Requirements for Industrial Radiography Operations.

AMEND RH-1800.d. to reflect the NRC's Part 34 Recordkeeping Requirements.

d. Recordkeeping Requirements.

7. (Con't)

ii. The record must include the date of the check or inspection, name of the inspector, equipment involved, any problems found, and what repair and/or maintenance, if any, was done.

8. Records of alarm system and entrance control checks at permanent radiographic installation.

Each licensee or registrant shall maintain records of alarm system and entrance control device tests required under RH-1801.i. and retain each record for three (3) years after it is made.

9. Records of training and certification.

Each licensee or registrant shall maintain the following records (of training and certification) for three (3) years after the record is made:

i. Records of training of each radiographer and each radiographer's assistant. The record must include radiographer certification documents and verification of certification status, copies of written tests, dates of oral and practical examinations, and names of individuals conducting and receiving the oral and practical examinations; and

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 88 OF 173

Licenses for Industrial Radiography and Radiation Safety - Requirements for Industrial Radiography Operations.

AMEND RH-1800.d. to reflect the NRC's Part 34 Recordkeeping Requirements.

d. Recordkeeping Requirements.

9. Records of training and certification. (Con't)

- ii. Records of annual refresher safety training and semi-annual inspections of job performance for each radiographer and each radiographer's assistant. The records must list the topics discussed during the refresher safety training, the dates the annual refresher safety training was conducted, and the names of the instructors and attendees. For inspections of job performance, the records must also include a list showing the items checked and any noncompliances observed by the Radiation Safety Officer (RSO).

10. Copies of Operating and Emergency Procedures.

Each licensee or registrant shall maintain a copy of current operating and emergency procedures until the Department terminates the license or registration. Superseded material must be retained for three (3) years after the change is made.

11. Records of Personnel Monitoring.

Each licensee or registrant shall maintain the following exposure records specified in RH-1802.c.:

- i. Direct reading dosimeter readings and yearly operability checks required by RH-1802.c.2. and 3. for three (3) years after the record is made.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 89 OF 173

Licenses for Industrial Radiography and Radiation Safety - Requirements for Industrial Radiography Operations.

AMEND RH-1800.d. to reflect the NRC's Part 34 Recordkeeping Requirements.

d. Recordkeeping Requirements.

11. Records of Personnel Monitoring Procedures. ((Con't))

- ii. Records of alarm ratemeter calibrations for three (3) years after the record is made.
- iii. Reports received from the film badge, TLD, or Optically Stimulated Luminescent Dosimeter processor until the Department terminates the license or registration.
- iv. Records or estimates of exposures as a result of: off-scale personal direct reading dosimeters, or lost or damaged film badges, TLDs, or Optically Stimulated Luminescent Dosimeters, until the Department terminates the license or registration.

12. Records of Radiation Surveys.

Each licensee or registrant shall maintain a record of each exposure device survey conducted before the device is placed in storage as specified in RH-1803.c.5. if that survey is the last one performed in the workday. Each record must be maintained for three (3) years after it is made.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 90 OF 173

Licenses for Industrial Radiography and Radiation Safety - Requirements for Industrial Radiography Operations.

AMEND RH-1800.d. to reflect the NRC's Part 34 Recordkeeping Requirements.

d. Recordkeeping Requirements.

13. Form of Records.

Each record required by RH-1800.d. must be legible throughout the specified retention period. The record may be the original or a reproduced copy or a microform provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of reproducing a clear copy throughout the required retention period. The record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records, such as letters, drawings, and specifications, must include all pertinent information, such as stamps, initials, and signatures. The licensee or registrant shall maintain adequate safeguards against tampering with and loss of records.

14. Location of documents and records.

- i. Each licensee or registrant shall maintain copies of records required by RH-1800.d. and other applicable regulations at the location specified in the licensee's license application.
- ii. Each licensee or registrant shall also maintain copies of the following documents and records sufficient to demonstrate compliance at each applicable field station and each temporary jobsite:
 - A. The license or certificate of registration authorizing the use of licensed material or x-ray equipment;
 - B. A current copy of the Arkansas Rules and Regulations for Control of Sources of Ionizing Radiation

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 91 OF 173

Licenses for Industrial Radiography and Radiation Safety - Requirements for Industrial Radiography Operations.

AMEND RH-1800.d. to reflect the NRC's Part 34 Recordkeeping Requirements.

d. Recordkeeping Requirements.

14. Location of documents and records. (Con't)

- C. Utilization records for each radiographic exposure device dispatched from that location as required by RH-1800.d.6.
- D. Records of equipment problems identified in daily checks of equipment as required by RH-1800.d.7.
- E. Records of alarm system and entrance control checks as required by RH-1801.j.
- F. Records of direct reading dosimeters such as pocket dosimeter and/or electronic personal dosimeters readings as required by RH-1800.d.11.
- G. Operating and emergency procedures as required by RH-1802.b.
- H. Evidence of the latest calibration of the radiation survey instruments in use at the site as required by RH-1801.e.
- I. Evidence of the latest calibration of alarm ratemeters and operability checks of pocket dosimeters and/or electronic personal dosimeters as required by RH-1802.c.
- J. Latest survey records as required by RH-1803.c.
- K. The shipping papers for the transportation of radioactive materials as required by the U.S. Department of Transportation Regulations 49 CFR Parts 170 through 187; and
- L. When operating under reciprocity pursuant to RH-750, a copy of the Agreement State or Nuclear Regulatory Commission license authorizing the use of licensed materials.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 92 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.a.1.

1. Each radiographic exposure device, source assembly or sealed source, and all associated equipment must meet the requirements specified in American National Standards Institute N432-1980, "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography", (published as NBS Handbook 136, issued January 1981). This publication has been approved for incorporation by the Director, Division of Radiation Control and Emergency Management. This publication may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018 Telephone (212) 642-4900.

A copy of the document is available for inspection in the Division of Radiation Control and Emergency Management, Arkansas Department of Health, 4815 West Markham Street, Little Rock, Arkansas 72205.

Engineering analysis may be submitted by an applicant or licensee to demonstrate the applicability of previously performed testing on similar individual radiography equipment components. Upon review the Department may find this an acceptable alternative to actual testing of the component pursuant to the reference standard.

AMEND RH-1801.a.2. on page 336c

2. In addition to the requirements specified in RH-1801.a.1., the following requirements apply to radiographic exposure devices, source changers, source assemblies and sealed sources and associated equipment.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 93 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.a.2. (Con't)

- A. The licensee shall ensure that each ~~Each~~ radiographic exposure device ~~must have~~ has attached to it by the user a durable, legible, clearly visible label bearing the:
- i. Chemical symbol and mass number of the radionuclide in the device;
 - ii. Activity and the date on which this activity was last measured;
 - iii. Model number (or product code) and serial number of the sealed source;
 - iv. ~~Manufacturer~~ Manufacturer's identity of the sealed source; and
 - v. Licensee's name, address, and telephone number.

AMEND RH-1801.a.2.C. on page 336d

- C. Modification of ~~any exposure devices~~ radiographic exposure devices, source changers, source assemblies, and associated equipment is prohibited, unless the design of any replacement component, including the source holder, source assembly, controls or guide tubes would not compromise the design safety features of the system.

AMEND RH-1801.a.3. on page 336d

3. In addition to the requirements specified in RH-1801.a.1. and 2., the following requirements apply to radiographic exposure devices, source assemblies, and associated equipment that allow the source to be moved out of the device for ~~routine~~ radiographic operation or to source changers.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 94 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.a.3.E. on page 336e

- E. The guide tube must ~~have passed the crushing tests for the control tube as specified in ANSI N432~~ be able to withstand a crushing test that closely approximates the crushing forces that are likely to be encountered during use and be able to withstand a kinking resistance test that closely approximates the kinking forces likely to be encountered during use.

AMEND RH-1801.a.3.H. on page 336e

- H. The guide tube exposure head connection must be able to withstand the tensile test for control units specified in ANSI N432-1980.

DELETE RH-1801.a.4. on page 336e

- A/ ~~All newly manufactured radiographic exposure devices and associated equipment acquired by licensees after January 10, 1992 must comply with the requirements of this section.~~

DELETE RH-1801.a. NOTE on page 336f

(Currently, there is a NOTE following the end of RH-1801.a. on page 336e that is no longer deemed necessary.)

~~NOTE: RH-1801.b. of this section applies to all equipment manufactured prior to January 10, 1992. After January 10, 1992, radiographic equipment other than storage containers and source changers must meet the requirements of RH-1801.d. and RH-1801.b. applies only to storage containers (source changers).~~

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 95 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.b.1. to reflect the NRC's 34.21.

- b. Limits on levels of radiation for radiographic exposure devices and storage containers. Radiographic exposure devices measuring less than four (4) inches [10 centimeters] from the sealed source storage position to any exterior surface of the device shall have no radiation level in excess of 50 milliroentgens per hour at six (6) inches [15 centimeters] from any exterior surface of the device. Radiographic exposure devices measuring a minimum of four (4) inches [10 centimeters] from the sealed source storage position to any exterior surface of the device and all storage containers for sealed sources or outer containers for radiographic exposure devices shall have no radiation level in excess of 200 milliroentgens per hour at any exterior surface and ten (10) milliroentgens per hour at one (1) meter [39.4 inches] from any exterior surface. The radiation levels specified are with the sealed source in the shielded (i.e., "off") position.

The maximum exposure rate limit for storage containers and source changers are 200 millirem (2 millisieverts) per hour at any external surface, and ten (10) millirem (0.1 millisieverts) per hour at one (1) meter from any exterior surface with the sealed source in the shielded position.

AMEND RH-1801.c. (pages 336f-337) to reflect the NRC's 34.23.

- c. Locking of radiographic exposure devices, storage containers, and source changers.
1. Each radiographic exposure device shall must have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. The exposure device and/or its container shall must be kept locked (and if a keyed-lock, with the key removed at all times) when not under the direct surveillance of a radiographer or a radiographer's assistant except at permanent radiographic installations as in RH-1803.a. In addition, during radiographic operations the sealed source assembly shall must be secured in the shielded position each time the source is returned to that position. A survey shall be performed to determine that the sealed source is in the shielded position pursuant to RH-1803.c.12.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 96 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.c. (pages 336f-337) to reflect the NRC's 34.23.

c. Locking of radiographic exposure devices, storage containers, and source changers

2. Each sealed source storage container and source changer ~~shall~~ must have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. Storage containers and source changers ~~shall~~ must be kept locked (and if a keyed-lock, with the key removed at all times) when containing sealed sources except when under the direct surveillance of a radiographer or a radiographer's assistant.

3/ Radiographic/exposure/devices//source/changers//and/storage containers//shall/be/locked/and/surveyed/to/assure/that/the sealed/source/is/in/the/shielded/position/prior/to/being/moved from/one/location/to/another/and/also/prior/to/being/secured/at a/given/location/

AMEND RH-1801.e. (on page 338) to reflect the NRC's 34.25.

e. Radiation survey instruments.

1. The licensee or registrant shall keep sufficient calibrated and operable radiation survey instruments at each location where radioactive material or industrial radiographic x-ray equipment is present to make the ~~physical~~ radiation surveys as required by this Part and RH-1300.
2. Instrumentation required by this Part ~~shall/have/arrange such/that/2/milliroentgens/per/hour/through/1/roentgen/per hour/can/be/measured/and/other/ranges/as/necessary/to determine/conformance/with/other/requirements/of/this/Part~~ must be capable of measuring a range from two (2) millirems (0.02 millisieverts) per hour through one (1) rem (0.01 millisieverts) per hour.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 97 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.e. (on page 338) to reflect the NRC's 34.25. (Con't)

e. Radiation survey instruments.

3/ Each radiation survey instrument shall be calibrated

A/ Against appropriate energy and exposure levels at intervals not to exceed three (3) months and after each instrument servicing;

B/ Such that accuracy within ± 20 percent traceable to a national standard can be demonstrated;

C/ At two points located approximately 1/3 and 2/3 of full-scale on each scale for linear scale instruments; at midrange of each decade, and at two points of at least one decade for logarithmic scale instruments; and at appropriate points for digital instruments;

The licensee or registrant shall have each radiation survey instrument required in RH-1801.e.1. calibrated:

A. At intervals not to exceed three (3) months and after each instrument servicing, except for battery changes;

B. For linear scale instruments, at two (2) points located approximately one-third and two-thirds of full-scale; for logarithmic scale instruments, at midrange of each decade and at two (2) points on at least one decade, and for digital instruments at three (3) points between 2 and 1000 millirems (0.02 and 10 millisieverts) per hour; and

C. So that an accuracy within plus or minus twenty (20) percent of the calibration source can be demonstrated at each point checked.

4/ Records shall be maintained of these calibrations for two (2) years after the calibration date for inspection by the Department

The licensee shall maintain records of these calibrations in accordance with RH-1800.d.3.

5. Each radiation survey instrument shall be checked with a radiation source at the beginning of each day of use and at the beginning of each work shift to ensure it is operating properly.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 98 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.f. (on page 339) to reflect the NRC's 34.27.

f. Leak testing//repair//tagging//opening//modification/ and replacement of sealed sources.

1. The replacement of any sealed source fastened to or contained in a radiographic exposure device and leak testing of any sealed source //repair//tagging//opening//or any//other//modification//of//any//sealed//source//shall must be performed only by persons specifically authorized to do so by the Department, the U.S. Nuclear Regulatory Commission, or any an Agreement State.
- 2/ Each sealed source shall be tested for leakage at intervals not to exceed six (6) months // In the absence of a certificate from a transferor that a test has been made within the six (6) month period prior to the transfer // the sealed source shall not be put into use until tested /
- 3/ The leak test shall be capable of detecting the presence of 0.005 microcurie of removable contamination on the sealed source // An acceptable leak test for sealed sources in the possession of a radiography licensee would be to test at the nearest accessible point to the sealed source / storage position or other appropriate measuring point // by a procedure to be approved pursuant to RH-403/f/6 // Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Department /
- 4/ Any test conducted pursuant to the requirements of RH-1801/f/2 and 3 which reveals the presence of 0.005 microcurie or more of removable radioactive material shall be considered evidence that the sealed source is leaking // The licensee shall immediately withdraw the equipment involved from use and shall cause it to be decontaminated and repaired or to be disposed of // in accordance with Regulations of the Department // Within five (5) days after obtaining results of the test // the licensee shall file a report with the Department describing the equipment involved // the test results and the corrective action taken /

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 99 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.f. (on page 339) to reflect the NRC's 34.27. (con't)

- f. Leak testing/repair/tagging/opening/modification and replacement of sealed sources.

18/ A sealed source which is not fastened to or contained in a radiographic exposure device shall have permanently attached to it a durable tag at least one (1) inch square bearing the prescribed radiation caution symbol in conventional colors, magenta or purple on a yellow background and at least the instructions: "Danger - Radioactive Material - Do Not Handle - Notify Civil Authorities if Found."

ADDITION

2. The opening, repair, or modification of any sealed source must be performed only by persons specifically authorized to do so by the Department, the U.S. Nuclear Regulatory Commission, or an Agreement State.
3. Testing and recordkeeping requirements.
 - a. Each licensee who uses a sealed source shall have the source tested for leakage at intervals not to exceed six (6) months. The leak testing of the source must be performed using a method approved by the Department, the U.S. Nuclear Regulatory Commission, or an Agreement State. The wipe sample should be taken from the nearest accessible point to the sealed source where contamination might accumulate. The wipe sample must be analyzed for radioactive contamination. The analysis must be capable of detecting the presence of 0.005 microcurie (185 Bq) of radioactive material on the test sample and must be performed by a person specifically authorized by the Department, the U.S. Nuclear Regulatory Commission, or an Agreement State to perform the analysis.
 - b. The licensee shall maintain records of the leak tests in accordance with RH-1800.d.4.
 - c. Unless a sealed source is accompanied by a certificate from the transferor that shows that it has been leak tested within six (6) months before the transfer, it may not be used by the licensee until tested for leakage. Sealed sources that are in storage and not in use do not require leak testing, but must be tested before use or transfer to another person if the interval of storage exceeds six (6) months.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 100 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.f. (on page 339) to reflect the NRC's 34.27. (con't)

- f. Leak testing//repair//tagging//opening//modification// and replacement of sealed sources.

ADDITION

4. Any test conducted pursuant to the requirements of RH-1801.f.2 and 3 which reveals the presence of 0.005 microcurie (185 Bq) or more of removable radioactive material must be considered evidence that the sealed source is leaking. The licensee shall immediately withdraw the equipment involved from use and shall cause it to be decontaminated and repaired or disposed of in accordance with Regulations of the Department. A report must be filed with the Department within five (5) days of any test with results that exceed the threshold in RH-1801.f., describing the equipment involved, the test results, and the corrective action taken.

5. Each exposure device using depleted uranium (DU) shielding and an "S" tube configuration must be tested for DU contamination at intervals not to exceed twelve (12) months. The analysis must be capable of detecting the presence of 0.005 microcurie (185 Bq) of radioactive material on the test sample and must be performed by a person specifically authorized by the Department, the U.S. Nuclear Regulatory Commission, or an Agreement State to perform the analysis. Should such testing reveal the presence of 0.005 microcurie (185 Bq) or more of removable DU contamination, the exposure device must be removed from use until an evaluation of the wear on the S-tube has been made. Should the evaluation reveal that the S-tube is worn through, the device may not be used again. DU shielded devices do not have to be tested for DU contamination while in storage and not in use. Before using or transferring such a device however, the device must be tested for DU contamination if the interval of storage exceeds twelve (12) months. A record of the DU leak-test must be made in accordance with RH-1800.d.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 101 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.g. (on page 340) to reflect the NRC's 34.29.

g. Quarterly inventory.

(1) Each licensee shall conduct a quarterly physical inventory to account for all sealed sources received or possessed by him/her//The records of the inventories shall be maintained for two (2) years from the date of the inventory for inspection by the Department and shall include the quantities and kinds of radioactive material, the location of sealed sources, the date of the inventory, the name of the individual making the inventory, the manufacturer, the model number and the serial number and for devices containing depleted uranium received and possessed under this license and devices containing depleted uranium (DU) received and possessed under this license.

(2) The licensee shall maintain records of the quarterly inventory in accordance with RH-1800.d.5.

AMEND RH-1801.i. (on page 341) to reflect the NRC's 34.31.

i. Inspection and maintenance of radiographic exposure devices, transport and storage containers, associated equipment, source changers, and survey instruments.

1/ The licensee or registrant shall check for obvious defects in radiation machines, radiographic exposure devices, storage containers, and source changers prior to use each day the equipment is used.

2/ Each licensee or registrant shall conduct a program of at least quarterly inspection and maintenance of radiation machines, radiographic exposure devices, storage containers and source changers, to assure proper functioning of components important to safety. Records of inspection and maintenance shall be maintained for inspection by the Department. All appropriate parts shall be maintained in accordance with the manufacturer's specifications.

3/ If any inspection conducted pursuant to RH-1801.i.1 or 2 reveals damage to components critical to radiation safety, the device shall be removed from service and labeled as defective until repairs have been made.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 102 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.i. (on page 341) to reflect the NRC's 34.31.

1. The licensee or registrant shall perform visual and operability checks on survey meters, radiographic exposure devices, transport and storage containers, associated equipment, source changers, and shutters on x-ray units before use on each day the equipment is used to ensure that the equipment is in good working condition, that the sources are adequately shielded, and that required labeling is present. Survey instrument operability must be performed using check sources or other appropriate means. If equipment problems are found, the equipment must be removed from service until repaired.
2. Each licensee or registrant shall have written procedures for:
 - i. Inspection and routine maintenance of radiographic exposure devices, source changers, associated equipment, transport and storage containers, and survey instruments at intervals not to exceed three (3) months or before the first use thereafter to ensure the proper functioning of components important to safety. Replacement components shall meet design specifications. If equipment problems are found, the equipment must be removed from service until repaired.
 - ii. Inspection and maintenance necessary to maintain the Type B packaging used to transport radioactive materials. The inspection and maintenance program must include procedures to assure that Type B packages are shipped and maintained in accordance with the certificate of compliance or other approval.
 - iii. Records of equipment problems and of any maintenance performed under RH-1801.i.2.i. and 2.ii. must be made in accordance with RH-1800.d.7.

AMEND RH-1801.j. (on page 341) to reflect the NRC's 34.33.

j. Permanent radiographic installations.

Permanent radiographic installations having high radiation area/extraneous sources of the types described in RH-1803.c.2/through A shall also meet the following special requirements

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 103 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.j. (on page 341) to reflect the NRC's 34.33. (Con't)

j. Permanent radiographic installations. (Con't)

A/ Each/entrance/that/is/used/for/personnel/access/to/the high/radiation/area/in/a/permanent/radiographic installation/to/which/this/section/applies/shall/have both/visible/and/audible/warning/signals/to/warn/of the/presence/of/radiation//The/visible/signal/shall/be activated/by/radiation/whenever/the/source/is exposed//The/audible/signal/shall/be/actuated/when/an attempt/is/made/to/enter/the/installation/while/the source/is/exposed/

B/ The/control/device/or/alarm/system/shall/be/tested/for proper/operation/at/the/beginning/of/each/day/of equipment/use//If/a/control/device/or/alarm/system/is operating/improperly,/it/shall/be/immediately/labeled as/defective/and/repaired/before/industrial radiographic/operations/are/resumed//Records/of/these tests/shall/be/maintained/for/Department/inspection/

A. Each entrance that is used for personnel access to the high radiation area in a permanent radiographic installation must have either:

(1) An entrance control of the type described in RH-1303.c.2 through 4 that reduces the radiation level upon entry into the area, or

(2) Both conspicuous visible and audible warning signals to warn of the presence of radiation. The visible signal must be activated by radiation whenever the source is exposed. The audible signal must be actuated when an attempt is made to enter the installation while the source is exposed.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 104 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.j. (on page 341) to reflect the NRC's 34.33. (Con't)

j. Permanent radiographic installations. (Con't)

B. The alarm system must be tested for proper operation with a radiation source each day before the installation is used for radiographic operations. The test must include a check of both the visible and audible signals. Entrance control devices that reduce the radiation level upon entry (designated in RH-1801.j.A.(1)) must be tested monthly. If an entrance control device or an alarm is operating improperly, it must be immediately labeled as defective and repaired within seven (7) calendar days. The facility may continue to be used during this seven (7) day period, provided the licensee or registrant implements the continuous surveillance requirements or RH-1803.a. and uses an alarming ratemeter. Test records for entrance controls and audible and visual alarm must be maintained in accordance with RH-1800.d.8.

AMEND RH-1801.k. on pages 342a-342b.

RH-1801.k. Reporting/Requirements Notifications

- a. In addition to the reporting requirements specified in RH-1502, each licensee or registrant shall provide a written report to the Arkansas Department of Health, Division of Radiation Control and Emergency Management, Slot #30, 4815 West Markham Street, Little Rock, Arkansas 72205, within thirty (30) days of the occurrence of any of the following incidents involving radiographic equipment:
1. Unintentional disconnection of the source assembly from the control cable;
 2. Inability to retract the source assembly to its fully shielded position and secure it in this position; or
 3. Failure of any component (critical to safe operation of the device) to properly perform its intended function;

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 105 OF 173

Performance Requirements for Radiographic Equipment.

AMEND RH-1801.k. on pages 342a-342b. (Con't)

RH-1801.k. Reporting/Requirements Notifications

- b. The licensee or registrant shall include the following information in each report submitted under RH-1801.a. and in each report of overexposure submitted under RH-1504 which involves failure of safety components of radiography equipment:
1. A description of the equipment problem;
 2. Cause of each incident, if known;
 3. Name of the manufacturer and model number equipment involved in the incident;
 4. Place, date, and time of the incident;
 5. Actions taken to establish normal operations;
 6. Corrective actions taken or planned to prevent recurrence; and
 7. Qualifications of personnel involved in the incident.
- c. Any licensee or registrant conducting radiographic operations or storing radioactive material at any location not listed on the license or registration for a period in excess of 180 days in a calendar year, shall notify the Department prior to exceeding the 180 days.

ADD RH-1801.l. to reflect the NRC's 34.35.

RH-1801.l Labeling, storage, and transportation.

1. The licensee may not use a source changer or a container to store licensed material unless the source changer or the storage container has securely attached to it a durable, legible, and clearly visible label bearing the standard trefoil radiation caution symbol in conventional colors, i.e., magenta, purple or black on a yellow background having a minimum diameter of 25 mm, and the wording

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 106 OF 173

Performance Requirements for Radiographic Equipment.

ADD RH-1801.1. to reflect the NRC's 34.35.

RH-1801.1 Labeling, storage, and transportation.

"CAUTION *
RADIOACTIVE MATERIAL
NOTIFY CIVIL AUTHORITIES (or
"NAME OF COMPANY")

* == or "DANGER"

2. The licensee may not transport licensed material unless the material is packaged, and the package is labeled, marked and accompanied with appropriate shipping papers in accordance with regulations set out in SECTION \$. TRANSPORTATION OF RADIOACTIVE MATERIALS.
3. Locked radiographic exposure devices and storage containers must be physically secured to prevent tampering or removal by unauthorized personnel. The licensee shall store licensed material in a manner which will minimize danger from explosion or fire.
4. The licensee shall lock and physically secure the transport package containing licensed material in the transport vehicle to prevent accidental loss, tampering, or unauthorized removal of the licensed material from the vehicle.

AMEND RH-1802 (on pages 342b-344) to reflect the NRC's 34.41.

RH-1802. Personnel Radiation Safety Requirements for Radiographers and Radiographer's Assistants.

a. Conducting industrial radiographic operations.

1. Whenever radiography is performed at a location other than a permanent radiographic installation, the radiographer must be accompanied by at least one other qualified radiographer or an individual who has at a minimum met the requirements of RH-1802.b.3. The additional qualified individual shall observe the operations and be capable of providing immediate assistance to prevent unauthorized entry. Radiography may not be performed if only one (1) qualified individual is present.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 107 OF 173

Conducting Industrial Radiography Operations.

AMEND RH-1802 (on pages 342b-344) to reflect the NRC's 34.41. (Con't)

RH-1802. Personnel Radiation Safety Requirements for Radiographers and Radiographer's Assistants.

2. All radiographic operations conducted at locations of use authorized on the license or on the x-ray registration must be conducted in a permanent radiographic installation, unless specifically authorized by the Department.
3. A licensee or registrant may conduct lay-barge or underwater radiography only if the procedures have been approved by the Department, by an Agreement State, or by the Nuclear Regulatory Commission.

Amend RH-1802.a. Limitations to reflect the NRC's 34.43.

ab. Limitations Training.

1. No The licensee or registrant shall may not permit any individual to act as a radiographer as defined in this part until such the individual:
 - A/ has met the requirements of RH-1802.a.2.
 - B/ has provided the Department with documentation showing completion of at least 30 days of on-the-job training by a radiographer instructor as a radiographer's assistant following completion of the requirements of RH-1802.a.2. // Note: This requirement does not apply to individuals designated as radiographers prior to May 1, 1990.
 - C/ has demonstrated competence to use the source of radiation, related handling tools and radiation survey instruments which will be employed in his/her assignment.
 - D/ has demonstrated understanding of the instructions in this paragraph by successful completion of a written test and a field examination on the subjects covered.
 - E/ If deemed necessary by the Department has successfully completed an examination administered by the Department or its agent.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 108 OF 173

Conducting Industrial Radiography Operations

RH-1802. Personnel Radiation Safety Requirements for Radiographers and Radiographer's Assistants.

b. Limitations Training. (Con't)

1. A. Has received training in RH-1804 in addition to a minimum of two (2) months of on-the-job training, and is certified through a radiographer certification program by a certifying entity in accordance with the criteria specified in Appendix IRC.
2. In addition, the licensee or registrant may not permit any individual to act as a radiographer until the individual:
 - A. Has received copies of and instructions in the requirements described in this Part; RH-1511; in the applicable sections of Section 3. "STANDARDS FOR PROTECTION AGAINST RADIATION" including its Part N: "NOTICES, INSTRUCTIONS AND REPORTS TO WORKERS: INSPECTIONS" and in applicable Department of Transportation (DOT) as referenced in the Nuclear Regulatory Commission's (NRC) 10 CFR Part 71, in the Department license(s) under which the radiographer will perform industrial radiography, the licensee's or registrant's operating and emergency procedures;
 - B. Has demonstrated understanding of the licensee's license and the licensee's or registrant's operating and emergency procedures by successful completion of a written or oral examination covering this material.
 - C. Has received training in the use of the licensee's or registrant's radiographic exposure devices, sealed sources, in the daily inspection of devices and associated equipment, and in the use of radiation survey instruments.
 - D. Has demonstrated understanding of the use of radiographic exposure devices, sources, survey instruments and associated equipment described above in RH-1802.b.2.A. and RH-1802.b.2.C. by the successful completion of a practical examination covering this material.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 109 OF 173

Conducting Industrial Radiography Operations.

RH-1802. Personnel Radiation Safety Requirements for Radiographers and Radiographer's Assistants.

4b. Limitations Training. (Con't)

23. No The licensee or registrant ~~shall~~ may not permit any individual to act as a radiographer's assistant ~~unless such individual has received copies of and has demonstrated an understanding of~~ until the individual:

A/ The subjects outlined in RH-1804 of this Part;

B/ The Regulations contained in this Part and the applicable sections of Section 3 of these Regulations;

C/ Appropriate license and/or certificate of registration; and

D/ The licensee's or registrant's operating and emergency procedures;

A. Has received copies of and instructions in the requirements described in this Part; RH-1511; in the applicable sections of Section 3. "STANDARDS FOR PROTECTION AGAINST RADIATION" including its Part N: "NOTICES, INSTRUCTIONS AND REPORTS TO WORKERS: INSPECTIONS" and in applicable Department of Transportation (DOT) regulations as referenced in the Nuclear Regulatory Commission's (NRC) 10CFR Part 71, in the Department license(s) under which the radiographer's assistant will perform industrial radiography, the licensee's or registrant's operating and emergency procedures;

B. Has developed competence in the use, under the personal supervision of the radiographer, radiographic exposure devices, sealed sources, associated equipment, and radiation survey instruments that the assistant will use; and

C. Has demonstrated understanding of the instructions provided above in RH-1802.b.3.A. by the successful completion of a written test on the subjects covered and has demonstrated competence in the use of hardware described in RH-1802.b.3.B. by the successful completion of a practical examination on the use of such hardware.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 110 OF 173

Conducting Industrial Radiography Operations.

RH-1802. Personnel Radiation Safety Requirements for Radiographers and Radiographer's Assistants.

4b. ~~Limitations~~ Training. (Con't)

3/ Records of the above training, including copies of written tests and dates of oral tests and field examinations, shall be maintained for inspection by the Department for three (3) years following termination of employment.

4. The licensee or registrant shall provide annual refresher safety training for each radiographer and radiographer's assistant at intervals not to exceed twelve (12) months.

5. Except as provided in RH-1802.b.5.d., the RSO or designee shall conduct an inspection program of the job performance of each radiographer and radiographer's assistant to ensure that the Department's regulations, license requirements, and the applicant's operating emergency procedures are followed. The inspection program must:

a. Include observation of the performance of each radiographer and radiographer's assistant during an actual industrial radiographic operation, at intervals not to exceed six (6) months; and

b. Provide that, if a radiographer or radiographer's assistant has not participated in an industrial radiographic operation for more than six (6) months since the last inspection, the radiographer must demonstrate knowledge of the training requirements of RH-1802.b.2.C. and the radiographer's assistant must re-demonstrate knowledge of the training requirements of RH-1802.b.3.B by a practical examination before these individuals can next participate in a radiographic operation.

c. The Department may consider alternatives in those situations where the individual serves as both radiographer and RSO.

d. In those operations where a single individual serves as both radiographer and RSO, and performs all radiography operations, an inspection program is not required.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 111 OF 173

Conducting Industrial Radiography Operations.

RH-1802. Personnel Radiation Safety Requirements for Radiographers and Radiographer's Assistants.

db. Limitations Training. (Con't)

6. The licensee or registrant shall maintain records of the above training to include certification documents, written and practical examinations, refresher safety training and inspections of job performance in accordance with RH-1800.d.9.
7. The licensee or registrant shall include the subjects detailed in RH-1804.
8. Records of radiographer certification maintained in accordance with RH-1800.d.i. provide appropriate affirmation of certification requirements specified in RH-1802.3.A.

AMEND RH-1802 (on pages 343-344) to allow the Department to confiscate Certification Cards.

c. Radiographer Certificate Card Confiscation.

The Department may confiscate a radiographer's certification card should there be serious health and safety violations relating to the Regulations, license conditions, and/or licensee Operating and Emergency Procedures. The radiographer will be restricted from conducting radiographic operations within the State of Arkansas.

1. Following the confiscation of the radiographer's certification card, the conduct of any radiographic operations by this radiographer within the State of Arkansas shall be deemed deliberate misconduct as detailed in RH-1511.
2. The Department shall notify the licensee's management and the Certifying State of the certification card confiscation and the restrictions placed on the radiographer.
3. The Department shall return the Certification Card when the radiographer has been satisfactorily retrained and/or recertified by a Certifying State.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 112 OF 173

Conducting Industrial Radiography Operations.

AMEND RH-1802 (on pages 343-344) to reflect the NRC's 34.42.

d. Radiation Safety Officer for Industrial Radiography.

The Radiation Safety Officer (RSO) shall ensure that radiation safety activities are being performed in accordance with approved procedures and regulatory requirements in the daily operation of the licensee's or registrant's program.

1. The minimum qualifications, training, and experience of Radiation Safety Officers (RSO) for industrial radiography are as follows:
 - a. Completion of the training and testing requirements of RH-1802.b.3.A.;
 - b. 2000 hours of hands-on experience as a qualified radiographer in industrial radiographic operations; and
 - c. Formal training in the establishment and maintenance of a radiation protection program.
2. The Department will consider alternatives when the RSO has appropriate training and/or experience in the field of ionizing radiation, and in addition, has adequate formal training with respect to the establishment and maintenance of a radiation safety protection program.
3. The specific duties and authorities of the RSO include, but are not limited to:
 - a. Establishing and overseeing all operating, emergency, and ALARA procedures as required by Section 3 "STANDARDS FOR PROTECTION AGAINST RADIATION", and reviewing them regularly to ensure that the procedures in use conform to current Section 3 procedures, conform to other Department regulations, and to the license conditions.
 - b. Overseeing and approving all phases of the training program for radiographic personnel, ensuring that appropriate and effective radiation protection practices are taught;
 - c. Ensuring that required radiation surveys and leak tests are performed and documented in accordance with the regulations, including any corrective measures when levels of radiation exceed established limits;

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 113 OF 173

Conducting Industrial Radiography Operations.

AMEND RH-1802 (on pages 343-344) to reflect the NRC's 34.42. (Con't)

d. Radiation Safety Officer for Industrial Radiography. (Con't)

- d. Ensuring that personnel monitoring devices are calibrated and used properly by occupationally exposed personnel, that records are kept of the monitoring results, and that timely notifications are made as required by RH-1504; and
- e. Ensuring that operations are conducted safely and to assume control for instituting corrective actions including stopping of operations when necessary.

AMEND RH-1802 (on pages 343-344) to reflect the NRC's 34.45.

b.e. Operating and emergency procedures.

- 1. The licensee's or registrant's operating and emergency procedures ~~shall~~ must include as a minimum, instructions in ~~at least~~ the following:

- 1a. The Appropriate handling and use of ~~sources of radiation~~ licensed sealed sources, radiographic exposure devices, and x-ray equipment (if used) ~~such so~~ that no person is likely to be exposed to radiation doses in excess of the limits established in Part C of these Regulations;

AMEND RH-1802 (on pages 343-344) to reflect the NRC's 34.45.

b.e. Operating and emergency procedures.

- 2b. Methods and occasions for conducting radiation surveys;
- 2c. Methods for controlling access to radiographic areas;
- 4d. Methods and occasions for locking and securing ~~sources of radiation~~ radiographic exposure devices, transport and storage containers and sealed sources;
- 5e. Personnel monitoring and the use of personnel monitoring equipment including steps that must be taken immediately by radiographic personnel in the event a pocket dosimeter is found to be off-scale;

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 114 OF 173

Conducting Industrial Radiography Operations

AMEND RH-1802 (on pages 343-344) to reflect the NRC's 34.45. (Con't)

6e. Operating and emergency procedures. (Con't)

6f. Transportation Transporting sealed sources to field locations, including packing of ~~sources of radiation in the vehicles, posting of vehicles and control of sources of radiation during transportation~~ radiographic exposure devices and storage containers in the vehicles, placarding of vehicles when needed, and control of the sealed sources during transportation.

7/ Minimizing exposure of individuals in the event of an accident;

8/ The procedure for notifying proper personnel in the event of an accident;

9/ Maintenance of records; and

10/ The inspection and maintenance of radiographic exposure devices, storage containers and radiation machines;

g. The inspection, maintenance, and operability checks of radiographic exposure devices, survey instruments, transport containers, and storage containers;

h. Steps that must be taken immediately by radiography personnel in the event a pocket dosimeter is found to be off-scale or an alarm ratemeter alarms unexpectedly.

i. The procedure for notifying proper persons in the event of an accident;

j. Minimizing exposure of persons in the event of an accident;

k. Source recovery procedure if licensee will perform source recovery;

l. Maintenance of records.

2. The licensee or registrant shall maintain copies of current operating and emergency procedures in accordance with RH-1800.d.10. and RH-1800.d.14.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 115 OF 173

Requirements for Radiography Operations

AMEND RH-1802.c. to reflect the NRC's 34.47.

cf. Personnel monitoring/control.

1. No A licensee or registrant shall may not permit any individual to act as a radiographer or a radiographer's assistant unless, at all times during radiographic operations, each such individual wears, on the trunk of the body, a combination of a direct reading pocket dosimeter, an operable alarm ratemeter, and either a film badge, or a thermoluminescent dosimeter (TLD), or an Optically Stimulated Luminescent Dosimeter, except that for permanent radiography facilities where other appropriate alarming or warning devices are in routine use, the wearing of an alarming ratemeter is not required. Pocket dosimeters shall have a range from zero to at least 200 milliroentgens and shall be recharged daily or at the start of each shift. Each film badge, thermoluminescent dosimeter, or Optically Stimulated Luminescent Dosimeter shall be assigned to and worn by only one individual. At permanent radiography installations where other appropriate alarming or warning devices are in routine use, the wearing of an alarming ratemeter is not required.
 - a. Pocket dosimeters shall have a range from zero to 200 millirems (2 millisieverts) and must be recharged at the of each shift. Electronic personal dosimeters may only be used in place of ion-chamber pocket dosimeters.
 - b. Each film badge, thermoluminescent dosimeter (TLD), and/or Optically Stimulated Luminescent Dosimeter must be assigned to and worn by only one (1) individual.
 - c. Film badges, thermoluminescent dosimeters (TLD), and Optically Stimulated Luminescent Dosimeter must be replaced at periods not to exceed one (1) month.
 - d. After replacement each film badge, thermoluminescent dosimeter (TLD), or Optically Stimulated Luminescent Dosimeter must be processed as soon as possible.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 116 OF 173

Requirements for Radiography Operations.

AMEND RH-1802.c. to reflect the NRC's 34.47. (Con't)

cf. Personnel monitoring/control. (Con't)

2. Pocket dosimeters shall be read and exposures recorded daily. Records of these exposures shall be kept for inspection by the Department.

Direct reading dosimeters such as pocket dosimeters or electronic personal dosimeters, must be read and the exposures recorded at the beginning and end of each shift, and records must be maintained in accordance with RH-1800.d.11.

3. Pocket dosimeters, or electronic personal dosimeters, shall must be checked at periods not to exceed one (1) year twelve (12) months for correct response to radiation, and records must be maintained in accordance with RH-1800.d.11. Acceptable dosimeters shall be read within plus or minus 20 twenty (20) percent of the true radiation exposure. Records of this check shall be maintained for inspection by the Department.

4. If an individual's pocket dosimeter is discharged beyond its range (i.e., goes off-scale), in industry or radiographic operations by that individual shall cease and the individual's film badge or TLD shall be processed immediately is found to be off-scale, or if his or her electronic personal dosimeter reads greater than 200 millirems (2 millisieverts), and the possibility of radiation exposure can not be ruled out as the cause, the individual's film badge, TLD, or Optically Stimulated Luminescent Dosimeter must be sent for processing within twenty-four (24) hours. In addition, the individual shall not return to may not resume work associated with licensed material or other sources of radiation until a determination of the individual's radiation exposure has been made. This determination must be made by the RSO or the RSO's designee. The results of this determination must be included in the records maintained in accordance with RH-1800.d.11.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 117 OF 173

Requirements for Radiography Operations.

AMEND RH-1802.c. to reflect the NRC's 34.47.(Con't)

cf. Personnel monitoring/control. (Con't)

5. Reports received from the film badge, or thermoluminescent dosimeter, or Optically Stimulated Luminescent Dosimeter processor shall be maintained for inspection by the Department until it authorizes their disposal must be retained in accordance with RH-1800.d.11.
6. If a film badge, or TLD, or Optically Stimulated Luminescent Dosimeter is lost or damaged, the worker shall cease work immediately until a replacement film badge or TLD is provided and the exposure is calculated for the time period from issuance to loss or damage of the film badge, or TLD, or Optically Stimulated Luminescent Dosimeter. The results of the calculated exposure and the time period for which the film badge, TLD, or Optically Stimulated Luminescent Dosimeter was lost or damaged must be included in the records maintained in accordance with RH-1800.d.11.
7. Each alarm ratemeter shall:
 - A. Be checked to ensure that the alarm functions properly (sounds) prior to each day's use;
 - B. Be set to given an alarm signal at a preset dose rate of 500 mrem/hr (5 mSv/hr); with an accuracy rate of plus or minus 20 percent of the true radiation dose rate;
 - C. Require special means to change the preset alarm function; and
 - D. Be calibrated at periods not to exceed one (1) year twelve (12) months for correct response to radiation. Acceptable rate meters must attain within plus or minus 20 percent (#20%) of the true radiation dose rate. The licensee or registrant shall maintain records of alarm ratemeter calibrations in accordance with RH-1800.d.11.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 118 OF 173

Requirements for Radiography Operations.

AMEND RH-1803.a. to reflect the NRC's 34.51.

a. Security Surveillance.

During each radiographic operation, the radiographer, radiographer/instructor/or/radiographer/s/assistant or the other individual present as required in RH-1802.a. shall maintain a continuous direct visual surveillance of the operation to protect against unauthorized entry into a high radiation area, as defined in Section 3, Part D, RH-1303.c., except

1/ where the high radiation area is equipped with a control device or alarm system as described in RH-1303.c.12, or

2/ where the high radiation area is locked to protect against unauthorized or accident entry

except at permanent radiographic installations where all entryways are locked and the requirements of RH-1801.j. are met.

AMEND RH-1803.b. to reflect the NRC's 34.53.

b. Posting.

Notwithstanding any provisions in RH-1304.c., areas in which radiography is being performed shall be conspicuously posted as required by RH-1303.b. and c.11

All areas in which industrial radiography is being performed must be conspicuously posted as required by RH-1303.b. Exceptions listed in RH-1304.c. do not apply to industrial radiographic operations.

AMEND RH-1803.c. to reflect the NRC's 34.49.

c. Radiation surveys and survey records.

1/ No radiographic operation shall be conducted unless calibrated and operable radiation survey instrumentation as described in RH-1801.e is available and used at each site where radiographic exposures are made

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 119 OF 173

Requirements for Radiography Operations.

AMEND RH-1803.c. to reflect the NRC's 34.49. (Con't)

c. Radiation surveys and survey records. (Con't)

- /2/ A survey with a radiation survey instrument shall be made after each radiographic exposure to determine that the sealed source has been returned to its shielded position. A survey shall be made of the storage area as defined in RH-1800.c.127. Whenever a radiographic exposure device is placed in storage the entire circumference of the radiographic exposure device shall be surveyed. If the radiographic exposure device has a source guide tube, the survey shall include the guide tube.
- /3/ A physical radiation survey as specified in RH-1801.c.13 shall be made to determine that each sealed source is in its shielded position prior to securing the radiographic exposure device, storage container, or source changer in a storage area as defined in RH-1800.c.127. The entire circumference of the radiographic exposure device, storage container, or source changer must be surveyed.
- /4/ A physical radiation survey shall be made after each radiographic exposure using radiation machines to determine that the machine is off.
- /5/ Records shall be kept of the surveys required by RH-1803.c.13 and maintained for inspection by the Department for at least two years after the completion of the survey. If the survey was used to determine an individual's exposure, however, the records of the survey shall be maintained until the Department authorizes their disposition.

The licensee or registrant shall:

1. Conduct surveys with a calibrated and operable radiation survey instrument that meets the requirements of RH-1801.e.
2. Using a survey instrument meeting the requirement of RH-1803.c.1. above, conduct a survey of the radiographic exposure device and the guide tube after each exposure when approaching the device or the guide tube. The survey must determine that the sealed source has been returned to its shielded position before exchanging films, repositioning the exposure head, or dismantling equipment.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 120 OF 173

Requirements for Radiography Operations.

AMEND RH-1803.c. to reflect the NRC's 34.49. (Con't)

c. Radiation surveys and survey records. (Con't)

3. Conduct a survey of the radiographic exposure device with a calibrated radiation survey instrument any time the source is exchanged and whenever a radiographic exposure device is placed in a storage area (as defined in RH-1800.c.), to ensure that the sealed source is in its shielded position.
4. Maintain records in accordance with RH-1800.d.12.

AMEND RH-1803.d. to reflect the NRC's 34.46.

- d. Supervision of radiographer's assistants. Whenever a radiographer's assistant uses radiographic exposure devices, associated equipment or sealed sources and/or related source handling tools, or conducts radiation surveys required by RH-1803.c.2 to determine that the sealed source has returned to the shielded position after an exposure, the radiographer's assistant shall be under the personal supervision of a radiographer instructor. The supervision shall include:
1. The radiographer/instructor's personal radiographer's physical presence at the site where the sealed sources are being used,
 2. The ability availability of the radiographer instructor to give immediate assistance if required, and
 3. The radiographer/instructor's/watching radiographer's direct observation of the assistant's performance of the operations referred to in this Section.

AMEND RH-1804 (on pages 357-358) to reflect the NRC's 34.43.

RH-1804. Subjects to be Covered During the Instruction of Radiographers

- a. Fundamentals of radiation safety including:
 1. Characteristics of gamma and/or x-ray radiation;
 2. Units of radiation dose (in rem) and quantity of radioactivity (curie);

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 121 OF 173

AMEND RH-1804 (on pages 357-358) to reflect the NRC's 34.43. (Con't)

RH-1804. Subjects to be Covered During the Instruction of Radiographers

3. ~~Significance of radiation/dose~~ Hazards of exposure to radiation:
 - A/ ~~Radiation/protection/standards/~~
 - B/ ~~Biological/effects/of/radiation/~~
 - C/ ~~Case/histories/of/radiography/accidents/~~
4. Levels of radiation from sources of radiation.
5. Methods of controlling radiation dose.
 - A. ~~Working/~~Time.
 - B. ~~Working/~~Distance.
 - C. Shielding
- b. Radiation detection instruments ~~to be used~~ including:
 1. Use of radiation survey instruments.
 - A. Operation.
 - B. Calibration.
 - C. Limitations.
 2. Survey techniques.
 3. Use of personnel monitoring equipment.
 - A. Film badges.
 - B. Thermoluminescent dosimeters (TLDs).
 - C. Optically Stimulated Luminescent dosimeters.
 - ~~C~~D. Pocket dosimeters.
 - ~~D~~E. Alarm ratemeters.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 122 OF 173

AMEND RH-1804 (on pages 357-358) to reflect the NRC's 34.43. (Con't)

RH-1804. Subjects to be Covered During the Instruction of Radiographers

c. Equipment to be used including:

~~11 Remote/handling/equipment/~~

21. Operation and control of radiographic exposure devices and sealed sources equipment, remote handling equipment, and storage containers, including pictures or models of source assemblies (pigtailed).

22. Storage, and transport/containers, source changers control, and disposal of licensed material.

3. Inspection and maintenance of equipment.

4. Operation and control of x-ray equipment if applicable.

5. Collimators.

d. The requirements of pertinent State regulations.

e. The licensee's or registrant's written operating and emergency procedures.

f. Case histories of accidents in radiography.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 123 OF 173

Industrial Radiographer Certification.

APPENDIX IRC

RADIOGRAPHIC CERTIFICATION

I. Requirements for an Independent Certifying Organization

An independent certifying organization shall:

1. Be an organization such as a society or association, whose members participate in, or have an interest in, the fields of industrial radiography;
2. Make its membership available to the general public nationwide that is not restricted because of race, color, religion, sex, age, national origin or disability;
3. Have a certification program open to nonmembers, as well as members;
4. Be an incorporated, nationally recognized organization, that is involved in setting national standards of practice within its fields of expertise;
5. Have an adequate staff, a viable system for financing its operations, and a policy-and-decision-making review board;
6. Have a set of written organizational by-laws and policies that provide adequate assurance of lack of conflict of interest and a system for monitoring and enforcing those by-laws and policies;
7. Have a committee, whose members can carry out their responsibilities impartially, to review and approve the certification guidelines and procedures, and to advise the organization's staff in implementing the certification program;
8. Have a committee, whose members can carry out their responsibilities impartially, to review complaints against certified individuals and to determine appropriate sanctions;

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 124 OF 173

Industrial Radiographer Certification.

APPENDIX IRC

RADIOGRAPHIC CERTIFICATION

I. Requirements for an Independent Certifying Organization

An independent certifying organization shall: (con't)

9. Have written procedures describing all aspects of its certification program, maintain records of the current status of each individuals's certification and the administration of its certification program;
10. Have procedures to ensure that certified individuals are provided due process with respect to the administration of its certification program, including the process of becoming certified and any sanctions imposed against certified individuals;
11. Have procedures for proctoring examinations, including qualifications for proctors. These procedures must ensure that the individuals proctoring each examination are not employed by the same company or corporation (or a wholly-owned subsidiary of such company or corporation) as any of the examinees;
12. Exchange information about certified individuals with the Department and other independent certifying organizations and/or the Nuclear Regulatory Commission and/or Agreement States and allow periodic review of its certification program and related records; and
13. Provide a description to the Department of its procedures for choosing examination sites and for providing an appropriate examination environment.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 125 OF 173

Industrial Radiographer Certification.

APPENDIX IRC

RADIOGRAPHIC CERTIFICATION

II. Requirements for Certification Programs

All certification programs must:

1. Require applicants for certification to:
 - a. Receive training in the topics set forth in RH-1804 or equivalent to NRC and/or Agreement State Regulations, and
 - b. Satisfactorily complete a written examination covering these topics;
2. Require applicants for certification to provide documentation that demonstrates that the applicant has:
 - a. Received training in the topics set forth in RH-1804 or equivalent NRC and/or Agreement State regulations;
 - b. Satisfactorily completed a minimum period of on-the-job training; and
 - c. Has received verification by an Agreement State or a the NRC licensee that the applicant has demonstrated the capability of independently working as a radiographer;
3. Include procedures to ensure that all examination questions are protected from disclosure;
4. Include procedures for denying an application, revoking, suspending, and reinstating a certificate;
5. Provide a certificate period of not less than three (3) years nor more than five (5) years;
6. Include procedures for renewing certifications and, if the procedures allow renewals without examination, require evidence of recent full-time employment and annual refresher training.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 126 OF 173

Industrial Radiographer Certification.

APPENDIX IRC RADIOGRAPHIC CERTIFICATION

II. Requirements for Certification Programs (Con't)

All certification programs must:

7. Provide a timely response to inquiries, by telephone or letter, from members of the public, about an individual's certification status.

III. Requirements for Written Examinations

All examinations must be:

1. Designed to test an individual's knowledge and understanding of the topics listed in RH-1804 or equivalent Agreement State and/or NRC requirements;
2. Written in a multiple-choice format;
3. Have test items drawn from a question bank containing psychometrically valid questions based on the material in RH-1804.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 127 OF 173

Energy Compensation Sources for Well Logging and Other Regulatory Clarifications.

ADDITIONS TO RH-1900.c. Definitions.

1. Energy Compensation Source (ECS) -- A small sealed source, with an activity not exceeding 100 microcurie (3.7 MBq), used within a logging tool, or other tool components, to provide a reference standard to maintain the tool's calibration when in use.
19. Tritium Neutron Generator Target Source -- A tritium source used within a neutron generator tube to produce neutrons for use in well logging applications.

AMEND RH-1915. Agreement with Well Owner or Operator.

- a. A licensee may perform well logging with a sealed source only after the licensee has a written agreement with the employing well owner or operator. This written agreement must identify who will meet the following requirements:
 1. If a sealed source becomes lodged in the well, a reasonable effort will be made to recover it.
 2. A person may not attempt to recover a sealed source in a manner which, in the licensee's opinion, could result in its rupture.
 3. The radiation monitoring required in Rh-1969.a. will be performed.
 4. If the environment, any equipment, or personnel are contaminated with radioactive material, they must be decontaminated before release from the site or release for unrestricted use. And;
 5. If the sealed source is classified as irretrievable after reasonable efforts at recovery have been expended, the following requirements must be implemented within ~~30~~ (thirty) (30) days:
 - i. Each irretrievable well logging source must be immobilized and sealed in place with a cement plug;

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 128 OF 173

Energy Compensation Sources for Well Logging and Other Regulatory Clarifications.

AMEND RH-1915. Agreement with Well Owner or Operator.

- ii. A ~~mechanical device~~ means to prevent inadvertent intrusion on the source ~~must be set at some point in the well above the cement plug~~, unless the ~~cement plug~~ and source are not accessible to any subsequent drilling operations; and
 - iii. A permanent identification plaque, constructed of long-lasting material such as stainless steel, brass, bronze, or monel, must be mounted at the surface of the well, unless the mounting of the plaque is not practical. The size of the plaque must be at least seven (7) inches (17 cm) square and 1/8-inch (3 mm) thick. The plaque^{14/} must contain:
 - A. The word "**CAUTION**";
 - B. The radiation symbol (the color requirement in RH-1303.a.1 need not be met);
 - C. The date the source was abandoned;
 - D. The name of the well owner or operator, as appropriate;
 - E. The well name and well identification number(s) or other designation;
 - F. An identification of the sealed source(s) by radionuclide and quantity;
 - G. The depth of the source and depth to the top of the plug; and
 - H. An appropriate warning, such as "**DO NOT RE-ENTER THIS WELL**".^{15/}
- b. The licensee shall retain a copy of the written agreement for three (3) years after the completion of the well logging operation.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 129 OF 173

Energy Compensation Sources for Well Logging and Other Regulatory Clarifications.

AMEND RH-1915. Agreement with Well Owner or Operator.

- c. A licensee may apply, pursuant to RH-1991, for Department approval, on a case-by-case basis, of proposed procedures to abandon an irretrievable well logging source in a manner not otherwise authorized in RH-1915.a.5 of this Section.
- d. A written agreement between the licensee and the well owner or operator is not required if the licensee and the well owner or operator are part of the same corporate structure or otherwise similarly affiliated. However, the licensee shall still otherwise meet the requirements in RH-1915.a.1 through RH-1915.a.5.

AMEND RH-1917. Request for Written Statements (Wireline Service) on page 363a.

Each licensee license is issued with the condition that the licensee will, at any time before expiration of the license, upon the Department's request, submit written statements, signed under oath or affirmation, to enable the Department to determine whether or not the license should be modified, suspended, or revoked.

AMEND RH-1933.a. Radiation Detection Instruments.

- a. The licensee shall keep a calibrated and operable radiation survey instrument capable of detecting beta and gamma radiation at each field station and temporary jobsite to make the radiation surveys required by this Part and by other Parts of Section 3. To satisfy this requirement, the radiation survey instrument must be capable of measuring $0.1 \text{ mrem (0.001 mSv) per hour}$ through at least 50 mrem (0.5 mSv) per hour. Survey instruments acquired before July 14, 1987, and capable of measuring 0.1 mrem (0.001 mSv) per hour through at least 20 mrem (0.2 mSv) per hour through at least 50 mrem (0.5 mSv) per hour. Survey instruments acquired after July 14, 1987, and capable of measuring 0.1 mrem (0.001 mSv) per hour through at least 20 mrem (0.2 mSv) per hour through at least 50 mrem (0.5 mSv) per hour.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 130 OF 173

Energy Compensation Sources for Well Logging and Other Regulatory Clarifications.

AMEND RH-1935 Leak Testing of Sealed Sources.

- a. Testing and recordkeeping requirements. Each licensee who uses a sealed source shall have the source leak tested for leakage periodically. The licensee shall keep a record of leak test results in units of microcuries and retain the record for inspection by the Department for three (3) years after the leak test is performed.
- b. Method of testing. The wipe of a sealed source must be performed using a leak test kit or method approved by the Department, the U.S. Nuclear Regulatory Commission, or an Agreement State. The wipe sample must be taken from the nearest accessible point to the sealed source where contamination might accumulate. The wipe sample must be analyzed for radioactive contamination. The analysis must be capable of detecting the presence of 0.005 microcurie (185 Bq) of radioactive material on the test sample and must be performed by a person approved by the Department, U.S. Nuclear Regulatory Commission, or an Agreement State to perform the analysis.
- c. Test frequency.
 1. Each sealed source (except an Energy Compensation Source (ECS)) must be tested at intervals not to exceed six (6) months. In the absence of a certificate from a transferor that a test has been made within the six (6) months before the transfer, the sealed source may not be used until tested.
 2. Each ECS that is not exempt from testing in accordance with RH-1935.c. must be tested at intervals not to exceed three (3) years. In the absence of a certificate from a transferor that a test has been made within the three (3) years before the transfer, the ECS may not be used until tested.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 131 OF 173

Energy Compensation Sources for Well Logging and Other Regulatory
Clarifications

AMEND RH-1935 Leak Testing of Sealed Sources.

d. Removal of leaking source from service.

1. If the test conducted pursuant to RH-1935.a and RH-1935.b reveals the presence of 0.005 microcurie (185 Bq) or more of removable radioactive material, the licensee shall remove the sealed source from service immediately and have it decontaminated, repaired, or disposed of by a Department, U.S. Nuclear Regulatory Commission, or an Agreement State licensee that is authorized to perform these functions. The licensee shall check the equipment associated with the leaking source for radioactive contamination and, if contaminated, have it decontaminated or disposed of by a Department, U.S. Nuclear Regulatory Commission, or an Agreement State licensee that is authorized to perform these functions.
2. The licensee shall submit a report to the Department within five (5) days of receiving the test results. The report must describe the equipment involved in the leak, the test results, any contamination which resulted from the leaking source, and the corrective actions taken up to the time the report is made.

e. Exemptions from testing requirements. The following sealed sources are exempt from the periodic leak test requirements set out in RH-1935.a through RH-1935.d:

1. Hydrogen-3 (tritium) sources;
2. Sources containing licensed material with a half-life of thirty (30) days or less;
3. Sealed sources containing licensed material in gaseous form;
4. Sources of beta- or gamma-emitting radioactive material with an activity of 100 microcuries (3,700,000 Bq) or less; and
5. Sources of alpha- or neutron-emitting radioactive material with an activity of ~~10~~ ten (10) microcuries (370,000 Bq) or less.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 132 OF 173

Energy Compensation Sources for Well Logging and Other Regulatory Clarifications.

AMEND RH-1941. Design and Performance Criteria for Sealed Sources.

a. After August 15, 1990, a A licensee may not use a sealed source in well logging unless the sealed source applications if:

1. The sealed source is Is doubly encapsulated;
2. The sealed source contains Contains radioactive licensed material whose chemical and physical forms are as insoluble and nondispersible as practical; and
3. The sealed source's prototype has been tested and found to maintain its integrity after each of the following tests:

A/ Temperature // The test source must be held at 40°C for 20 minutes, 600°C for one (1) hour, and then be subject to a thermal shock test with a temperature drop from 600°C to 20°C within 15 seconds.

B/ Impact test // A 5 kg steel hammer, 2.5 cm in diameter, must be dropped from a height of one (1) meter onto the test source.

C/ Vibration test // The test source must be subject to a vibration from 25 Hz to 500 Hz at 5 g amplitude for 30 minutes.

D/ Puncture test // A one (1) gram hammer and pin, 0.3 cm pin diameter, must be dropped from a height of 1 meter onto the test source.

E/ Pressure test // The test source must be subjected to an external pressure of 24,600 pounds per square inch absolute (1,695 x 10⁷ pascals).

Meets the requirements of RH-1941.b., c., or d.

b. For a sealed source manufactured on or before July 14, 1989, a licensee may use the sealed source, for use in well logging applications if it meets the requirements of USASI N5.10-1968, "Classification of Sealed Radioactive Sources," or the requirements in RH-1941.c. or d.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 133 OF 173

Energy Compensation Sources for Well Logging and Other Regulatory Clarifications.

AMEND RH-1941. Design and Performance Criteria for Sealed Sources.

- c. For a sealed source manufactured after July 14, 1989, a licensee may use the sealed source, for use in well logging applications if it meets the oil-well logging requirements of ANSI/HPS N43.6-1997, "Sealed Radioactive Sources-Classification."
- d. For a sealed source manufactured after July 14, 1989, a licensee may use the sealed source, for use in well logging applications, if:
 - 1. The sealed source's prototype has been tested and found to maintain its integrity after each of the following tests:
 - i. Temperature. The test source must be held at - 40° C for 20 minutes, 600° C for 1 hour, and then be subject to a thermal shock test with a temperature drop from 600° C to 20° C within 15 seconds.
 - ii. Impact test. A 5 kg steel hammer, 2.5 cm in diameter, must be dropped from a height of 1 m onto the test source.
 - iii. Vibration test. The test source must be subject to a vibration from 25 Hz to 500 Hz at 5 g amplitude for 30 minutes.
 - iv. Puncture test. A 1 gram hammer and pin, 0.3 cm pin diameter, must be dropped from a height of 1 m onto the test source.
 - v. Pressure test. The test source must be subject to an external pressure of 1.695×10 pascals (24,600 pounds per square inch absolute).
- e. The requirements of RH-1941.a., b., c., and d. do not apply to sealed sources that contain radioactive material in gaseous form.
- f. The requirements in RH-1941.a., b., c., and d. do not apply to energy compensation sources (ECS). ECSs must be registered with the Department under RH-403.i., the Nuclear Regulatory Commission or with an Agreement State.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 135 OF 173

Energy Compensation Sources for Well Logging and Other Regulatory Clarifications.

AMEND RH-1977. Notification of Incidents and Lost Sources; Abandonment Procedures for Irretrievable Sources.

- a. The licensee shall immediately notify the Department by telephone and subsequently, within ~~30/(thirty)~~ thirty (30) days, by confirmatory letter if the licensee knows or has reason to believe that a sealed source has been ruptured. The letter must designate the well or other location, describe the magnitude and extent of the escape of radioactive materials, assess the consequences of the rupture, and explain efforts planned or being taken to mitigate these consequences.
- b. The licensee shall notify the Department of the theft or loss of radioactive materials, radiation overexposures, excessive levels and concentrations of radiation, and certain other accidents as required by RH-1501, RH-1502, and RH-1504 of these Regulations.
- c. If a sealed source becomes lodged in a well, and when it becomes apparent that efforts to recover the sealed source will not be successful, the licensee shall:
 1. Notify the Department by telephone of the circumstances that resulted in the inability to retrieve the source and: ~~obtain approval to implement abandonment procedures;~~
 - i. Obtain the Department's approval to implement abandonment procedures; or
 - ii. That the licensee implemented abandonment before receiving the Department's approval because the licensee believed there was an immediate threat to public health and safety; and
 2. Advise the well owner or operator, as appropriate, of the abandonment procedures under RH-1915.a or RH-1915.c; and
 3. Either ensure that abandonment procedures are implemented within ~~30/(thirty)~~ thirty (30) days after the sealed source has been classified as irretrievable or request an extension of time if unable to complete the abandonment procedures.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 136 OF 173

Energy Compensation Sources for Well Logging and Other Regulatory Clarifications.

AMEND RH-1977. Notification of Incidents and Lost Sources; Abandonment Procedures for Irretrievable Sources.

- d. The licensee shall, within ~~30 (thirty)~~ thirty (30) days after a sealed source has been classified as irretrievable, make a report in writing to the Department. The licensee shall send a copy of the report to each appropriate State or Federal agency that issued permits or otherwise approved the drilling operation. The report shall contain the following information:
1. Date of occurrence;
 2. A description of the irretrievable well logging source involved including the radionuclide and its quantity, chemical, and physical form;
 3. Surface location and identification of the well;
 4. Results of effort to immobilize and seal the source in place;
 5. A brief description of the attempted recovery effort;
 6. Depth of the source;
 7. Depth of the top of the cement plug;
 8. Depth of the well;
 9. The immediate threat to public health and safety justification for implementing abandonment if prior Department approval was not obtained in accordance with RH-1977.c.1.ii.;
 10. Any other information, such as a warning statement, contained on the permanent identification plaque; and
 11. State and Federal agencies receiving a copy of this report.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 137 OF 173

Radiation Protection Requirement: Amended Definitions and Criteria.

AMEND RH-2803. Instructions to Workers.

- a. All individuals working in or frequenting any portion of a restricted area:
 1. Shall be kept informed of the storage, transfer or use of radioactive materials or of radiation in such portions of the restricted area;
 2. Shall be instructed in the health protection problems associated with exposure to ~~such/radioactive/material/of~~ radiation and/or radioactive material in precautions or procedures to minimize exposure and the purposes and functions of protective devices employed;
 3. ~~SHALL/BE/INSTRUCTED~~ Instructed in, and ~~instructed~~ required to observe, to the extent within the worker's control, the applicable provisions of Department Regulations and licenses or registration for the protection of personnel from exposures to radiation or radioactive material ~~occurring/in/such/areas;~~
 4. Shall be instructed of their responsibility to report promptly to the licensee or registrant any condition which may lead to or cause a violation of Department Regulations and licenses or unnecessary exposure to radiation and/or radioactive material;
 5. Shall be instructed in the appropriate response to warnings made in the event of any unusual occurrence or malfunction that may involve exposure to radiation and/or radioactive material; and
 6. Shall be advised as to the radiation exposure reports which workers may request pursuant to RH-2804.
- b. In determining those individuals subject to the requirements of RH-2303.a., licensees and registrants must take into consideration assigned activities during normal and abnormal situations involving exposure to radiation and/or radioactive material 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/restricted/area present in the work place.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 138 OF 173

RESTRUCTURING 'PART C' TRANSPORTATION and ADDING NRC COMPATIBILITY REGULATIONS
"Compatibility with the International Atomic Energy Agency" and "Fissile
Material Shipments & Exemptions"

SECTION 4. TRANSPORTATION OF RADIOACTIVE MATERIALS.

(FOOTNOTES APPEAR AT THE END OF THIS SECTION)

PART A. GENERAL

RH-3000. Authority. Act 8 of Second Extraordinary Session of 1961, as amended.

RH-3001. Effective Date. The provisions of these Regulations shall become operative on the effective date of an agreement executed by the State of Arkansas and the Federal Government under the provisions of Section 274 of the Atomic Energy Act of 1954 as amended (73 STAT. 689).

RH-3002. Purpose and Scope. *The provisions of this section apply to transportation of radioactive material or the delivery of radioactive material to a carrier for transportation, which is not subject to the rules and regulations of the U.S. Department of Transportation and other agencies of the United States having jurisdiction.*

Purpose and Scope.

- (a) This part establishes requirements for packaging, preparation for shipment, and transportation of licensed material.
- (b) The packaging and transport of licensed material are also subject to the regulations of other agencies (e.g., the U.S. Department of Transportation, the U.S. Nuclear Regulatory Commission, and the U.S. Postal Service) having jurisdiction over means of transport. The requirements of this part are in addition to, and not in substitution for, other requirements.
- (c) The regulations in this part apply to any licensed authority by specific or general license issued by the Department to receive, possess, use, or transfer licensed material to a carrier for transport, transports the material outside the site of usage as specified in the Department's license, or transports that material on public highways. No provision of this part authorizes the possession of licensed material.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 139 OF 173

RESTRUCTURING 'PART C' TRANSPORTATION (Con't)

RH-3002. Purpose and Scope. (Con't)

- (d) Exemptions from the requirement for license in RH-3200 are specified in RH-3300.
- (e) The regulations of this part apply to any person required to obtain a certificate of compliance or an approved compliance plan if the person delivers radioactive material to a common or contract carrier for transport or transports the material outside the confines of the person's plant or other authorized place of use.
- (f) This part also gives notice to all persons who knowingly provide to any licensee, certificate holder, quality assurance program approval or to a contractor, or subcontractor of any of them, components, equipment, materials, or other goods or services, that relate to a licensee's certificate holder's, quality assurance program approval holder's or applicant's activities subject to this part, that they may be individually subject to Department enforcement action for violation of RH-1511 (Deliberate misconduct)

The regulations in this Section establish requirements for packaging, preparation for shipment, and transportation of radioactive material in excess of Type A quantities.

RH-3003. Communications. All communications concerning these Regulations shall be addressed to the Division of Radiation Control and Emergency Management, Arkansas Department of Health, Division of Radiation Control and Emergency Management, 4815 West Markham, Mail Slot 30, Little Rock, Arkansas 72205-3867.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 140 OF 173

RESTRUCTURING 'PART C' TRANSPORTATION. (Con't)

PART B. DEFINITIONS

RH-3100. General Definitions.

These Regulations of the Arkansas State Board of Health Rules and Regulations for Control of Sources of Ionizing Radiation, Section A/

The following terms are as defined for the purpose of this Section. To ensure compatibility with international transportation standards, all limits in this part are given in terms of dual units: The International System of Units (SI) followed or preceded by U.S. standard or customary units. The U.S. customary units are not exact equivalents, but rounded to a convenient value, providing a functionally equivalent unit. For the purpose of this part, either unit may be used.

- a. A_1 - Maximum activity of special form of radioactive material permitted in a Type A package.

A_2 - Maximum activity of radioactive material, permitted in a Type A package.

These values may be derived in accordance with the procedure prescribed in RH-2700, Appendix C.

These values are either listed in RH-2700, Table C-1 or may be derived in accordance with the procedure prescribed in RH-2700, Appendix C.

- b. A_2 - Maximum activity of radioactive material, other than special form, LSA and SCO material, permitted in a Type A package.

These values are either listed in RH-2700, Table C-1 or may be derived in accordance with the procedure prescribed in RH-2700, Appendix C.

- c. Carrier - A person engaged in the transportation of passengers or property by land or water as a common, contract, or private carrier, or by civil aircraft.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 141 OF 173

RESTRUCTURING 'PART C' TRANSPORTATION. (Con't)

RH-3100. General Definitions. (Con't)

- d. Certificate Holder - a person who has been issued a certificate of compliance or other package approval by the U.S. Nuclear Regulatory Commission.
- e. CFR - Code of Federal Regulations.
- f. Close reflection by water - immediate contact by water of sufficient thickness for maximum reflection of neutrons.
- g. Containment system - the assembly of components of the packaging intended to retain the radioactive material during transport.
- h. Conveyance -
- (1) 'For transport by public highway or rail' any transport vehicle or large freight container;
 - (2) 'For transport by water' any vessel, or any hold, compartment, or defined deck area of a vessel including any transport vehicle on board the vessel; and
 - (3) 'For transport by aircraft' any aircraft.
- di. Exclusive use (also referred to in other regulations as sole use or full load) - The sole use of a conveyance by a single consignor ~~and~~ of a conveyance for which all initial, intermediate, and final loading and unloading are carried out in accordance with the direction of the consignor or consignee. The consignor and the carrier must ensure that any loading or unloading is performed by personnel having radiological training and resources appropriate for safe handling of the consignment. The consignor must issue specific instructions, in writing, for maintenance of exclusive use shipment controls, and include them with the shipping paper information provided by the consignor.
- i. Fissile material - Plutonium-238, plutonium-239, plutonium-241, uranium-233, uranium-235, or any combination of these radionuclides. Unirradiated natural uranium and depleted uranium that has been irradiated in thermal reactors only are not included in this definition.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 142 OF 173

RESTRUCTURING 'PART C' TRANSPORTATION. (Con't)

RH-3100. General Definitions. (Con't)

- k. Licensed material - Radioactive material received, possessed, used, or transferred under a general or specific license issued by the Department pursuant to the regulations in this part.
- l. Low Specific Activity (LSA) - radioactive material with limited specific activity that satisfies the descriptions and limits set forth below. Shielding materials surrounding the LSA material may not be considered in determining the estimated average specific activity of the package contents. LSA material must be in one of three groups:
- (1) LSA-I
- (i) Ores containing only naturally occurring radioactive radionuclides (e.g., uranium, thorium) and uranium or thorium concentrates of such ores; or
- (ii) Solid unirradiated natural uranium or depleted uranium or natural thorium or their solid or liquid compounds or mixtures; or
- (iii) Radioactive material, other than fissile material, for which the A_2 value is unlimited; or
- (iv) Mill tailings, contaminated earth, concrete, rubble, other debris, and activated material in which the radioactive material is essentially uniformly distributed, and the average specific activity does not exceed $10 E-6 A_2/g$.
- (2) LSA-II
- (i) Water with tritium concentration up to 20.0 Ci/liter (0.8 TBq/liter); or
- (ii) Material in which the radioactive material is distributed throughout, and the average specific activity does not exceed $10 E-4 A_2/g$ for solids and gases, and $10 E-5 A_2/g$ for liquids.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 143 OF 173

RESTRUCTURING 'PART C' TRANSPORTATION. (Con't)

RH-3100. General Definitions. (Con't)

1. Low Specific Activity (LSA) (Con't)

(3) LSA-III

Solids (e.g., consolidated wastes, activated materials) in which:

(i) The radioactive material is distributed throughout a solid or a collection of solid objects, or is essentially uniformly distributed in a solid compact binding agent (such as concrete, bitumen, ceramic, etc.); and

(ii) The radioactive material is relatively insoluble, or it is intrinsically contained in a relatively insoluble material, so that, even under loss of packaging, the loss of radioactive material per package by leaching, when placed in water for seven (7) days would not exceed $0.1 A_2$; and

(iii) The average specific activity of the solid does not exceed $2 \times 10^{-3} A_2/g$.

m. Low toxicity alpha emitters - natural uranium, depleted uranium, natural; uranium-235, uranium-238, thorium-232, thorium-228, or thorium-230 when contained in ores or physical or chemical concentrates or tailings; or alpha emitters with a half-life of less than ten (10) days.

n. Maximum normal operating pressure - the maximum gauge pressure that would develop in the containment system in a period of 1 year under the heat condition specified in 10 CFR 71.71(c)(1) in the absence of venting, external cooling by an ancillary system or operational controls during transport.

o. Natural thorium - thorium with the naturally occurring distribution of thorium isotopes (essentially 100 weight percent thorium-232).

ep. Normal form radioactive material - Radioactive material which that has not been demonstrated to qualify as "special form radioactive material".

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 144 OF 173

RESTRUCTURING 'PART C' TRANSPORTATION. (Con't)

RH-3100. General Definitions. (Con't)

- g. Optimum interspersed hydrogenous moderation - The presence of hydrogenous material between packages to such an extent that the maximum nuclear reactivity results.
- fr. Package - Packaging together with its radioactive contents as presented for transport.
1. Fissile material package - A fissile material packaging together with its fissile material contents.
 2. Type B package - A Type B packaging together with its radioactive contents. On approval, a Type B package design is designated by NRC as B(U) unless the package has a maximum normal operating pressure of more than 700 kilopascal (100 lb/in²) gauge or a pressure relief device which would allow the release of radioactive material to the environment under the tests specified in 10 CFR 71.73 (hypothetical accident conditions), in which case it will receive a designation B(M). B(U) refers to the need for unilateral approval of international shipments; B(M) refers to the need for multilateral approval of international shipments. There is no distinction made in how packages with these designations may be used in domestic transportation. To determine their distinction for international transportation, see DOT regulations in 49 CFR Part 173. A Type B package approved prior to September 6, 1983, was designated only as Type B. Limitations on its use are specified in 10 CFR 71.73.
- gs. Packaging - Assembly of components necessary to ensure compliance with the packaging requirements of this Part. It may consist of one or more receptacles, absorbent materials, spacing structures, thermal insulation, radiation shielding, and devices for cooling or absorbing mechanical shocks. The vehicle, tie-down system, and auxiliary equipment may be designated as part of the packaging.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 145 OF 173

RESTRUCTURING 'PART C' TRANSPORTATION (Con't)

RH-3100. General Definitions. (Con't)

- kt. Special form radioactive material - Radioactive material which satisfies the following conditions:
1. It is either a single solid piece or is contained in a selected capsule that can be opened only by destroying the capsule;
 2. The piece or capsule has at least one dimension not less than ~~8~~ five (5) millimeters (0.197 inch); and
 3. It satisfies the test requirements of 10 CFR 71.75. A special form encapsulation designed in accordance with the requirements of 10 CFR 71.4 in effect on June 30, 1983, and constructed before July 1, 1985, and a special form encapsulation designed in accordance with the requirements of 10 CFR 71.4 in effect on March 31, 1996, and constructed before April 1, 1998, may continue to be used. Any other special form encapsulation must meet the specifications of this definition.
- u. Specific activity of a radionuclide - The radioactivity of the radionuclide per unit mass of that nuclide. The specific activity of a material in which the radionuclide is essentially uniformly distributed is the radioactivity per unit mass of the material.
- v. State - A State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands.
- w. Surface Contaminated Object (SCO) - A solid object that is not itself classed as radioactive material, but which has radioactive material distributed on any of its surfaces. SCO must be in one of two (2) groups with surface activity not exceeding the following limits:

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 146 OF 173

RESTRUCTURING 'PART C' TRANSPORTATION (Con't)

RH-3100. General Definitions. (Con't)

x. Surface Contaminated Object (SCO) (Con't)

1. SCO-I: A solid object on which:

(i) The non-fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 10⁻⁴ microcurie/cm² (4 Bq/cm²) for beta and gamma and low toxicity alpha emitters, or 10⁻⁵ microcurie/cm² (0.4 Bq/cm²) all other alpha emitters;

(ii) The fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 1.0 microcurie/cm² (4X10⁴ Bq/cm²) for beta and gamma and low toxicity alpha emitters, or 0.1 microcurie/cm² (4X10³ Bq/cm²) all other alpha emitters; and

(iii) The non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 1.0 microcurie/cm² (4X10⁴ Bq/cm²) for beta and gamma and low toxicity alpha emitters, or 0.1 microcurie/cm² (4X10³ Bq/cm²) all other alpha emitters.

2. SCO-II: A solid object on which the limits for SCO-I are exceeded and on which:

(i) The non-fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 10⁻² microcurie/cm² (400 Bq/cm²) for beta and gamma and low toxicity alpha emitters, or 10⁻³ microcurie/cm² (40 Bq/cm²) all other alpha emitters;

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 147 OF 173

RESTRUCTURING 'PART C' TRANSPORTATION. (Con't)

RH-3100. General Definitions. (Con't)

x. Surface Contaminated Object (SCO) (Con't)

2. SCO-II: (Con't)

(ii) The fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 20 microcurie/cm² (8X10⁵ Bq/cm²) for beta and gamma and low toxicity alpha emitters, or 2 microcurie/cm² (8X10⁴ Bq/cm²) all other alpha emitters; and

(iii) The non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 20 microcurie/cm² (8X10⁵ Bq/cm²) for beta and gamma and low toxicity alpha emitters, or 2 microcurie/cm² (8X10⁴ Bq/cm²) all other alpha emitters.

y. Transport index - The dimensionless number (rounded up to the next tenth) placed on the label of a package, to designate the degree of control to be exercised by the carrier during transportation. The transport index is determined as follows:

1. For non-fissile material packages, the number determined by multiplying the maximum radiation level in millisievert (mSv) per hour at one meter (3.3 ft) from the external surface of the package by 100 (equivalent to maximum radiation level in millirem per hour at one meter (3.3 ft)); or

2. For fissile material packages, the number determined by multiplying the maximum radiation level in millisievert (mSv) per hour at one meter (3.3 ft) from the external surface of the package by 100 (equivalent to maximum radiation level in millirem per hour at one meter (3.3 ft)); or, for criticality control purposes, the number obtained as described in 10 CFR 71.59, whichever is larger.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 148 OF 173

RESTRUCTURING 'PART C' TRANSPORTATION (Con't)

RH-3100. General Definitions. (Con't)

11. Type B package / + / Type B package / together with its radioactive contents // On approval // a / Type B package / design // is / designated / by NRC / as / B(U) / unless / the / package / has / a / maximum / normal / operating pressure / of / more / than / 700 / kilopascal / (100 / lb / in²) / gauge / or / a pressure / relief / device / which / would / allow / the / release / of radioactive / material / to / the / environment / under / the / tests specified / in / 10 / CFR / 171 / 73 / (hypothetical / accident / conditions) // in which / case / it / will / receive / a / designation / B(M) // B(U) / refers / to the / need / for / unilateral / approval / of / international / shipments // B(M) / refers / to / the / need / for / multilateral / approval // There / is / no distinction / made / in / how / packages / with / these / designations / may / be used / in / domestic / transportation // To / determine / their / distinction for / international / transportation // see / DOT / regulations / in / 49 / CFR Part / 173 // A / Type B package / approved / prior / to / September / 6 / 1983 / was / designated / only / as / Type B // Limitations / on / its / use / are specified / in / 10 / CFR / 171 / 73 /

12. Type A quantity - A quantity of radioactive material, the aggregate radioactivity of which does not exceed A_1 for special form radioactive material or A_2 for normal form radioactive material, where A_1 and A_2 are given in Section 3, RH-2700, Table C-1 of this Part or may be determined by procedures described in Appendix C of this Part.

aa. Type B quantity means a quantity of radioactive material greater than a Type A quantity.

ab. Uranium -- natural, depleted, enriched

1. Natural uranium

Uranium with the naturally occurring distribution of uranium isotopes (approximately 0.711 weight percent uranium-235, and the remainder by weight essentially uranium-238).

2. Depleted uranium

Uranium containing less uranium-235 than the naturally occurring distribution of uranium isotopes.

3. Enriched uranium

Uranium containing more uranium-235 than the naturally occurring distribution of uranium isotopes.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 149 OF 173

RESTRUCTURING 'PART C' TRANSPORTATION. (Con't)

PART C. REQUIREMENTS FOR INTRASTATE TRANSPORTATION OF RADIOACTIVE MATERIALS

PART C. GENERAL REGULATORY PROVISIONS

RH-3200. 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 Department or as exempted in RH-3300.

Requirement for License.

Except as authorized in a general license or a specific license issued by the Department, or as exempted in this part, no licensee may:

- a. Deliver licensed material to a carrier for transport; or
- b. Transport licensed material.

RH-3201. Intrastate Transport of Radioactive Materials.

- a. A general license is hereby issued to any common or contract carrier to receive, possess, transport and store radioactive material in the regular course of their carriage for another or storage incident thereto, provided the transportation and storage is in accordance with the applicable requirements of the regulations appropriate to the mode of transport of the U.S. Department of Transportation insofar as such regulations relate to the loading and storage of packages, placarding/carding of the transporting vehicle and incident reporting.⁽¹⁾
- b. A general license is hereby issued to any private carrier to transport radioactive material, provided the transportation is in accordance with the applicable requirements of these Regulations appropriate to the mode of transport of the U.S. Department of Transportation insofar as such regulations relate to the loading and storage of packages, placarding/carding of the transporting vehicle and incident reporting.⁽¹⁾
- c. Persons who transport radioactive material pursuant to the general licenses in RH-3201a or b are exempt from the requirements of Section 3 of these Regulations to the extent that they transport radioactive material.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 150 OF 173

RESTRUCTURING 'PART C' TRANSPORTATION. (Con't)

RH-3201. Exemptions.

- a. Common and contract carriers, freight forwarders and warehousemen who are subject to the rules and regulation of the U.S. Department of Transportation or the U.S. Postal Service are exempt from these Regulations to the extent that they transport or store radioactive material in the regular course of their carriage for another or storage incident thereto. Common and contract carriers who are not subject to the rules and regulations of the U.S. Department of Transportation or U.S. Postal Service are subject to RH-3200 and other applicable Sections of these Regulations.
- b. Physicians, as defined in RH-200, are exempt from the requirements of RH-3202 to the extent that they transport radioactive material for use in the practice of medicine.
- c. Any licensee is exempt from RH-3200 to the extent that he/she delivers to a carrier for transport packages each of which contains no radioactive material having a specific activity in excess of 0.002 microcurie per gram.
- d. Any licensee who delivers radioactive material to a carrier for transport, where such transport is subject to the regulations of the U.S. Postal Service, is exempt from the provisions of RH-3200.

RH-3202/ Preparation of Radioactive Material for Transport // A general license is hereby issued to deliver radioactive material to a carrier² for transport provided that/

- a/ The licensee complies with the applicable requirements of the Regulations, appropriate to the mode of transport, of the U.S. Department of Transportation insofar as such regulations relate to the packaging of radioactive material and to the monitoring, marking and labeling of those packages/
- b/ The licensee has established procedures for safely opening and closing packages in which radioactive material is transported and to assure that prior to the delivery to a carrier for transport, each package is properly closed for transport/

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 151 OF 173

RESTRUCTURING 'PARTS C & D' TRANSPORTATION. (Con't)

RH-3202. Preparation of Radioactive Material for Transport. A general license is hereby issued to deliver radioactive material to a carrier for transport provided that:

e. Prior to delivery of a package to a carrier for transport, the licensee shall assure that any special instructions needed to safely open the packages are sent to or have been made available to the consignee.

RH-3202. Transportation of Radioactive Material.

- a. Each licensee who transports licensed material outside of the confines of the licensee's plant or other place of use, or who delivers licensed material to a carrier for transport, shall:
 1. comply with the applicable requirements, appropriate to the mode of transport, of the regulations of DOT 49 CFR Parts 170 through 189; and
 2. assure that any special instructions needed to safely open the package are sent to or have been made available to the consignee.
- b. 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 those regulations to the same extent as if the shipment was subject to the regulations.

PART D. GENERAL LICENSES

RH-3301. Additional Requirements. The Department may, by rule, regulation or order, impose upon any licensee or registrant such requirements in addition to those established in these Regulations as it deems appropriate or necessary to minimize danger to public health and safety or property.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 152 OF 173

RESTRUCTURING PART D TRANSPORTATION. (Con't)

RH-3301. General License For Carriers.

- a. A general license is hereby issued to any common or contract carrier not exempt under RH-3201 to receive, possess, transport, and store radioactive material in the regular course of their carriage for another or storage incident thereto, 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 such requirements relate to the loading and storage of packages, placarding of the transporting vehicle, and incident reporting. Any notification of incidents referred to those U.S. Department of Transportation requirements shall be filed with or made to the Department.
- b. A general license is hereby issued to any private carrier to transport radioactive material, 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 such requirements relate to the loading and storage of packages, placarding of the transporting vehicle, and incident reporting. Any notification of incidents referred to those U.S. Department of Transportation requirements shall be filed with or made to the Department.
- c. Persons who transport radioactive material pursuant to the general licenses in RH-3301.a. and b. are exempt from the requirements of Section 3 entitled "Standards for Protection" and Section 3, Part N entitled "Notices, Instructions, and Reports to Workers; Inspections" of these regulations to the extent that they transport radioactive material.

RH-3302. General License For NRC Approved Packages.

- a. A general license is hereby issued to any licensee of the Department 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).
- b. This general license applies only to a licensee who:
 1. 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;

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 153 OF 173

RESTRUCTURING PART D TRANSPORTATION. (Con't)

RH-3302. General License For NRC Approved Packages. (Con't)

b. This general license applies only to a licensee who:

2. Complies with the terms and conditions of the license, certificate, or other approval, as applicable, and the applicable requirements of this Section;

3. Prior to the licensee's first use of the package, has registered with the NRC; and

c. The general license in RH-3302.a. applies only when the package approval authorizes use of the package under this general license.

d. For previously approved Type B packages which are not designated as either B(U) or B(M) in the NRC Certificate of Compliance, this general license is subject to additional restrictions of RH-3303.

RH-3303. General License For Previously Approved Type B Packages.

a. 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 RH-3302 with the following additional limitations:

1. Fabrication of the packaging was satisfactorily completed before August 31, 1986, as demonstrated by application of its model number in accordance with NRC regulations; and

2. The package may not be used for a shipment to a location outside the United States, except approved under special arrangement in accordance with 49 CFR 173.477.

RH-3304. General License For DOT Specification Container.

a. A general license is hereby issued to any licensee of the Department to transport or to deliver to a carrier for transport licensed material in a specification container for a Type B quantity of radioactive material as specified in the regulations of the U.S. Department of Transportation in 49 CFR Parts 173 and 178.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 154 OF 173

RESTRUCTURING PART D TRANSPORTATION. (Con't)

RH-3304. General License For DOT Specification Container. (Con't)

- b. This general license in RH-3304.a. 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 the U.S. Department of Transportation in accordance with 49 CFR 173.472.

RH-3305. General License For Use of Foreign Approved Package

- a. A general license is hereby issued to any licensee of the Department 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. Department of Transportation as meeting the applicable requirements of 49 CFR 171.12.
- b. This general license applies only to shipments made to or from locations outside the United States.
- c. This general license applies only to a licensee who:
1. Has a copy of the applicable certificate, the revalidation, and 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; and
 2. Complies with the terms and conditions of the certificate and revalidation and with applicable requirements of this Section.

RH-3306. General License For Fissile Material, Limited Quantity Per Package.

- a. A general license is issued to any licensee of the Department to transport fissile material, or to deliver fissile material to a carrier for transfer, without complying with the package standards of this Section, if the material is shipped in accordance with this Section.
- b. The general license applies only to a licensee who has a quality assurance program approved by the Department as satisfying the provisions of RH-3500.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 155 OF 173

RESTRUCTURING PART D TRANSPORTATION. (Con't)

RH-3306. General License For Fissile Material, Limited Quantity Per Package. (Con't)

- c. Except as provided in RH-3306.d., this general license applies only when a package contains no more than a Type A quantity of radioactive material, including only one of the following:
1. Up to 40 g of uranium-235;
 2. Up to 30 g of uranium-233;
 3. Up to 25 g of fissile radionuclides of plutonium, except that for encapsulated plutonium-beryllium neutron sources in special form, an A₁ quantity of plutonium may be present; or
 4. A combination of fissile radionuclides in which the sum of the ratios of the amounts of each radionuclide to the corresponding maximum amounts in RH-3306.c.1, .2, and .3 does not exceed unity.
- d. For packages where fissile material is mixed with substances having an average hydrogen density greater than water, this general license applies only when a package containing no more than a Type A quantity of radioactive material, including only one of the following:
1. Up to 29 g of uranium-235;
 2. Up to 18 g of uranium-233;
 3. Up to 18 g of fissile radionuclides of plutonium, or
 4. A combination of fissile radionuclides in which the sum of the ratios of the amounts of each radionuclide to the corresponding maximum amounts in RH-3306.d.1, .2, and .3 does not exceed unity.
- e. Except for the beryllium contained within the special form plutonium-beryllium sources authorized in RH-3306.c., this general license applies only when the beryllium, graphite, or hydrogenous material enriched in deuterium is not present in quantities not exceeding 0.1% of the fissile material mass.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 156 OF 173

RESTRUCTURING PART D TRANSPORTATION. (Con't)

RH-3306. General License For Fissile Material, Limited Quantity Per Package. (Con't)

f.1. Except as specified in RH-3306.f.2. for encapsulated plutonium-beryllium sources, this general license applies only when a package 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:

$$\text{Minimum Transport Index} = (0.25x + 0.33y + 0.4z)$$

2. 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 0.025 times the number of grams of the fissile radionuclides of plutonium.
3. Packages which have a transport index greater than 10 are not authorized under this general license provisions of this Section.

RH-3307. GENERAL LICENSE: FISSILE MATERIAL, LIMITED QUANTITY, CONTROLLED SHIPMENT

- a. A general license is issued to any licensee of the Department to transport fissile material, or to deliver fissile material to a carrier for transfer, without complying with the package standards of this Section, if limited material is shipped in accordance with this Section.
- b. The general license applies only to a licensee who has a quality assurance program approved by the Department as satisfying the provisions of RH-3500.
- c. This general license applies only when a package contains no more than a Type A quantity of radioactive material and no more than 400 g total of the fissile radionuclides of plutonium encapsulated as plutonium-beryllium neutron sources in special form.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 157 OF 173

RESTRUCTURING PART D TRANSPORTATION. (Con't)

RH-3307. GENERAL LICENSE: FISSILE MATERIAL, LIMITED QUANTITY, CONTROLLED SHIPMENT (Con't)

d. This general license applies only when:

1. The mass of fissile radionuclides in the shipment is limited such that the

$$\frac{\text{grams of uranium-235}}{X} + \frac{\text{grams of other fissile material}}{Y} > 1$$

where X and Y are the mass defined in the table following RH-3307.d.2.

2. The encapsulated plutonium-beryllium neutron sources are in special form and the total mass of fissile radionuclides in the shipment does not exceed 2500 g.

PERMISSIBLE MASS LIMITS FOR SHIPMENTS OF FISSILE MATERIAL

<u>Fissile material</u>	<u>Fissile material mass (g) mixed with substances having a hydrogen density less than or equal to water</u>	<u>Fissile material mass (g) mixed with substances having a hydrogen density greater than water</u>
<u>Uranium-235 (X)</u>	<u>500</u>	<u>290</u>
<u>Other fissile material (Y)</u>	<u>300</u>	<u>180</u>

e. Except for the beryllium contained within the special form plutonium-beryllium sources authorized in RH-3307.c. and d., this general license applies only when the beryllium, graphite, or hydrogenous material enriched in deuterium is not present in quantities not exceeding 0.1% of the fissile material mass.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 158 OF 173

RESTRUCTURING PARTS D & E TRANSPORTATION. (Con't)

RH-3307. GENERAL LICENSE: FISSILE MATERIAL, LIMITED QUANTITY, CONTROLLED SHIPMENT. (Con't)

- f. This general license applies only when shipment of these packages is made under procedures specifically authorized by DOT, in accordance with 49 CFR Part 173 of its regulations, to prevent loading, transport, or storage of these packages with other fissile material shipments.

PART E OPERATING CONTROLS AND PROCEDURES

RH-3400. Violations.

- a. Any person who violates any of the provisions of the Act or rules, regulations or orders in effect pursuant thereto of the Department, shall, upon conviction thereof, be punished by a fine not less than one hundred dollars (\$100.00) nor more than two thousand dollars (\$2,000.00) or by imprisonment for not more than six (6) months, or be both so fined and imprisoned.
- b. Sources of radiation shall be subject to inspection pursuant to Section 5 of these Regulations.

RH-3401. Routine Determination.

Prior to each shipment of licensed material, the licensee shall ensure that the package with its contents satisfies the applicable requirements of this Section and the license. The licensee shall determine that:

- a. The package is proper for the contents to be shipped;
- b. The package is in unimpaired physical condition except for superficial defects such as marks or dents;
- c. Each closure device of the packaging, including any required gasket, is properly installed and secured and free of defects;
- d. Any system for containing liquid is adequately sealed and has adequate space or other specified provision for expansion of the liquid;

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 159 OF 173

RESTRUCTURING PART E TRANSPORTATION. (Con't)

RH-3401. Routine Determination.

- e. Any pressure relief device is operable and set in accordance with written procedures;
- f. The package has been loaded and closed in accordance with written procedures;
- g. Any 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;
- h. 1. The level of non-fixed (removable) radioactive contamination on the external surfaces of each package offered for shipment is as low as reasonably achievable. The level of non-fixed (removable) 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 must be taken in the most appropriate locations to yield a representative assessment of the non-fixed contamination levels. Except as provided in RH-3401.h.2., the amount of radioactivity measured on any single wiping material, when averaged over the surface wiped, must not exceed the limits given in Table 3 below at any time during transport. Other methods of assessment of equal or greater efficiency may be used. When other methods are used, the detection efficiency of the method used must be taken into account and in no case may the removable contamination on the external surfaces of the package exceed ten (10) times the limits listed in Table 3.
- 2. In the case of packages transported as exclusive use shipments by rail or highway only, the non-fixed radioactive contamination at any time during transport must not exceed ten (10) times the levels prescribed in RH-3401.h.1. The levels at the beginning of transport must not exceed the levels in RH-3401.h.1.;
- 3. In the case of packages containing radioactive materials is Special Form, a leak test performed in the past six (6) months may be used as evidence that the requirements of RH-3401.h.1. has been met.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 160 OF 173

RESTRUCTURING PART E TRANSPORTATION. (Con't)

RH-3401. Routine Determination. (Con't)

- i. External radiation levels around the package and around the vehicle, if applicable, will not exceed 200 millirems per hour (2 mSv/h) at any point on the external surface of the package at any time during transportation. The transport index shall not exceed 10.
- i. For a package transported in exclusive use by rail, highway or water, radiation levels external to the package may exceed the limits specified in RH-3401.h.1. but shall not exceed any of the following:
 1. 200 millirems per hour (2 mSv/h) on the accessible external surface of the package unless the following conditions are met, in which case the limit is 1000 millirems per hour (10 mSv/h):
 - (i) The shipment is made in a closed transport vehicle.
 - (ii) Provisions are made to secure the package so that its position within the vehicle remains fixed during transportation, and
 - (iii) There are no loading or unloading operations between the beginning and end of the transportation.
 2. 200 millirems per hour (2 mSv/h) at any point on the outer surface of the vehicle, including the upper and lower surfaces, or, in the case of an open vehicle, at any 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;
 3. 10 millirems per hour (0.1 mSv/h) at any point two (2) meters from the vertical planes represented by the outer lateral surfaces of the vehicle, or, in the case of a open vehicle, at any point two (2) meters from the vertical planes projected from the outer edges of the vehicle; and
 4. 2 millirems per hour (0.02 mSv/h) in any normally occupied positions of the vehicle, except that this provision does not apply to private motor carriers when persons occupying these positions are provided with special health supervision, personnel radiation exposure monitoring devices, and training in accordance with RH-2803, INSTRUCTIONS TO WORKERS.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 161 OF 173

RESTRUCTURING PART E TRANSPORTATION. (Con't)

RH-3401. Routine Determination. (Con't)

- k. A package must be prepared for transport so that in still air at 100 degrees Fahrenheit (38 degrees Celsius) and in the shade, no accessible surface of a package would have a temperature exceeding 122 degrees Fahrenheit (50 degrees Celsius) in a nonexclusive use shipment or 180 degrees Fahrenheit (82 degrees Celsius) in an exclusive use shipment. Accessible package surface temperatures shall not exceed these limits at any time during transportation.

Table 3

Removable External Radioactive Contamination Wipe Limits

	<u>Maximum Permissible Limits</u>	
<u>Contaminant</u>	<u>uCi/cm²*</u>	<u>dpm/cm²</u>
<u>Beta-gamma emitting radionuclides; all radionuclides with half-lives less than ten days; natural uranium; natural thorium; uranium-235; uranium-238; thorium-232; thorium-228 and thorium-230 when contained in ores or physical concentrates</u>	<u>10⁻⁵</u>	<u>22</u>
<u>All other alpha emitting radionuclides</u>	<u>10⁻⁶</u>	<u>2.2</u>

FOOTNOTE

(*) == to convert microcuries (uCi) to SI units of megabecquerels, multiply the values by 37.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 162 OF 173

RESTRUCTURING PART E TRANSPORTATION. (Con't)

RH-3402. Air Transport of Plutonium.

Notwithstanding the provisions of any general licenses and notwithstanding any exemptions stated directly in this Section or included indirectly by citation of the U.S. Department of Transportation (DOT) regulations, as may be applicable, the licensee shall assure that plutonium in any form is not transported by air, or delivered to a carrier for air transport, unless:

- a. The plutonium is contained in a medical device designed for individual human application; or
- b. The plutonium is contained in a material in which the specific activity is not greater than 0.002 microcuries per gram (74 Bq/gm) of material and in which the radioactivity is essentially uniformly distributed; or
- c. The plutonium is shipped in a single package containing no more than an A₂ quantity of plutonium in any isotope or form and is shipped in accordance with RH-3202; or
- d. 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.

RH-3403. Records.

- a. Each licensee shall maintain for a period of two (2) years after shipment a record of each shipment of licensed material not exempt under RH-3201, showing, where applicable:
 1. Identification of the packaging by model number;
 2. Verification that there were no significant defects in the packaging, as shipped;
 3. Volume and identification of coolant;
 4. Type and quantity of licensed material in each package, and the total quantity of each shipment;
 5. Date of the shipment;

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 163 OF 173

RESTRUCTURING PART E TRANSPORTATION. (Con't)

RH-3403. Records. (Con't)

- a. Each licensee shall maintain for a period of two (2) years after shipment a record of each shipment of licensed material not exempt under RH-3201, showing, where applicable:
6. Name and address of the transferee;
 7. Address to which the shipment was made; and
 8. Results of the determinations required by RH-3401.
- b. The licensee shall make available to the Department for inspection, upon reasonable notice, all records required by this Section.

RH-3404. Reports.

The licensee shall report to the Department within thirty (30) days:

- a. Any instance in which there is significant reduction in the effectiveness of any authorized packaging during use; and
- b. Details of any defects with safety significance in the packaging after first use, with the means employed to repair the defects and prevent their recurrence.

~~RH-3203/~~ RH-3405. Advance Notification of Transport of Nuclear Waste.^{3/}

- a. Prior to the transport of any nuclear waste outside of the confines of the licensee's facility or other place of use or storage, or prior to the delivery of any nuclear waste to a carrier for transport, each licensee shall provide advance notification of such transport to the Governor (or Governor's designee) of each State through which the waste will be transported.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 164 OF 173

RESTRUCTURING PART E TRANSPORTATION. (Con't)

~~RH-3203/~~ RH-3405. Advance Notification of Transport of Nuclear Waste.^{3/} |

b. Advance notification is required only when:

1. The nuclear waste is required to be in Type B packaging for transportation;
2. 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;
3. The quantity of licensed material in a single package exceeds:
 - i. 5,000 curies of special form radionuclides;
 - ii. 5,000 curies of uncompressed gases of Argon-41, Krypton-85m, Krypton-87, Xenon-131m, or Xenon-135;
 - iii. 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;
 - iv. 20 curies of other non-special form radionuclides for which A_2 is less than or equal to 4 curies; or
 - v. 200 curies of other non-special form radionuclides for which A_2 is greater than 4 curies (148 GBq).

c. Each advance notification required by ~~RH-3203/d/~~ RH-3405.a. | shall contain the following information:

1. The name, address and telephone number of the shipper, carrier and receiver of the shipment;
2. A description of the nuclear waste contained in the shipment as required by these Regulations or the U.S. Department of Transportation in 49 CFR 172.202 and 172.203.d;
3. The point of origin of the shipment and the seven-day period during which departure of the shipment is estimated to occur;

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 165 OF 173

RESTRUCTURING PART E TRANSPORTATION. (Con't)

~~RH-3203~~ RH-3405. Advance Notification of Transport of Nuclear Waste.^{3/} |

c. Each advance notification required by ~~RH-3203~~ RH-3203.a. |
shall contain the following information: (Con't)

4. The seven-day period during which arrival of the shipment at State boundaries is estimated to occur;
5. The destination of the shipment and the seven-day period during which arrival of the shipment is estimated to occur; and
6. A point of contact with a telephone number for current shipment information.

d. The notification required by ~~RH-3203~~ RH-3405.a. shall be made |
in writing to the office of each appropriate Governor (or |
Governor's designee) and to the Department. A notification |
delivered by mail must be postmarked at least seven (7) days |
before the beginning of the seven-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-day period during which departure of the shipment |
is estimated to occur. A copy of the notification shall be |
retained by the licensee for one (1) year. |

e. The licensee shall notify each appropriate Governor (or |
Governor's designee) and the Department of any changes to |
schedule information provided pursuant to ~~RH-3203~~ RH-3405. Such |
notification shall be by telephone to a responsible individual |
in the Office of the Governor (or Governor's designee) of the |
appropriate state or states. |

Each licensee shall maintain for one (1) year a record of the |
name of the individual contacted. |

f. 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 Department. A copy of the notice |
shall be retained by the licensee for one (1) year. |

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 166 OF 173

RESTRUCTURING PART F TRANSPORTATION. (Con't)

PART F. QUALITY ASSURANCE

RH-3500. Quality Assurance Requirements.

- a. 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 are promptly identified and corrected.
- b. The licensee shall identify the material and components to be covered by the quality assurance program.
- c. 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.
- d. Prior to the use of any package for the shipment of radioactive material, each licensee shall obtain approval by the Department of its quality assurance program.
- e. The licensee shall maintain sufficient written records to demonstrate compliance with the quality assurance program. Records of quality assurance pertaining to the use of a package for shipment of radioactive material shall be maintained for a period of two (2) years after shipment.

CURRENT SECTION FOOTNOTES

FOOTNOTES FOR SECTION 4.

- ^{1/} Any notification of incidents referred to in those requirements shall be filed with or made to, the Department.
- ^{2/} For the purpose of these Regulations, a licensee who transports his own licensed material as a private carrier is considered to have delivered such material to a carrier for transport.
- ^{3/} For the purpose of this Section, "nuclear waste" means any large quantity of source, byproduct, or special nuclear material required to be in Type B packaging while transported to, through or across State boundaries to a disposal site, or to a collection point for transport to a disposal site.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 167 OF 173

IRRADIATORS (typo correction)

In RH-7057 Radiation Surveys (Irradiators) on page 599, the wrong SI equivalent for 0.05 millirem has been written! It should be 0.5 microsievert. (NRC Review discovery.)

RH-7057. Radiation Surveys.

- e. Before releasing resins for unrestricted use, they must be monitored before release in an area with a background level less than ~~0.05 microsievert (0.05 millirem)~~ 0.05 millirem (0.5 microsievert) per hour. The resins may be released only if the survey does not detect radiation levels above background radiation levels. The survey meter used must be capable of detecting radiation levels of ~~0.05 microsievert (0.05 millirem)~~ 0.05 millirem (0.5 microsievert) per hour.

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 168 OF 173

Establish a new section to deal with additional requirements for radionuclides in the Healing Arts.

SECTION 9. USE OF RADIONUCLIDES IN THE HEALING ARTS

PART A. GENERAL

RH-8000. Purpose and Scope.

This Section establishes additional requirements and provisions for the specific use of radionuclides in the healing arts. These requirements and provisions provide for the protection of the public health and safety. The requirements and provisions of this Section are in addition to, and not in substitution for, others in these regulations. The requirements and provisions of these regulations apply to applicants and licensees subject to this Section unless specifically exempted.

RH-8100. Reserved

PART B. Additional Requirements

RH-8201. Visiting authorized user.

- a. A licensee may permit any visiting authorized user to use licensed material for medical use under the terms of the licensee's license for a period not to exceed sixty (60) days in any calendar year if:
1. The visiting authorized user has the prior written permission of the licensee's management and, if the use occurs on behalf of an institution, the institute's Radiation Safety Committee and
 2. The licensee has a copy of an Agreement State or U.S. Nuclear Regulatory Commission license that identifies the visiting authorized user by name as an authorized user of medical use and only those procedures for which the visiting authorized user is licensed for are performed.
- b. A licensee shall retain copies of the records specified in RH-8201 for five (5) years from the date of the last visit.

-Continued-

NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 169 OF 173

Establish a new section to deal with additional requirements for radionuclides in the Healing Arts.

PART C. Specific Requirements

RH-8301. Possession, use, calibration, and check of dose calibrators.

- a. A licensee shall possess and use a dose calibrator to measure the activity of dosages of radiopharmaceuticals prior to administration to each patient.
- b. A licensee shall:
 1. Check each dose calibrator for constancy with a dedicated check source at the beginning of each day of use. To satisfy the requirement of this paragraph, the check must be done on a frequently used setting with a sealed source of not less than 10 microcuries of radium-226 or 50 microcuries of any other photon-emitting radionuclide with a half-life greater than ninety (90) days;
 2. Test each dose calibrator for accuracy upon installation and at least annually thereafter by assaying at least two (2) sealed sources containing different radionuclides whose activity the manufacturer has determined within five (5) percent of its stated activity, whose activity is at least 10 microcuries for radium-226 and 50 microcuries for any other photon-emitting radionuclide, and at least one of which has a principal photon energy between 100 keV and 500 keV. A licensee shall retain a record of each check and test required by this Section for three (3) years unless directed otherwise. The records required in this section must include: the model and serial number of the dose calibrator, the model and serial number of each source used, the identity of the radionuclide contained in the source and its activity, the date of the test, the results of the test, and the identity of the individual performing the test.
 3. Test each dose calibrator for linearity upon installation and at least quarterly thereafter over a range of use from 10 microcuries and the highest dosage that will be administered to a patient; and
 4. Test each dose calibrator for geometry dependence upon installation over the range of volumes and volume configurations for which it will be used. The licensee shall keep a record of this test for the duration of the use of the dose calibrator. A licensee shall also perform appropriate checks and tests required by this section following adjustment or repair of the dose calibrator.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 170 OF 173

Establish a new section to deal with additional requirements for radionuclides in the Healing Arts.

RH-8301. Possession, use, calibration, and check of dose calibrators.
(Con't)

5. A licensee shall mathematically correct dosage readings for any geometry or linearity error that exceeds five (5) percent if the dosage is greater than 10 microcuries and shall repair or replace the dose calibrator if the accuracy or constancy error exceeds ten (10) percent.

- c. A licensee shall retain a record of each check and test required by this section for three (3) years unless directed otherwise. The records required in this section must include: the model and serial number of the dose calibrator, the configuration of the source measured, the activity measured for each volume measured, the date of the test, and the identity of the individual performing the test.

RH-8302. Measurement of Dosages of Radiopharmaceuticals For Medical Use.

A licensee shall:

- a. Measure the activity of each dosage of a radiopharmaceutical prior to medical use.

- b. Retain a record of the measurements required by RH-8302 for three (3) years. To satisfy this requirement, the record must contain the:
 1. Generic name, trade name, or abbreviation of the radiopharmaceutical, its lot number, and expiration dates and the radionuclide;

 2. Patient's name and/or identification number if one has been assigned;

 3. Prescribed dosage and activity of the dosage at the time of measurement;

 4. Date and time of the measurement; and

 5. Initials of the individual who made the record.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 171 OF 173

Establish a new section to deal with additional requirements for radionuclides in the Healing Arts.

RH-8303. Permissible Molybdenum-99 Concentration.

- a. A licensee shall not administer a radiopharmaceutical containing more than 0.15 microcurie of molybdenum-99 per millicurie of technetium-99m (0.15 kilobecquerel of molybdenum-99 per megabecquerel of technetium-99).
- b. A licensee preparing technetium-99m radiopharmaceuticals from molybdenum-99/technetium - 99 generators shall measure the molybdenum-99 concentration in each eluate or extract.
- c. A licensee who must measure molybdenum concentration shall retain a record of each measurement for three (3) years. The record shall include, for each elution or extraction of technetium-99m, the measured activity of the technetium expressed in millicuries (megabecquerels), the measured activity of molybdenum expressed in microcuries (kilobecquerels), the ratio of the measures expressed as microcuries of molybdenum per millicurie of technetium (kilobecquerels of molybdenum per megabecquerel of technetium), the date of the test, and the initials of the individual who performed the test.
- d. A licensee shall report immediately to the Department each occurrence of molybdenum-99 concentration exceeding the limits specified in RH-8302.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 172 OF 173

Establish a new section to deal with additional requirements for radionuclides in the Healing Arts.

PART D. Specific Requirements For The Use of Radiopharmaceuticals For Therapy

RH-8301. Safety Instructions for Hospitalized Radiopharmaceutical Patient Caregivers.

- a. A licensee shall provide radiation safety instructions for all personnel caring for the patient receiving radiopharmaceutical therapy and hospitalized. Refresher training shall be provided at intervals not to exceed one (1) year. To satisfy this requirement, the instructions must describe the licensee's procedures for:
1. Patient control;
 2. Visitor control;
 3. Contamination control;
 4. Waste control; and
 5. Notification of the Radiation Safety Officer in case of the patient's death or medical emergency.
- b. A licensee shall keep for three (3) years a list of individuals receiving instruction, a description of the instruction, the date of instruction, and the name of the individual who gave the instruction.

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NRC REVIEW DRAFT OF 2000 REVISIONS RULES & REGULATIONS FOR CONTROL OF SOURCES OF IONIZING RADIATION

PAGE 173 OF 173

Establish a new section to deal with additional requirements for radionuclides in the Healing Arts.

PART E. Specific Requirements For The Use of Sources For Brachytherapy

RH-8401. Use of Sources of Brachytherapy.

A licensee shall use brachytherapy sources in accordance with the manufacturer's radiation safety and handling instructions.

RH-8402. Release of Patients Treated With Temporary Implants.

- a. Immediately after removing the last temporary implant source from a patient, the licensee shall make a radiation survey of the patient or the human research subject with a radiation detection survey instrument to confirm that all sources have been removed. The licensee may not release from confinement for medical care a patient treated by temporary implant until all sources have been removed.
- b. A licensee shall retain a record of patient surveys for three (3) years. Each record must include the date of the survey, the name of the patient, the dose rate from the patient expressed as millirem per hour and measured at one (1) meter from the patient, the survey instrument used, and the initials of the individual who made the survey.