

**Basic Radiation  
Safety Manual**

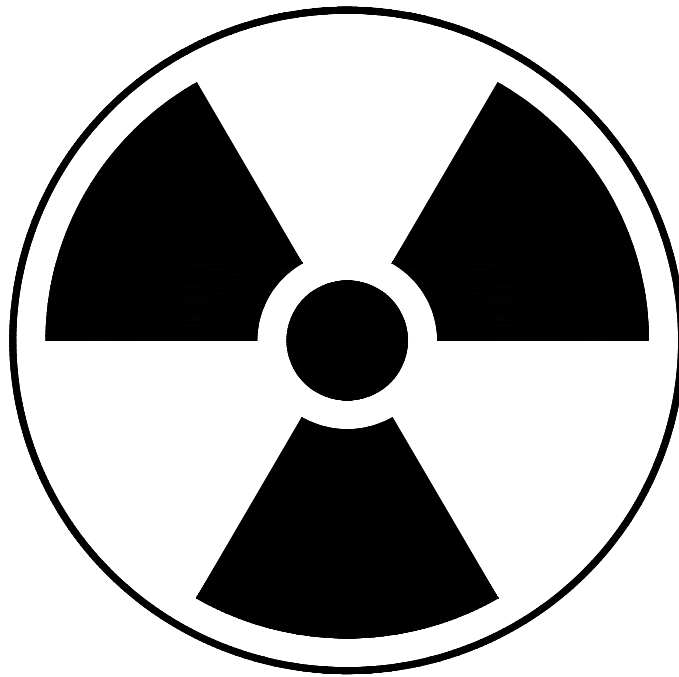
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**RLL-1 General License**

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*Table of Contents*

General Licenses / Agreement States .....	1
General Licensee Requirements.....	1
RLL Device .....	2
Radiation Dose Estimate .....	3
ISO Distance Curves .....	3
Basic Operation and Mounting for the RLL-1 .....	10
Applicable Regulations .....	16
PART 20 -- STANDARDS FOR PROTECTION AGAINST RADIATION .....	17
Subpart A -- General Provisions .....	17
§20.1001 Purpose.....	17
§20.1002 Scope.....	17
§20.1003 Definitions.....	17
§20.1004 Units of radiation dose.....	24
§20.1005 Units of radioactivity.....	25
§20.1006 Interpretations.....	25
§20.1007 Communications.....	25
§20.1008 Implementation.....	25
§20.1009 Reporting, recording, and application requirements: OMB approval.....	25
Subpart M -- Reports .....	26
§20.2201 Reports of theft or loss of licensed material.....	26
§20.2202 Notification of incidents.....	27
PART 30 -- RULES OF GENERAL APPLICABILITY TO DOMESTIC LICENSING OF BYPRODUCT MATERIAL.....	31
§30.7 Employee protection.....	35
§30.8 Information collection requirements: OMB approval.....	
§30.9 Completeness and accuracy of information.....	
§30.10 Deliberate misconduct.....	37
§30.11 Specific exemptions.....	37
§30.14 Exempt concentrations.....	37
§30.15 Certain items containing byproduct material.....	38
§30.31 Types of licenses.....	40
§30.32 Application for specific licenses.....	40
§30.33 General requirements for issuance of specific licenses.....	42
§30.36 Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.....	46
§30.52 Inspections.....	
§30.53 Tests.....	
§30.61 Modification and revocation of licenses.....	53
§30.62 Right to cause the withholding or recall of byproduct material.....	53
§30.63 Violations.....	53
§30.64 Criminal penalties.....	53
PART 31 -- GENERAL DOMESTIC LICENSES FOR BYPRODUCT MATERIAL .....	55

§31.1 Purpose and scope. ....	55
§31.2 Terms and conditions. ....	55
§31.5 Certain detecting, measuring, gauging, or controlling devices and certain devices for producing light or an ionized atmosphere. <sup>(2)</sup> .....	55
§31.8 Americium-241 in the form of calibration or reference sources. ....	58
§31.9 General license to own byproduct material. ....	59
§32.51a .....	Same: Conditions of licenses.
NRC and Agreement State Directory .....	61
NRC Regional Map .....	62
Agreement State Map .....	63
State Directory .....	64

## General Licenses / Agreement States

General licenses are issued within the body of the federal regulations that govern the possession and use of radioactive materials. The general license to own byproduct material installed in approved industrial gauging devices can be found in Title 10 Part 31.5 of the Code of Federal Regulations. Owners of these types of devices are legally responsible for the radioactive materials installed in the gage, and possess these materials under the auspices of *their* general license, which is issued to them in Title 10 Part 31.5.

The Nuclear Regulatory Commission (US NRC) is the federal entity that has been assigned the task of governing the possession and use of radioactive materials in the United States and its territories. Certain states have entered into an agreement with the NRC whereby the individual state governs the use of radioactive materials within its borders. These “Agreement States” have their own radiological agencies and their own sets of regulations pertaining to the use of radioactive materials. Radioactive materials that are possessed and used within one of these Agreement States are subject to that state’s laws.

Included in this manual is a copy of 10 CFR Part 31.5. Owners of generally licensed devices must comply with these regulations. General licensees located in Agreement States will need to acquire a copy of the equivalent regulations for their state. A directory of agreement state offices (current at time of printing) is provided in this manual. The addresses and phone numbers for the NRC regional offices can also be found in this manual.

## General Licensee Requirements

Inspection – Each licensee, whether specific or general, is subject to inspection by the NRC or Agreement State. The licensee must afford the NRC or Agreement State, at all reasonable times, opportunity to inspect radioactive material under his or her control.

Labeling – The stainless steel “CAUTION – RADIOACTIVE MATERIAL” label must not be removed from the source holder (10 CFR 31.5 (c)(1)). This label must be maintained in good, legible condition and must be replaced if it is removed or defaced.

Transfer – The general licensee shall not transfer ownership of the device except as specified in 10 CFR 31.5 (8).

Disposal – The device must be returned to Ronan Engineering, or a specifically licensed radioactive material broker, pursuant to Parts 30 and 32 of 10 CFR, for disposal. Ronan Engineering will provide packaging instructions upon request.

Reports – General Licensees are required to comply with 10 CFR 20.2201 and 20.2202 with regards to reporting any occurrence of lost or stolen radioactive material, or radiological incidents/accidents.

## RLL Device

The Ronan ultra-low level series of source holders (RLL) utilize very small quantities of radioactive materials. The RLL-1 is permitted to contain a maximum of 900 microcuries ( $\mu\text{Ci}$ ) of cesium-137 (Cs-137) or 200 microcuries ( $\mu\text{Ci}$ ) of cobalt-60 (Co-60). The radioactive material is completely encapsulated in a stainless steel capsule, which is then heli-arc or laser welded closed. Due to high structural integrity, these source capsules qualify as special form material; virtually eliminating the possibility of the spread of radioactive contaminant.

The sealed capsules are loaded in to the RLL-1 device. This is a stainless steel tube that is welded shut at both ends and installed inside a shielded, steel housing.

The general licensee is not permitted to repair, modify, or otherwise tamper with the device or its shielding.

The combination of high structural integrity and low source quantity permits the general licensee to install and commission the device without special training or certification. The general licensee is required to install and operate the gage in accordance with the instructions provided by Ronan Engineering.

The RLL-1 device is not required to be wipe tested and there is no shutter or moving parts that have to be periodically inspected or maintained. *Important Exception – The RLL-1 device is required to be wipe tested every three years if it contains a single capsule in excess of 100 $\mu\text{Ci}$ . If a leak test is required, a stainless steel tag will be permanently affixed to the device stating, “Leak Test Required”.*

Under ordinary and accidental conditions, it is unlikely that any person would receive an external dose in excess of the dose for the appropriate organ as specified in column IV of the table in 10 CFR Part 32.24. Also, it can be demonstrated that, if the device is used in accordance with Ronan’s recommendations, it is unlikely that an individual would receive a calendar dose in excess of ten percent (10%) of the limits specified in 10 CFR Part 20.1201 (a).

## Radiation Dose Estimate

Iso distance curves are provided in this manual for various applications as specified in the table below:

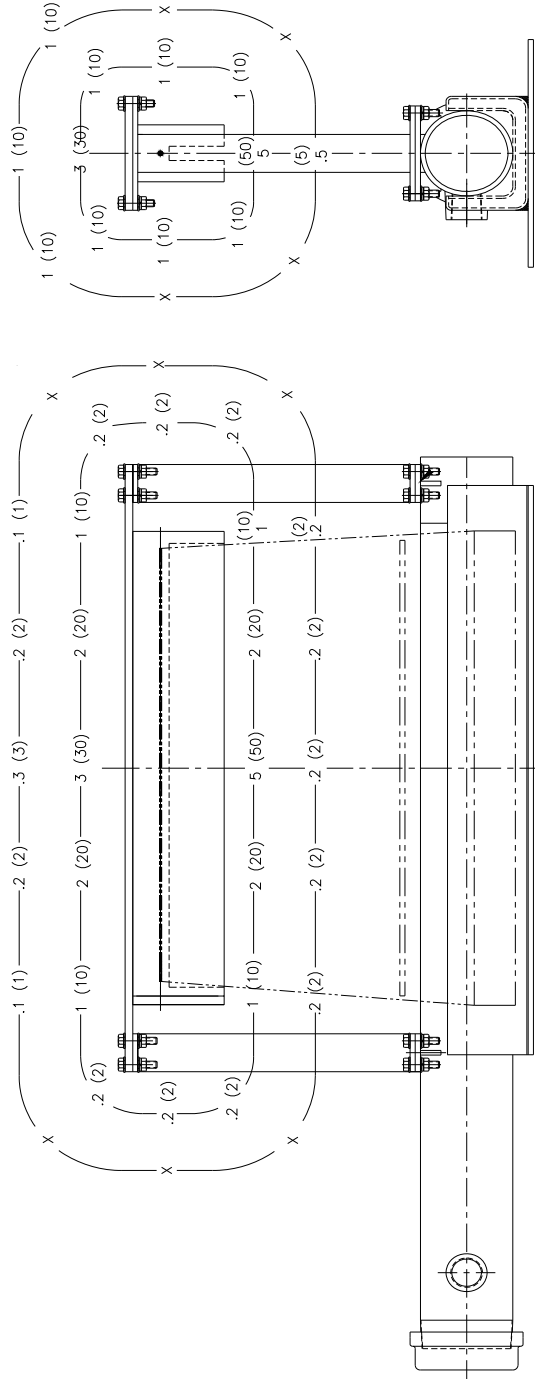
<u>Application</u>	<u>Drawing Number</u>
Weight Gages	C-16307-K and C-16310-K
Continuous Level Gages	B-16306-K and C-16309-K
Density / Point Level Gages	B-16305-K and B-16308-K

These curves indicate that the maximum dose rate, at one foot, from any device is less than 0.5 mR/h. Most of these devices require (as a conservative estimate) less than 1 hour of handling to install. Based upon these low dose rates and the short period of time required for handling/installation it is unlikely that any personnel would receive a significant exposure. In fact, it can be safely assumed that working personnel will receive considerably less than 10 percent (10%) of the dose limits specified in column IV of 10 CFR 32.24, for the appropriate organs, and less than ten percent (10%) of the dose limits specified in 10 CFR 20.1201(a).

## ISO Distance Curves

The next few pages include iso distance curves taken from typical RLL-1 applications. These curves represent radiation levels expected to be found at 2" and 12" from the surface of gages equipped with the RLL-1 source holder.

DATE	ISM	ROUSON RECORD	DR. CK
1/7/99	0	NEW RELEASE PER EN #1807	CMC

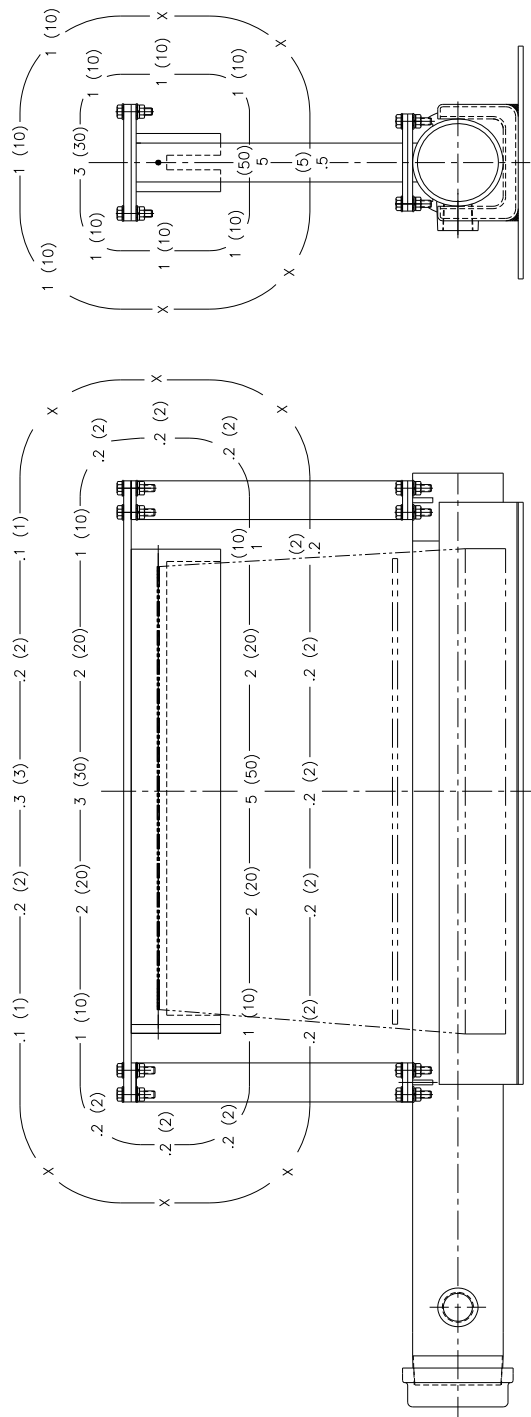


NOTES:

1. SURVEY METER— CALCULATED
- MFR. \_\_\_\_\_ MODEL \_\_\_\_\_
- S/N \_\_\_\_\_ CAL. \_\_\_\_\_
2. SOURCE TYPE CO-60
3. SOURCE SIZE 10 x 20uCi
4. SOURCE S/N \_\_\_\_\_ CALCULATED
5. ALL READINGS IN mR/h (µSv/h)
6. SURVEYED BY B. CAHILL
- DATE 11/12/98
7. X = LESS THAN 0.1mR/h (1 µSv/h)
8. LESS THAN 0.1mR/h (1 µSv/h)
- AT 36" (1 meter)

<b>RONAN</b>		MEASUREMENTS DIVISION	
CUSTOMER:	SCALE	DR. PTC/MC	APPR. BY
	NTS		
TITLE ISO DISTANCE CURVES: RLL-1 WEIGH SCALE 12" WIDE BELT			
DATE	DRAWING NUMBER	REV.	
1/7/99	C-16310-K	0	

DATE	SYM	REVISION RECORD	DR	CK
1/7/99	D	NEW RELEASE PER ECN #197		CMC



NOTES:

1. SURVEY METER- CALCULATED
- MFR. \_\_\_\_\_ MODEL \_\_\_\_\_
- S/N. \_\_\_\_\_ CAL. \_\_\_\_\_
2. SOURCE TYPE CS-137
3. SOURCE SIZE 10 x .90NCI
4. SOURCE S/N CALCULATED
5. ALL READINGS IN mR/h ( $\mu$ Sv/h)
6. SURVEYED BY B. CAHILL
- DATE 11/12/98
7. X = LESS THAN 0.1mR/h (1  $\mu$ Sv/h)
8. LESS THAN 0.1mR/h (1  $\mu$ Sv/h)
- AT 36" (1 meter)


<b>RONAN</b> MEASUREMENTS DIVISION	
CUSTOMER:	SCALE: NTS
DR. BY: CMC	APPR. BY:
TITLE: ISO DISTANCE CURVES: RLL1-WEIGH SCALE 12" WIDE BELT	
DATE: 1/7/99	DRAWING NUMBER: C-16307-K
REV.:	0

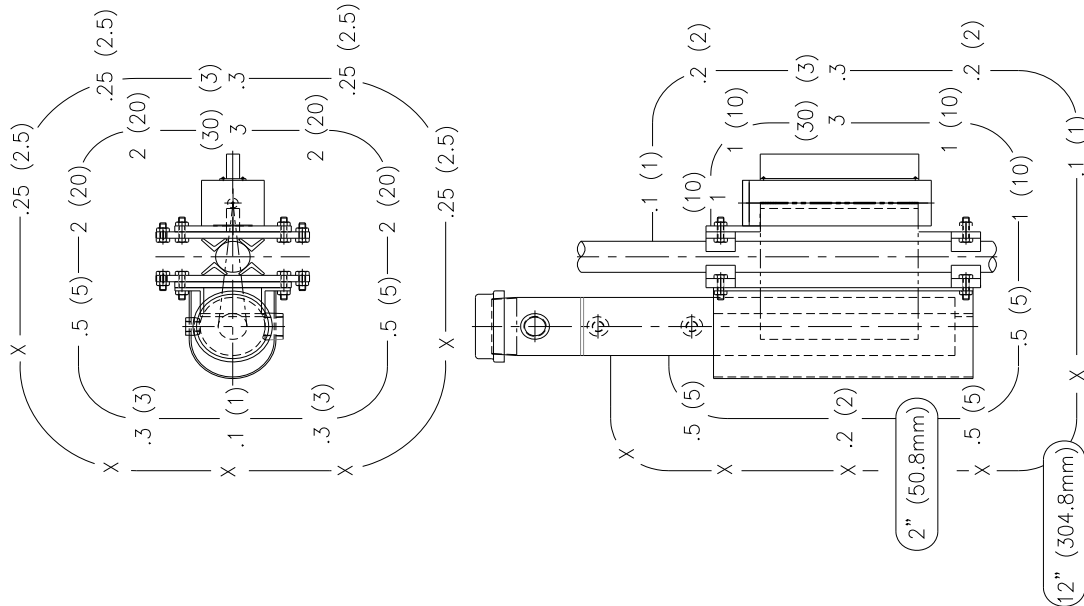


DATE	SYM	REVISION RECORD	DR	CK
1/6/99	0	NEW RELEASE, PER EGN #1807		CMC

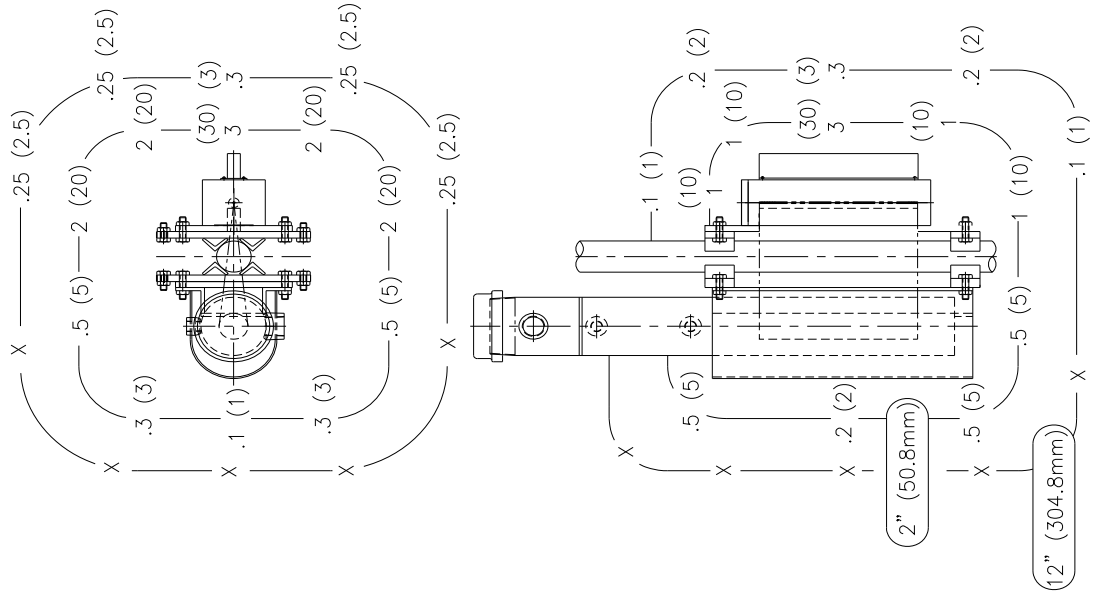
NOTES:

1. SURVEY METER – CALCULATED  
MFR. \_\_\_\_\_ MODEL \_\_\_\_\_  
S/N \_\_\_\_\_ CAL. \_\_\_\_\_
2. SOURCE TYPE CS-137
3. SOURCE SIZE 10 x 90µCi
4. SOURCE S/N CALCULATED
5. ALL READINGS IN mR/h (µSv/h)
6. SURVEYED BY B. CAHILL  
DATE 11/12/98
7. X = LESS THAN 0.1mR/h (1 µSv/h)
8. LESS THAN 0.1mR/h (1 µSv/h)  
AT 36" (1 meter)

		SCALE	DR. BY/CMC
		CUSTOMER:	APPR. BY
TITLE		ISO-DISTANCE CURVE:	
DATE		RLL1-CONTINUOUS LEVEL GAGE FOR 2" PIPE	
DRAWING NUMBER		REV.	
1/6/99		B-16306-K	
		0	



DATE	S/N	REVISION RECORD	DR	CK
1/7/99	0	NEW RELEASE, PER ECN #1807		CMC



NOTES:

1. SURVEY METER— CALCULATED  
MFR. \_\_\_\_\_ MODEL \_\_\_\_\_  
S/N \_\_\_\_\_ CAL. \_\_\_\_\_
2. SOURCE TYPE CO-60
3. SOURCE SIZE 10 x 20µCi
4. SOURCE S/N CALCULATED
5. ALL READINGS IN mR/h ( $\mu$ Sv/h)
6. SURVEYED BY B. CAHILL  
DATE 11/12/98
7. X = LESS THAN 0.1mR/h (1  $\mu$ Sv/h)
8. LESS THAN 0.1mR/h (1  $\mu$ Sv/h)  
AT 36" (1 meter)

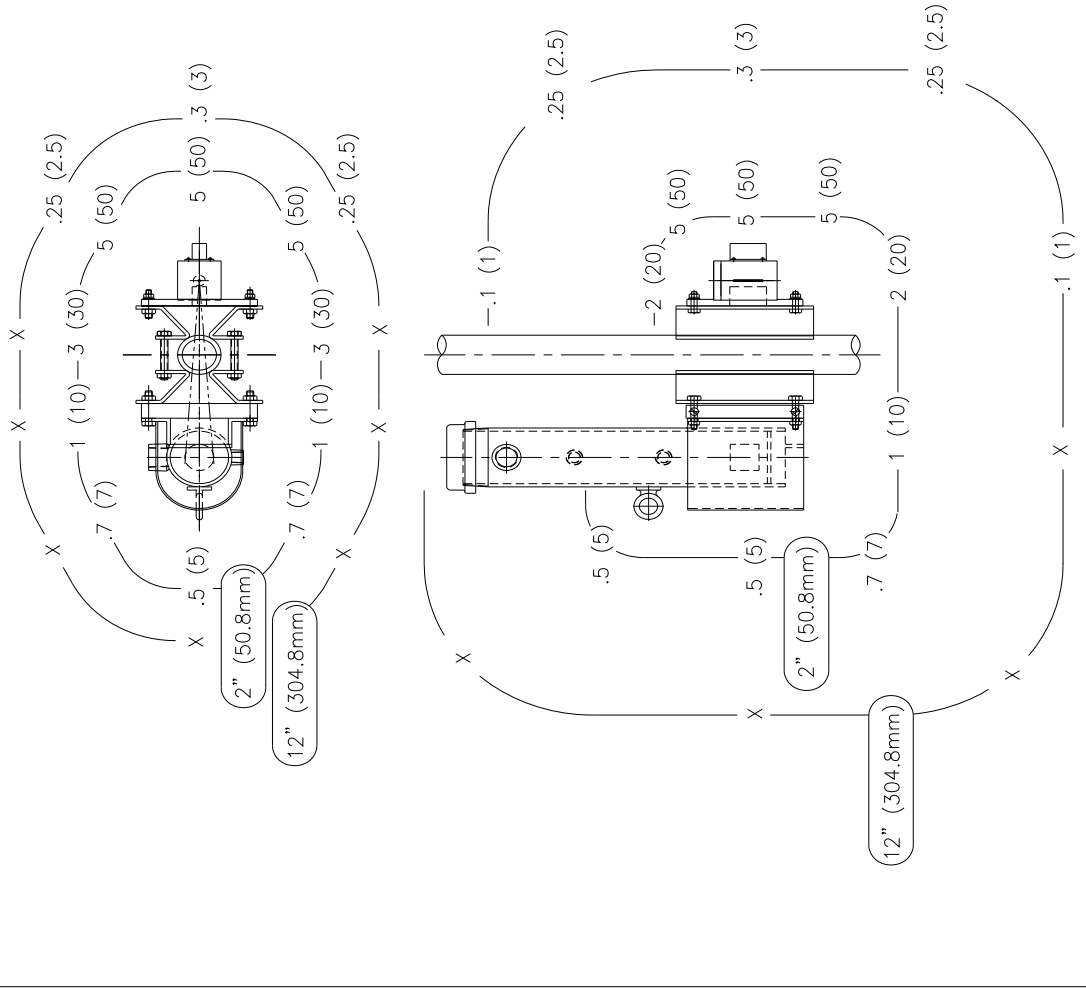
**RONAN** MEASUREMENTS DIVISION

CUSTOMER:	SCALE	DR. BY/CMC
	NTS	APPR. BY
TITLE ISO DISTANCE CURVE: RLL-1 CONTINUOUS LEVEL GAGE FOR 2" PIPE		
DATE	DRAWING NUMBER	REV.
1/7/99	B-16309-K	0

DATE	SYM	REVISION RECORD	DR	CK
1/7/99	0	NEW RELEASE, PER ECN #1807		CMC

NOTES:

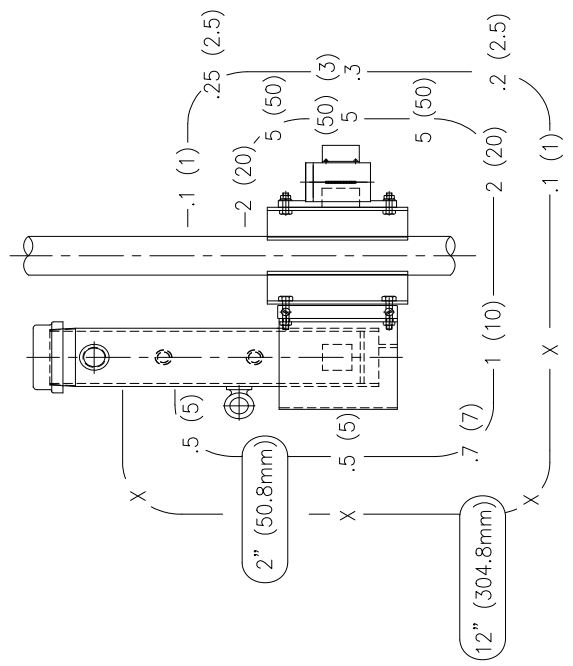
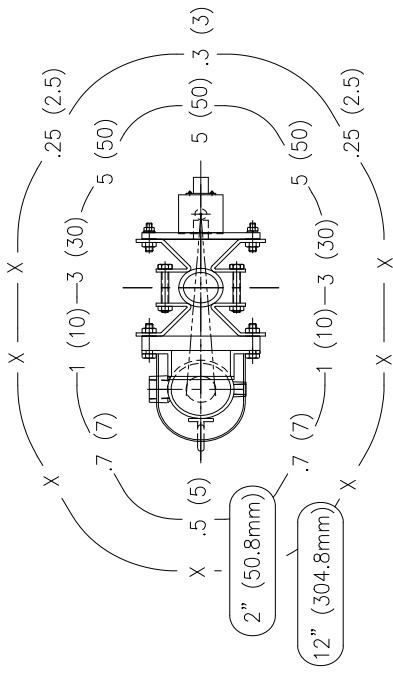
1. SURVEY METER –  
MFR. VICTOREEN MODEL 491  
S/N 2060 CAL. 08/04/98
2. SOURCE TYPE CS-137
3. SOURCE SIZE 1000µCi
4. SOURCE S/N 9491 GG
5. ALL READINGS IN mR/h (µSv/h)
6. SURVEYED BY B. CAHILL  
DATE 11/12/98
7. X = LESS THAN 0.1mR/h (1 µSv/h)
8. LESS THAN 0.1mR/h (1 µSv/h)  
AT 36" (1 meter)



MEASUREMENTS DIVISION

CUSTOMER:	SCALE	DR. BY	CMC
	NTS	APPR. BY	
TITLE ISO DISTANCE CURVE: RLL-1 DENSITY GAGE 2" PIPE			
DATE	DRAWING NUMBER	REV.	
1/7/99	B-16305-K	0	

DATE	SYM	REVISION RECORD	DR	CK
1/7/99	0	NEW RELEASE, PER EON #1807	CMC	



NOTES:

1. SURVEY METER – CALCULATED  
MFR. \_\_\_\_\_ MODEL \_\_\_\_\_  
S/N \_\_\_\_\_ CAL. \_\_\_\_\_
2. SOURCE TYPE CO-60
3. SOURCE SIZE 200μCi
4. SOURCE S/N CALCULATED
5. ALL READINGS IN mR/h (μSv/h)
6. SURVEYED BY B. CAHILL  
DATE 11/12/98
7. X = LESS THAN 0.1mR/h (1 μSv/h)
8. LESS THAN 0.1mR/h (1 μSv/h)  
AT 36" (1 meter)



MEASUREMENTS DIVISION	
CUSTOMER:	SCALE: NTS
	DR. BY: CMC
	APPR. BY:
TITLE: ISO DISTANCE CURVE: RLL-1 DENSITY GAGE 2" PIPE	
DATE: 1/7/99	DRAWING NUMBER: B-16308-K
	REV. 0

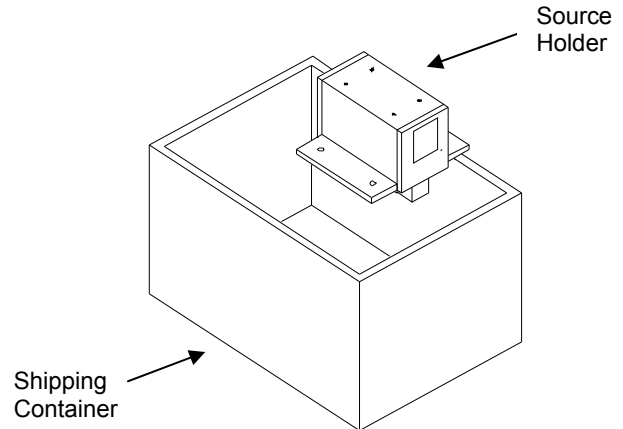
## Basic Operation and Mounting for the RLL-1

### Density Gages:

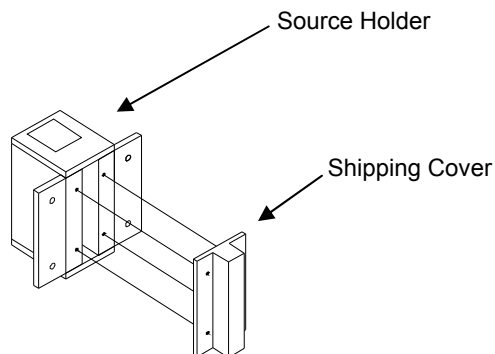
*Note: Prior to installation of source holder, make sure that mounting brackets are attached to the customer's pipe.*

For safe handling and installation follow these simple procedures:

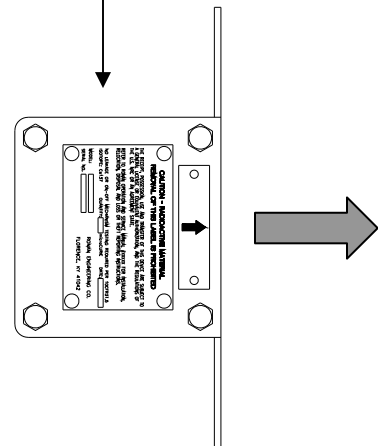
1. Remove source holder from shipping container. Radiation port is covered with shipping cover. You will see arrows indicating the direction of the radiation beam when the shipping cover is unbolted and removed.



2. Remove shipping cover (**do not discard mounting screws**). Hold source holder so that radiation port aims away from your body.

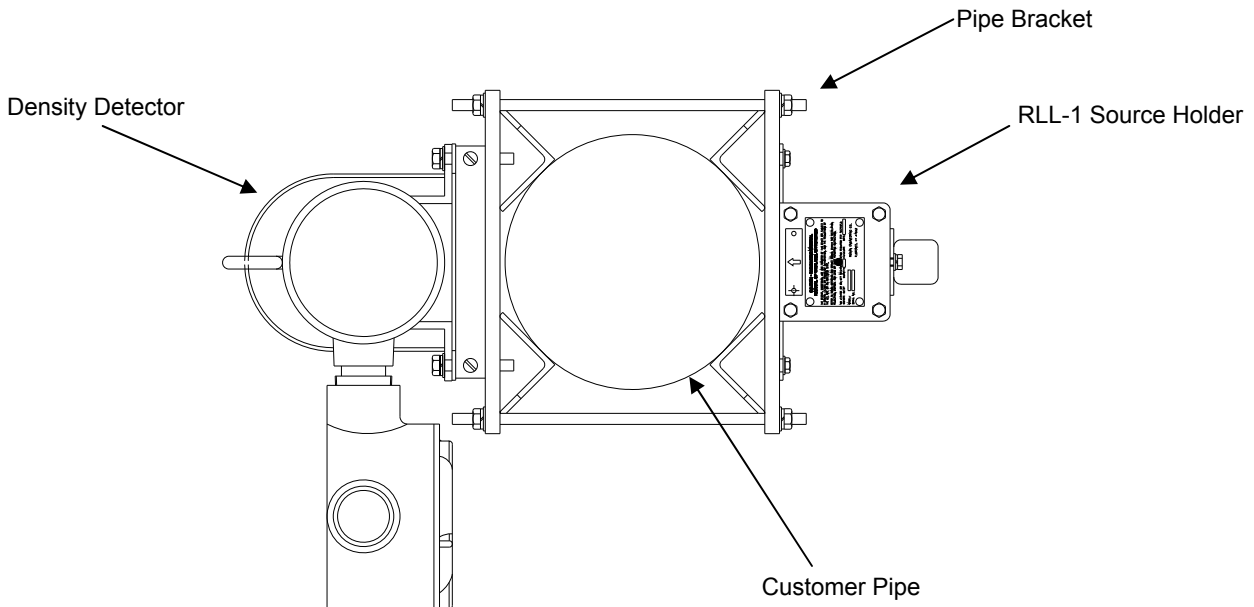


Make sure arrow points away from body!

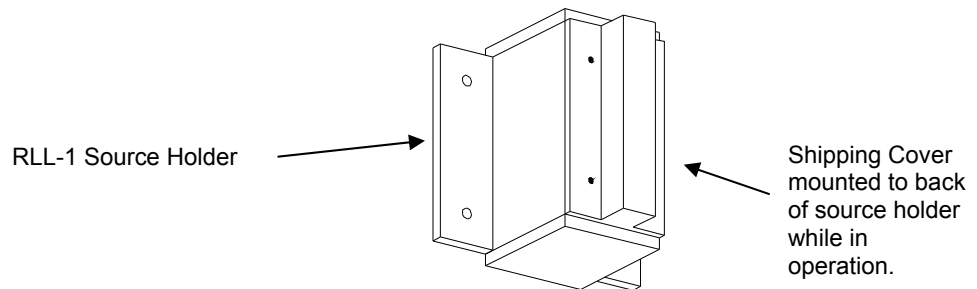


RLL-1 Source Holder (Top View)

3. Mount source holder to the density gage brackets installed on your process pipe.



4. Attach shipping cover to the backside of the RLL-1 source holder as shown.



### **Installation is now complete!**

To Remove source holder, simply reverse the above procedure.

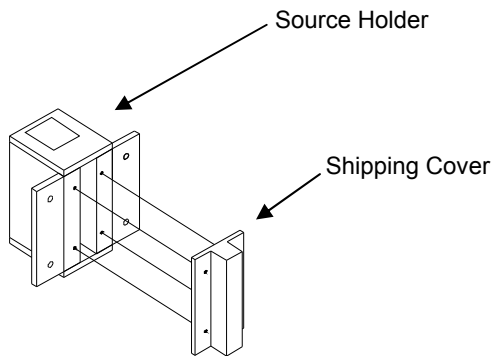
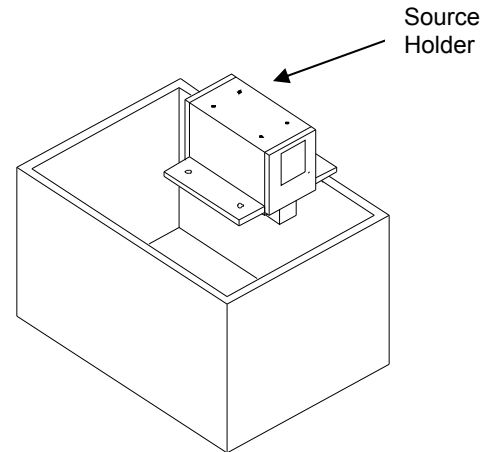
*Warning: If source holder is removed from the pipe for any reason, make sure the shipping cover is reattached to the source holder face plate so that it covers the radiation port (face plate and radiation port indicated by arrow on top of device).*

Continuous Level Gage:

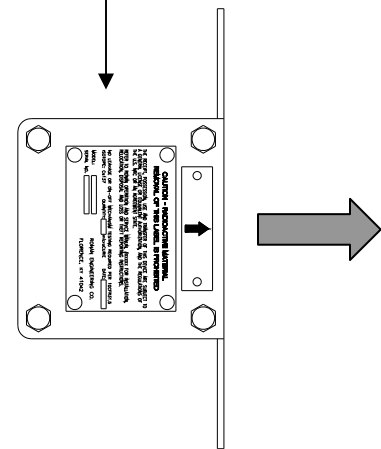
*Note: Prior to installation of source holder, make sure that mounting brackets are mounted in the proper locations on the vessel.*

For safe handling and installation follow these simple procedures:

1. Remove source holder from shipping container. Radiation port is covered with shipping cover. You will see arrows indicating the direction of the radiation beam when the shipping cover is unbolted and removed.
  
2. Remove shipping cover (**do not discard mounting screws**). Hold source holder so that radiation port aims away from your body.

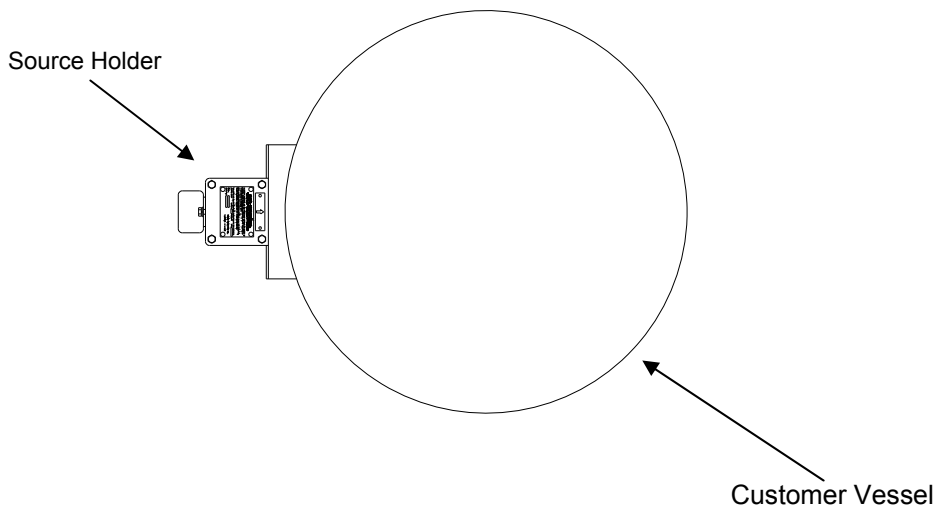


Make sure arrow points away from body!

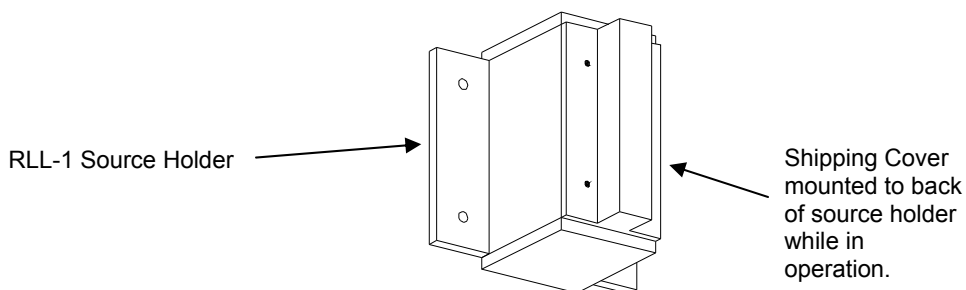


RLL-1 Source Holder (Top View)

3. Mount source holder to vessel. If available, check configuration drawings in I/O manual.



4. Attach shipping cover to the backside of the RLL-1 source holder as shown.



### **Installation is now complete!**

To Remove source holder, simply reverse the above procedure.

*Warning: If source holder is removed from the vessel for any reason, make sure the shipping cover is reattached to the source holder face plate so that it covers the radiation port (face plate and radiation port indicated by arrow on top of device).*

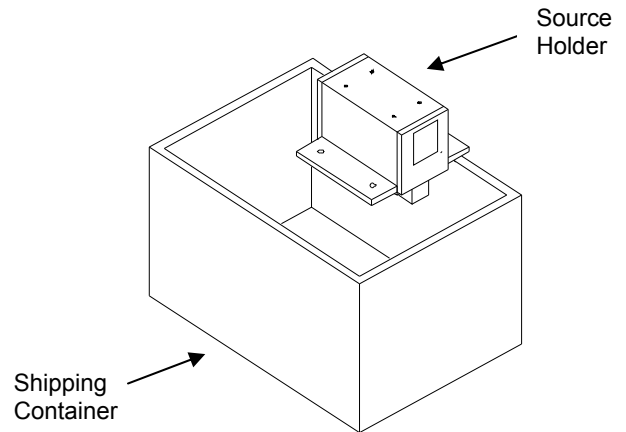


Weigh Scale Gage:

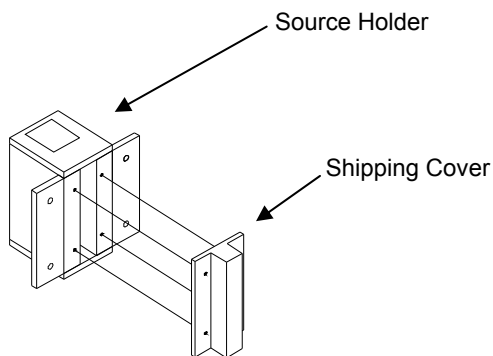
*Note: Prior to installation, make sure frame is properly mounted to the conveyor.*

For safe handling and installation follow these simple procedures:

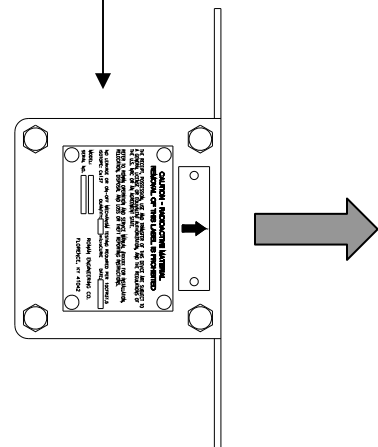
1. Remove source holder from shipping container. Radiation port is covered with shipping cover. You will see arrows indicating the direction of the radiation beam when the shipping cover is unbolted and removed.



2. Remove shipping cover (**do not discard mounting screws**). Hold source holder so that radiation port aims away from your body.

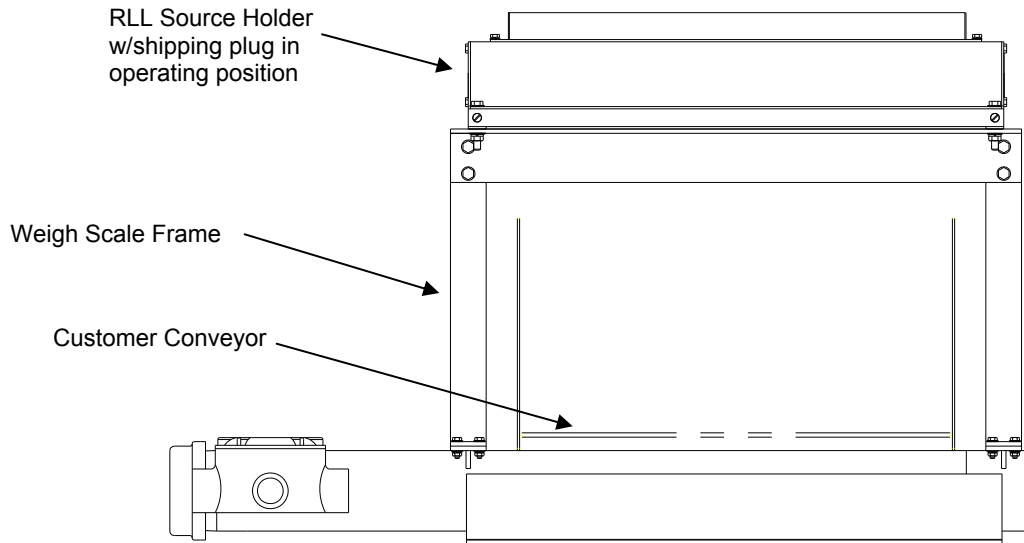


Make sure arrow points away from body!

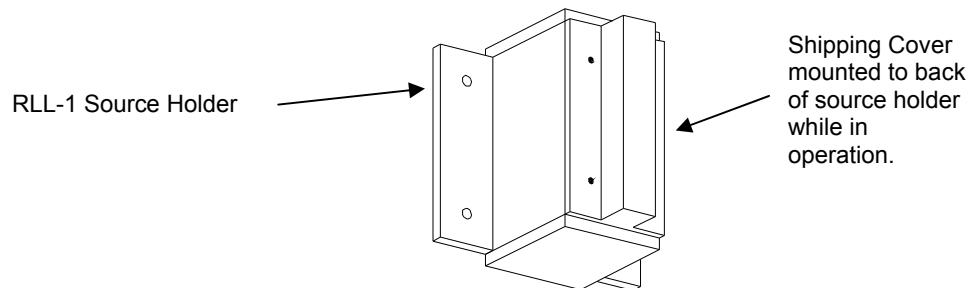


RLL-1 Source Holder (Top View)

3. Mount source holder to the weigh scale frame installed on your conveyor.



4. Attach shipping cover to the backside of the RLL-1 source holder as shown.



### **Installation is now complete!**

To Remove source holder, simply reverse the above procedure.

*Warning: If source holder is removed from the pipe for any reason, make sure the shipping cover is reattached to the source holder face plate so that it covers the radiation port (face plate and radiation port indicated by arrow on top of device).*

## **Applicable Regulations**

Listed on the following pages are annotated versions of the US NRC regulations that govern the possession and use of generally licensed, fixed nuclear gages. If the gage will be located in an Agreement State (see state listing following these regulations), that state may have its own set of regulations with which you will need to comply.

## PART 20 -- STANDARDS FOR PROTECTION AGAINST RADIATION

### Subpart A -- General Provisions

20.1001 Purpose.  
 20.1002 Scope.  
 20.1003 Definitions.  
 20.1004 Units of radiation dose.  
 20.1005 Units of radioactivity.  
 20.1006 Interpretations.  
 20.1007 Communications.  
 20.1008 Implementation.  
 20.1009 Reporting, recording, and application requirements: OMB approval.

### Subpart M -- Reports

20.2201 Reports of theft or loss of licensed material.  
 20.2202 Notification of incidents.

Appendix B to Part 20 -- Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage  
 Appendix C to Part 20 -- Quantities of Licensed Material Requiring Labeling  
 Appendix D to Part 20 -- United States Nuclear Regulatory Commission Regional Offices

### Subpart A -- General Provisions

Source: 56 FR 23391, May 21, 1991 unless otherwise noted.

#### ***§20.1001 Purpose.***

(a) The regulations in this part establish standards for protection against ionizing radiation resulting from activities conducted under licenses issued by the Nuclear Regulatory Commission. These regulations are issued under the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, as amended.

(b) It is the purpose of the regulations in this part to control the receipt, possession, use, transfer, and disposal of licensed material by any licensee in such a manner that the total dose to an individual (including doses resulting from licensed and unlicensed radioactive material and from radiation sources other than background radiation) does not exceed the standards for protection against radiation prescribed in the regulations in this part. However, nothing in this part shall be construed as limiting actions that may be necessary to protect health and safety.

#### ***§20.1002 Scope.***

The regulations in this part apply to persons licensed by the Commission to receive, possess, use, transfer, or dispose of byproduct, source, or special nuclear material or to operate a production or utilization facility under parts 30 through 36, 39, 40, 50, 60, 61, 70, or 72 of this chapter, and in accordance with 10 CFR 76.60 to persons required to obtain a certificate of compliance or an approved compliance plan under Part 76 of this chapter. The limits in this part do not apply to doses due to background radiation, to exposure of patients to radiation for the purpose of medical diagnosis or therapy, to exposure from individuals administered radioactive material and released in accordance with §35.75, or to exposure from voluntary participation in medical research programs. [63 FR 50128, Sept. 21, 1988]

#### ***§20.1003 Definitions.***

As used in this part:

*Absorbed dose* means the energy imparted by ionizing radiation per unit mass of irradiated material. The units of absorbed dose are the rad and the gray (Gy).

*Act* means the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.), as amended.

*Activity* is the rate of disintegration (transformation) or decay of radioactive material. The units of activity are the curie (Ci) and the becquerel (Bq).

*Adult* means an individual 18 or more years of age.

*Airborne radioactive material* means radioactive material dispersed in the air in the form of dusts, fumes, particulates, mists, vapors, or gases.

*Airborne radioactivity area* means a room, enclosure, or area in which airborne radioactive materials, composed wholly or partly of licensed material, exist in concentrations --

(1) In excess of the derived air concentrations (DACs) specified in appendix B, to §§20.1001 - 20.2401, or

(2) To such a degree that an individual present in the area without respiratory protective equipment could exceed, during the hours an individual is present in a week, an intake of 0.6 percent of the annual limit on intake (ALI) or 12 DAC-hours.

*Air-purifying respirator* means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

*ALARA* (acronym for "as low as is reasonably achievable") means 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 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 nuclear energy and licensed materials in the public interest.

*Annual limit on intake (ALI)* means the derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by the reference man that would result in a committed effective dose equivalent of 5 rems (0.05 Sv) or a committed dose equivalent of 50 rems (0.5 Sv) to any individual organ or tissue. (ALI values for intake by ingestion and by inhalation of selected radionuclides are given in Table 1, Columns 1 and 2, of appendix B to §§20.1001 - 20.2401).

*Assigned protection factor (APF)* means 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.

*Atmosphere-supplying respirator* means 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.

*Background radiation* means radiation from cosmic sources; naturally occurring radioactive material, 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.

*Background radiation* does not include radiation from source, byproduct, or special nuclear materials regulated by the Commission.

*Bioassay* (radiobioassay) means the determination of kinds, quantities or concentrations, and, in some cases, the locations of radioactive material in the human body, whether by direct measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed from the human body.

*Byproduct material* means --

(1) Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or utilizing special nuclear material; and

(2) The tailings or wastes produced by the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by these solution extraction operations do not constitute "byproduct material" within this definition.

*Class* (or *lung class* or *inhalation class*) means a classification scheme for inhaled material according to its rate of clearance from the pulmonary region of the lung. Materials are classified as D, W, or Y, which applies to a range of clearance half-times: for Class D (Days) of less than 10 days, for Class W (Weeks) from 10 to 100 days, and for Class Y (Years) of greater than 100 days.

*Collective dose* is the sum of the individual doses received in a given period of time by a specified population from exposure to a specified source of radiation.

*Commission* means the Nuclear Regulatory Commission or its duly authorized representatives.

*Committed dose equivalent* ( $H_{T,50}$ ) means the dose equivalent to organs or tissues of reference (T) that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

*Committed effective dose equivalent* ( $H_{E,50}$ ) is the sum of the products of the weighting factors applicable to each of the body organs or tissues

that are irradiated and the committed dose equivalent to these organs or tissues.

*Constraint (dose constraint)* means a value above which specified licensee actions are required.

*Controlled area* means an area, outside of a restricted area but inside the site boundary, access to which can be limited by the licensee for any reason.

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

*Declared pregnant woman* means a woman who has voluntarily informed the licensee, in writing, of her pregnancy and the estimated date of conception. The declaration remains in effect until the declared pregnant woman withdraws the declaration in writing or is no longer pregnant.

*Decommission* means 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.

*Deep-dose equivalent ( $H_d$ )*, which applies to external whole-body exposure, is the dose equivalent at a tissue depth of 1 cm (1000 mg/cm<sup>2</sup>).

*Demand respirator* means an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

*Department* means the Department of Energy established by the Department of Energy Organization Act (Pub. L. 95 - 91, 91 Stat. 565, 42 U.S.C. 7101 et seq.) to the extent that the Department, or its duly authorized representatives, exercises functions formerly vested in the U.S. Atomic Energy Commission, its Chairman, members, officers, and components and transferred to the U.S. Energy Research and Development Administration and to the Administrator thereof pursuant to sections 104 (b), (c), and (d) of the Energy Reorganization Act of 1974 (Pub. L. 93 - 438, 88 Stat. 1233 at 1237, 42 U.S.C. 5814) and retransferred to the Secretary of Energy pursuant to section 301(a) of the Department of Energy Organization Act (Pub. L. 95 - 91, 91 Stat 565 at 577 - 578, 42 U.S.C. 7151).

*Derived air concentration (DAC)* means the concentration of a given radionuclide in air which, if breathed by the reference man for a working year of 2,000 hours under conditions of light work (inhalation rate 1.2 cubic meters of air per hour), results in an intake of one ALI. DAC values are given in Table 1, Column 3, of appendix B to §§20.1001 - 20.2401.

*Derived air concentration-hour (DAC-hour)* is the product of the concentration of radioactive material in air (expressed as a fraction or multiple of the derived air concentration for each radionuclide) and the time of exposure to that radionuclide, in hours. A licensee may take 2,000 DAC-hours to represent one ALI, equivalent to a committed effective dose equivalent of 5 rems (0.05 Sv).

*Distinguishable from background* means that the detectable concentration of a radionuclide is statistically different from the background concentration of that radionuclide in the vicinity of the site or, in the case of structures, in similar materials using adequate measurement technology, survey, and statistical techniques.

*Disposable respirator* means 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).

*Dose or radiation dose* is a generic term that means absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, or total effective dose equivalent, as defined in other paragraphs of this section.

*Dose equivalent ( $H_T$ )* means the product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest. The units of dose equivalent are the rem and sievert (Sv).

*Dosimetry processor* means an individual or organization that processes and evaluates individual monitoring equipment in order to determine the radiation dose delivered to the equipment.

*Embryo/fetus* means the developing human organism from conception until the time of birth.

*Entrance or access point* means any location through which an individual could gain access to radiation areas or to radioactive materials. This includes entry or exit portals of sufficient size to permit human entry, irrespective of their intended use.

*Exposure* means being exposed to ionizing radiation or to radioactive material.

*External dose* means that portion of the dose equivalent received from radiation sources outside the body.

*Extremity* means hand, elbow, arm below the elbow, foot, knee, or leg below the knee.

*Eye dose equivalent* 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/cm<sup>2</sup>).

*Filtering facepiece (dust mask)* means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium, not equipped with elastomeric sealing surfaces and adjustable straps.

*Fit factor* means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

*Fit test* means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

*Generally applicable environmental radiation standards* means standards issued by the Environmental Protection Agency (EPA) under the authority of the Atomic Energy Act of 1954, as amended, that impose limits on radiation exposures or levels, or concentrations or quantities of radioactive material, in the general environment outside the boundaries of locations under the control of persons possessing or using radioactive material.

*Government agency* means any executive department, commission, independent establishment, corporation wholly or partly owned by the United States of America, which is an instrumentality of the United States, or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the Government. Gray [See §20.1004].

*Helmet* means a rigid respiratory inlet covering that also provides head protection against impact and penetration.

*Hood* means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

*High radiation area* means 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 1 hour at 30 centimeters from the radiation source or 30 centimeters from any surface that the radiation penetrates.

*Individual* means any human being.

*Individual monitoring* means --

(1) The assessment of dose equivalent by the use of devices designed to be worn by an individual;

(2) The assessment of committed effective dose equivalent by bioassay (see Bioassay) or by determination of the time-weighted air concentrations to which an individual has been exposed, i.e., DAC-hours; or

(3) The assessment of dose equivalent by the use of survey data.

*Individual monitoring devices* (individual monitoring equipment) means devices designed to be worn by a single individual for the assessment of dose equivalent such as film badges, thermoluminescence dosimeters (TLDs), pocket ionization chambers, and personal ("lapel") air sampling devices.

*Internal dose* means that portion of the dose equivalent received from radioactive material taken into the body.

*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/cm<sup>2</sup>).

*License* means a license issued under the regulations in parts 30 through 36, 39, 40, 50, 60, 61, 70, or 72 of this chapter.

*Licensed material* means source material, special nuclear material, or byproduct material received, possessed, used, transferred or disposed of under a general or specific license issued by the Commission.

*Licensee* means the holder of a license.

*Limits* (dose limits) means the permissible upper bounds of radiation doses.

*Lost or missing licensed material* means licensed material whose location is unknown. It includes material that has been shipped but has not reached its destination and whose location cannot be readily traced in the transportation system.

*Loose-fitting facepiece* means a respiratory inlet covering that is designed to form a partial seal with the face.

*Member of the public* means any individual except when that individual is receiving an occupational dose.

*Minor* means an individual less than 18 years of age.

*Monitoring* (radiation monitoring, radiation protection monitoring) means the measurement of radiation levels, concentrations, surface area concentrations or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses.

*Negative pressure respirator (tight fitting)* means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

*Nonstochastic effect* means health effects, the severity of which varies with the dose and for which a threshold is believed to exist. Radiation-induced cataract formation is an example of a nonstochastic effect (also called a deterministic effect).

*NRC* means the Nuclear Regulatory Commission or its duly authorized representatives.

*Occupational dose* means the dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation or to 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, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released in accordance with §35.75, from voluntary participation in medical research programs, or as a member of the public.

*Person* means --

(1) Any individual, corporation, partnership, firm, association, trust, estate, public or private

institution, group, Government agency other than the Commission or the Department of Energy (except that the Department shall be considered a person within the meaning of the regulations in 10 CFR chapter I to the extent that its facilities and activities are subject to the licensing and related regulatory authority of the Commission under section 202 of the Energy Reorganization Act of 1974 (88 Stat. 1244), the Uranium Mill Tailings Radiation Control Act of 1978 (92 Stat. 3021), the Nuclear Waste Policy Act of 1982 (96 Stat. 2201), and section 3(b)(2) of the Low-Level Radioactive Waste Policy Amendments Act of 1985 (99 Stat. 1842)), any State or any political subdivision of or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and

(2) Any legal successor, representative, agent, or agency of the foregoing.

*Planned special exposure* means an infrequent exposure to radiation, separate from and in addition to the annual dose limits.

*Positive pressure respirator* means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

*Powered air-purifying respirator (PAPR)* means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

*Pressure demand respirator* means a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

*Public dose* means the dose received by a member of the public from exposure to radiation or radioactive material released by a licensee, or to any other source of radiation under the control of a licensee. 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 §35.75, or from voluntary participation in medical research programs.

*Qualitative fit test (QLFT)* means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.



*Quality Factor (Q)* means the modifying factor (listed in tables 1004(b).1 and 1004(b).2 of §20.1004) that is used to derive dose equivalent from absorbed dose.

*Quantitative fit test (QNFT)* means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

*Quarter* means a period of time equal to one-fourth of the year observed by the licensee (approximately 13 consecutive weeks), providing that the beginning of the first quarter in a year coincides with the starting date of the year and that no day is omitted or duplicated in consecutive quarters.

*Rad* (See §20.1004).

*Radiation* (ionizing radiation) means alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation, as used in this part, does not include non-ionizing radiation, such as radio- or microwaves, or visible, infrared, or ultraviolet light.

*Radiation area* means an area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.005 rem (0.05 mSv) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

*Reference man* means a hypothetical aggregation of human physical and physiological characteristics arrived at by international consensus. These characteristics may be used by researchers and public health workers to standardize results of experiments and to relate biological insult to a common base.

*Rem* (See §20.1004).

*Residual radioactivity* means radioactivity in structures, materials, soils, groundwater, and other media at a site resulting from activities under the licensee's control. This includes 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 and previous burials at the site, even if those burials were made in accordance with the provisions of 10 CFR part 20.

*Respiratory protective device* means an apparatus, such as a respirator, used to reduce the individual's intake of airborne radioactive materials.

*Restricted area* means an area, access to which is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials. Restricted area does not include areas used as residential quarters, but separate rooms in a residential building may be set apart as a restricted area.

*Sanitary sewerage* means a system of public sewers for carrying off waste water and refuse, but excluding sewage treatment facilities, septic tanks, and leach fields owned or operated by the licensee.

*Self-contained breathing apparatus (SCBA)* means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

*Shallow-dose equivalent (HS)*, which applies to the external exposure of the skin or an extremity, is taken as the dose equivalent at a tissue depth of 0.007 centimeter ( $7 \text{ mg/cm}^2$ ) averaged over an area of 1 square centimeter.

*Sievert* (See §20.1004).

*Site boundary* means that line beyond which the land or property is not owned, leased, or otherwise controlled by the licensee.

*Source material* means --

(1) Uranium or thorium or any combination of uranium and thorium in any physical or chemical form; or

(2) Ores that contain, by weight, one-twentieth of 1 percent (0.05 percent), or more, of uranium, thorium, or any combination of uranium and thorium. Source material does not include special nuclear material.

*Special nuclear material* means --

(1) Plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the Commission, pursuant to the provisions of section 51 of the Act, determines to be special nuclear material, but does not include source material; or

(2) Any material artificially enriched by any of the foregoing but does not include source material.

*Stochastic effects* means health effects that occur randomly and for which the probability of the effect occurring, rather than its severity, is

assumed to be a linear function of dose without threshold. Hereditary effects and cancer incidence are examples of stochastic effects.

*Supplied-air respirator (SAR) or airline respirator* means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

*Survey* means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. When appropriate, such an evaluation includes a physical survey of the location of radioactive material and measurements or calculations of levels of radiation, or concentrations or quantities of radioactive material present.

*Tight-fitting facepiece* means a respiratory inlet covering that forms a complete seal with the face.

*Total Effective Dose Equivalent (TEDE)* means the sum of the deep-dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

*Unrestricted area* means an area, access to which is neither limited nor controlled by the licensee.

*Uranium fuel cycle* means the operations of milling of uranium ore, chemical conversion of uranium, isotopic enrichment of uranium, fabrication of uranium fuel, generation of electricity by a light-water-cooled nuclear power plant using uranium fuel, and reprocessing of spent uranium fuel to the extent that these activities directly support the production of electrical power for public use. Uranium fuel cycle does not include mining operations, operations at waste disposal sites, transportation of radioactive material in support of these operations, and the reuse of recovered non-uranium special nuclear and byproduct materials from the cycle.

*User seal check (fit check)* means 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 check, irritant smoke check, or isoamyl acetate check.

*Very high radiation area* means 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 1 hour at 1 meter from a radiation source or 1 meter 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)).

*Week* means 7 consecutive days starting on Sunday.

*Weighting factor  $W_T$* , for an organ or tissue (T) is the proportion of the risk of stochastic effects resulting from irradiation of that organ or tissue to the total risk of stochastic effects when the whole body is irradiated uniformly. For calculating the effective dose equivalent, the values of  $W_T$  are:

Organ or Tissue	$W_T$
Gonads	0.25
Breast	0.15
Red Bone Marrow	0.12
Lung	0.12
Thyroid	0.03
Bone Surfaces	0.03
Remainder	<sup>1</sup> 0.30
Whole Body	<sup>2</sup> 1.00

<sup>1</sup> 0.30 results from 0.06 for each of 5 "remainder" organs (excluding the skin and the lens of the eye) that receive the highest doses.

<sup>2</sup> For the purpose of weighting the external whole body dose (for adding it to the internal dose), a single weighting factor,  $w_T=1.0$ , has been specified. The use of other weighting factors for external exposure will be approved on a case-by-case basis until such time as specific guidance is issued.

*Whole body* means, for purposes of external exposure, head, trunk (including male gonads), arms above the elbow, or legs above the knee.

*Working level (WL)* is any combination of short-lived radon daughters (for radon-222: polonium-218, lead-214, bismuth-214, and polonium-214; and for radon-220: polonium-216, lead-212, bismuth-212, and polonium-212) in 1 liter of air that will result in the ultimate emission of  $1.3 \times 10^5$  MeV of potential alpha particle energy.

*Working level month (WLM)* means an exposure to 1 working level for 170 hours (2,000

working hours per year/12 months per year=approximately 170 hours per month). *Year* means the period of time beginning in January used to determine compliance with the provisions of this part. The licensee may change the starting date of the year used to determine compliance by the licensee provided that the change is made at the beginning of the year and that no day is omitted or duplicated in consecutive years.

[56 FR 23391, May 21, 1991, as amended at 57 FR 57878, Dec. 8, 1992; 58 FR 7736, Feb. 9, 1993; 60 FR 36043, July 13, 1995; 60 FR 48625, Sept. 20, 1995; 61 FR 65127, Dec. 10, 1996; 62 FR 4133, Jan. 29, 1997; 62 FR 39807, July 21, 1997]

**§20.1004 Units of radiation dose.**

(a) Definitions. As used in this part, the units of radiation dose are:

Gray (Gy) is the SI unit of absorbed dose. One gray is equal to an absorbed dose of 1 Joule/kilogram (100 rads).

Rad is the special unit of absorbed dose. One rad is equal to an absorbed dose of 100 ergs/gram or 0.01 joule/kilogram (0.01 gray).

Rem is the special unit of any of the quantities expressed as dose equivalent. The dose equivalent in rems is equal to the absorbed dose in rads multiplied by the quality factor (1 rem=0.01 sievert).

Sievert is 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 (1 Sv=100 rems).

(b) As used in this part, the quality factors for converting absorbed dose to dose equivalent are shown in table 1004(b).1.

Table 1004(b).1-Quality Factors and Absorbed Dose Equivalencies

Type of Radiation	Quality Factor	Absorbed dose equal to a unit dose equivalent
	(Q)	
X-, gamma, or beta radiation.....	1	1
Alpha particles, multiple-charged particles, fission fragments and heavy particles of unknown charge.....	20	0.05
Neutrons of unknown energy.....	10	0.1
High-energy protons.....	10	0.1

<sup>a</sup> absorbed dose in rad equal to 1 rem or the absorbed dose in gray equal.

(c) If it is more convenient to measure the neutron fluence rate than to determine the neutron dose equivalent rate in rems per hour or sieverts per hour, as provided in paragraph (b) of this section, 1 rem (0.01 Sv) of neutron radiation of unknown energies may, for purposes of the regulations in this part, be assumed to result from a total fluence of 25 million neutrons per square centimeter incident upon the body. If sufficient information exists to estimate the approximate energy distribution of the neutrons, the licensee may use the fluence rate per unit dose equivalent or the appropriate Q value from table 1004(b).2 to convert a measured tissue dose in rads to dose equivalent in rems.

	Neutron energy(MeV)	Quality Factor (Q) <sup>a</sup>	Fluence per unit equivalent <sup>b</sup> (neutrons cm <sup>-2</sup> )
(thermal)	2.5 x 10 <sup>-8</sup>	2	980 x 10 <sup>6</sup>
	1 x 10 <sup>-7</sup>	2	980 x 10 <sup>6</sup>
	1 x 10 <sup>-6</sup>	2	810 x 10 <sup>6</sup>
	1 x 10 <sup>-5</sup>	2	810 x 10 <sup>6</sup>
	1 x 10 <sup>-4</sup>	2	840 x 10 <sup>6</sup>
	1 x 10 <sup>-3</sup>	2	980 x 10 <sup>6</sup>
	1 x 10 <sup>-2</sup>	2.5	1010 x 10 <sup>6</sup>
	1 x 10 <sup>-1</sup>	7.5	170 x 10 <sup>6</sup>
	5 x 10 <sup>-1</sup>	11	39 x 10 <sup>6</sup>
	1	11	27 x 10 <sup>6</sup>
	2.5	9	29 x 10 <sup>6</sup>
	5	8	23 x 10 <sup>6</sup>
	7	7	24 x 10 <sup>6</sup>
	10	6.5	24 x 10 <sup>6</sup>
	14	7.5	17 x 10 <sup>6</sup>
	20	8	16 x 10 <sup>6</sup>
	40	7	14 x 10 <sup>6</sup>
	60	5.5	16 x 10 <sup>6</sup>
	1 x 10 <sup>2</sup>	4	20 x 10 <sup>6</sup>
	2 x 10 <sup>2</sup>	3.5	19 x 10 <sup>6</sup>
	3 x 10 <sup>2</sup>	3.5	16 x 10 <sup>6</sup>
	4 x 10 <sup>2</sup>	3.5	14 x 10 <sup>6</sup>

<sup>a</sup> Value of quality factor (Q) at the point where the dose equivalent is maximum in a 30-cm diameter cylinder tissue-equivalent phantom.

<sup>b</sup> Monoenergetic neutrons incident normally on a 30-cm diameter cylinder tissue-equivalent phantom.

#### **§20.1005 Units of radioactivity.**

For the purposes of this part, activity is expressed in the special unit of curies (Ci) or in the SI unit of becquerels (Bq), or their multiples, or disintegrations (transformations) per unit of time.

(a) One becquerel=1 disintegration per second ( $s^{-1}$ ).

(b) One curie= $3.7 \times 10^{10}$  disintegrations per second= $3.7 \times 10^{10}$  becquerels= $2.22 \times 10^{12}$  disintegrations per minute.

[56 FR 23391, May 21, 1991; 56 FR 61352, Dec. 3, 1991]

#### **§20.1006 Interpretations.**

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by an officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

#### **§20.1007 Communications.**

Unless otherwise specified, communications or reports concerning the regulations in this part should be addressed to the Executive Director for Operations, U.S. Nuclear Regulatory Commission, Washington, DC 20555. A communication, report, or application may be delivered in person to the Office of the Executive Director for Operations, 11555 Rockville Pike, Rockville, MD 20852.

#### **§20.1008 Implementation.**

(a) [Reserved]

(b) The applicable section of §§20.1001 - 20.2402 must be used in lieu of requirements in the standards for protection against radiation in effect prior to January 1, 1994<sup>(1)</sup> that are cited in license conditions or technical specifications, except as specified in paragraphs (c), (d), and (e) of this section. If the requirements of this part are more restrictive than the existing license condition, then the licensee shall comply with this part unless exempted by paragraph (d) of this section.

(c) Any existing license condition or technical specification that is more restrictive than a requirement in §§20.1001 - 20.2402 remains in force until there is a technical specification change, license amendment, or license renewal.

(d) If a license condition or technical specification exempted a licensee from a requirement in the standards for protection against radiation in effect prior to January 1, 1994,<sup>(1)</sup> it continues to exempt a licensee from the corresponding provision of §§20.1001 - 20.2402.

(e) If a license condition cites provisions in requirements in the standards for protection against radiation in effect prior to January 1, 1994<sup>(1)</sup> and there are no corresponding provisions in §§20.1001 - 20.2402, then the license condition remains in force until there is a technical specification change, license amendment, or license renewal that modifies or removes this condition.

[59 FR 41643, Aug. 15, 1994]

#### **§20.1009 Reporting, recording, and application requirements: OMB approval.**

(a) The Nuclear Regulatory Commission has submitted the information collection requirements contained in this part to the Office of Management and Budget (OMB) for approval as required by the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*). The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. OMB has approved the information collection requirements contained in this part under control number 3150-0014.

(b) The approved information collection requirements contained in this part appear in §§20.1003, 20.1101, 20.1202, 20.1203, 20.1204, 20.1206, 20.1208, 20.1301, 20.1302, 20.1403, 20.1404, 20.1406, 20.1501, 20.1601, 20.1703, 20.1901, 20.1902, 20.1904, 20.1905, 20.1906, 20.2002, 20.2004, 20.2006, 20.2102, 20.2103, 20.2104, 20.2105, 20.2106, 20.2107, 20.2108, 20.2110, 20.2201, 20.2202, 20.2203, 20.2204, 20.2205, 20.2206, 20.2301, and appendix G to 10 CFR Part 20.

(c) This part contains information collection requirements in addition to those approved under the control number specified in paragraph (a) of

this section. These information collection requirements and the control numbers under which they are approved are as follows:

- (1) In §20.2104, NRC Form 4 is approved under control number 3150-0005.
- (2) In §§20.2106 and 20.2206, NRC Form 5 is approved under control number 3150-0006.
- (3) In §20.2006 and appendix G to 10 CFR Part 20, NRC Form 540 and 540A is approved under control number 3150-0164.
- (4) In §20.2006 and appendix G to 10 CFR Part 20, NRC Form 541 and 541A is approved under control number 3150-0166.
- (5) In §20.2006 and appendix G to 10 CFR Part 20, NRC Form 542 and 542A is approved under control number 3150-0165.

[63 FR 50127, Sept. 21, 1998]

### Subpart M -- Reports

Source: 56 FR 23406, May 21, 1991, unless otherwise noted.

#### ***§20.2201 Reports of theft or loss of licensed material.***

- (a) Telephone reports. (1) Each licensee shall report by telephone as follows:
  - (i) Immediately after its occurrence becomes known to the licensee, any lost, stolen, or missing licensed material in an aggregate quantity equal to or greater than 1,000 times the quantity specified in appendix C to part 20 under such circumstances that it appears to the licensee that an exposure could result to persons in unrestricted areas; or
  - (ii) Within 30 days after the occurrence of any lost, stolen, or missing licensed material becomes known to the licensee, all licensed material in a quantity greater than 10 times the quantity specified in appendix C to part 20 that is still missing at this time.
- (2) Reports must be made as follows:
  - (i) Licensees having an installed Emergency Notification System shall make the reports to the NRC Operations Center in accordance with §50.72 of this chapter, and
  - (ii) All other licensees shall make reports by telephone to the NRC Operations Center (301 - 951 - 0550).
- (b) *Written reports.* (1) Each licensee required to make a report under paragraph (a) of this

section shall, within 30 days after making the telephone report, make a written report setting forth the following information:

- (i) A description of the licensed material involved, including kind, quantity, and chemical and physical form; and
- (ii) A description of the circumstances under which the loss or theft occurred; and
- (iii) A statement of disposition, or probable disposition, of the licensed material involved; and
- (iv) Exposures of individuals to radiation, circumstances under which the exposures occurred, and the possible total effective dose equivalent to persons in unrestricted areas; and
- (v) Actions that have been taken, or will be taken, to recover the material; and
- (vi) Procedures or measures that have been, or will be, adopted to ensure against a recurrence of the loss or theft of licensed material.

(2) Reports must be made as follows:

- (i) For holders of an operating license for a nuclear power plant, the events included in paragraph (b) of this section must be reported in accordance with the procedures described in §50.73(b), (c), (d), (e), and (g) of this chapter and must include the information required in paragraph (b)(1) of this section, and
- (ii) All other licensees shall make reports to the Administrator of the appropriate NRC Regional Office listed in appendix D to part 20.
- (c) A duplicate report is not required under paragraph (b) of this section if the licensee is also required to submit a report pursuant to §§30.55(c), 40.64(c), 50.72, 50.73, 70.52, 73.27(b), 73.67(e)(3)(vi), 73.67(g)(3)(iii), 73.71, or §150.19(c) of this chapter.
- (d) Subsequent to filing the written report, the licensee shall also report any additional substantive information on the loss or theft within 30 days after the licensee learns of such information.
- (e) The licensee shall prepare any report filed with the Commission pursuant to this section so that names of individuals who may have received exposure to radiation are stated in a separate and detachable part of the report.

[56 FR 23406, May 21, 1991, as amended at 58 FR 69220, Dec. 30, 1993; 60 FR 20186, Apr. 25, 1995]

**§20.2202 Notification of incidents.**

(a) Immediate notification. Notwithstanding any other requirements for notification, each licensee shall immediately report any event involving byproduct, source, or special nuclear material possessed by the licensee that may have caused or threatens to cause any of the following conditions --

(1) An individual to receive --

(i) A total effective dose equivalent of 25 rems (0.25 Sv) or more; or

(ii) A lens dose equivalent of 75 rems (0.75 Sv) or more; or

(iii) A shallow-dose equivalent to the skin or extremities of 250 rads (2.5 Gy) or more; or

(2) The release of radioactive material, inside or outside of a restricted area, so that, had an individual been present for 24 hours, the individual could have received an intake five times the annual limit on intake (the provisions of this paragraph do not apply to locations where personnel are not normally stationed during routine operations, such as hot-cells or process enclosures).

(b) Twenty-four hour notification. Each licensee shall, within 24 hours of discovery of the event, report any event involving loss of control of licensed material possessed by the licensee that may have caused, or threatens to cause, any of the following conditions:

(1) An individual to receive, in a period of 24 hours --

(i) A total effective dose equivalent exceeding 5 rems (0.05 Sv); or

(ii) A lens dose equivalent exceeding 15 rems (0.15 Sv); or

(iii) A shallow-dose equivalent to the skin or extremities exceeding 50 rems (0.5 Sv); or

(2) The release of radioactive material, inside or outside of a restricted area, so that, had an individual been present for 24 hours, the individual could have received an intake in excess of one occupational annual limit on intake (the provisions of this paragraph do not apply to locations where personnel are not normally stationed during routine operations, such as hot-cells or process enclosures).

(c) The licensee shall prepare any report filed with the Commission pursuant to this section so that names of individuals who have received exposure to radiation or radioactive material are

stated in a separate and detachable part of the report.

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

(1) Licensees having an installed Emergency Notification System shall make the reports required by paragraphs (a) and (b) of this section to the NRC Operations Center in accordance with 10 CFR 50.72; and

(2) All other licensees shall make the reports required by paragraphs (a) and (b) of this section by telephone to the NRC Operations Center (301) 816-5100.

(e) The provisions of this section do not include doses that result from planned special exposures, that are within the limits for planned special exposures, and that are reported under §20.2204.

[56 FR 23406, May 21, 1991, as amended at 56 FR 40766, Aug. 16, 1991; 57 FR 57879, Dec. 8, 1992; 59 FR 14086, Mar. 25, 1994]

### **Appendix B to Part 20 -- Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage**

Note: Appendix has been annotated to include those sections most relevant to Ronan gauging devices. For a complete set of appendices, see a current copy of 10 CFR Part 20.

#### *Introduction:*

For each radionuclide Table 1 indicates the chemical form which is to be used for selecting the appropriate ALI or DAC value. The ALIs and DACs for inhalation are given for an aerosol with an activity median aerodynamic diameter (AMAD) of 1  $\mu\text{m}$  and for three classes (D,W,Y) of radioactive material, which refer to their retention (approximately days, weeks or years) in the pulmonary region of the lung. This classification applies to a range of clearance half-times of less than 10 days for D, for W from 10 to 100 days, and for Y greater than 100 days. The class (D, W, or Y) given in the column headed "Class" applies only to the inhalation ALIs and DACs given in Table 1, columns 2 and 3. Table 2 provides concentration

limits for airborne and liquid effluents released to the general environment. Table 3 provides concentration limits for discharges to sanitary sewer systems.

*Notation:*

The values in Tables 1, 2, and 3 are presented in the computer "E" notation. In this notation a value of 6E-02 represents a value of  $6 \times 10^{-2}$  or 0.06, 6E+2 represents  $6 \times 10^2$  or 600, and 6E+0 represents  $6 \times 10^0$  or 6.

*See Table 1*

Note that the columns in Table 1, of this appendix captioned "Oral Ingestion ALI," "Inhalation ALI," and "DAC," are applicable to occupational exposure to radioactive material.

The ALIs in this appendix are the annual intakes of a given radionuclide by "Reference Man" which would result in either (1) a committed effective dose equivalent of 5 rems (stochastic ALI) or (2) a committed dose equivalent of 50 rems to an organ or tissue (non-stochastic ALI). The stochastic ALIs were derived to result in a risk, due to irradiation of organs and tissues, comparable to the risk associated with deep dose equivalent to the whole body of 5 rems. The derivation includes multiplying the committed dose equivalent to an organ or tissue by a weighting factor,  $w_T$ . This weighting factor is the proportion of the risk of stochastic effects resulting from irradiation of the organ or tissue, T, to the total risk of stochastic effects when the whole body is irradiated uniformly. The values of  $w_T$  are listed under the definition of weighting factor in §20.1003. The non-stochastic ALIs were derived to avoid non-stochastic effects, such as prompt damage to tissue or reduction in organ function.

A value of  $w_T=0.06$  is applicable to each of the five organs or tissues in the "remainder" category receiving the highest dose equivalents, and the dose equivalents of all other remaining tissues may be disregarded. The following parts of the GI tract -- stomach, small intestine, upper large intestine, and lower large intestine -- are to be treated as four separate organs.

Note that the dose equivalents for extremities (hands and forearms, feet and lower legs), skin, and lens of the eye are not considered in computing the committed effective dose equivalent, but are subject to limits that must be met separately.

When an ALI is defined by the stochastic dose limit, this value alone, is given. When an ALI is determined by the non-stochastic dose limit to an organ, the organ or tissue to which the limit applies is shown, and the ALI for the stochastic limit is shown in parentheses. (Abbreviated organ or tissue designations are used: LLI wall = lower large intestine wall; St.

wall = stomach wall; Blad wall = bladder wall; and Bone surf = bone surface.)

The use of the ALIs listed first, the more limiting of the stochastic and non-stochastic ALIs, will ensure that non-stochastic effects are avoided and that the risk of stochastic effects is limited to an acceptably low value. If, in a particular situation involving a radionuclide for which the non-stochastic ALI is limiting, use of that non-stochastic ALI is considered unduly conservative, the licensee may use the stochastic ALI to determine the committed effective dose equivalent. However, the licensee shall also ensure that the 50-rem dose equivalent limit for any organ or tissue is not exceeded by the sum of the external deep dose equivalent plus the internal committed dose to that organ (not the effective dose). For the case where there is no external dose contribution, this would be demonstrated if the sum of the fractions of the nonstochastic ALIs ( $ALI_{ns}$ ) that contribute to the committed dose equivalent to the organ receiving the highest dose does not exceed unity (i.e., (intake (in  $\mu\text{Ci}$ ) of each radionuclide/ $ALI_{ns}$ )  $< 1.0$ ). If there is an external deep dose equivalent contribution of  $H_d$  then this sum must be less than  $1 - (H_d/50)$  instead of being  $< 1.0$ .

The derived air concentration (DAC) values are derived limits intended to control chronic occupational exposures. The relationship between the DAC and the ALI is given by:  $DAC = ALI(\text{in } \mu\text{Ci}) / (2000 \text{ hours per working year} \times 60 \text{ minutes/hour} \times 2 \times 10^4 \text{ ml per minute}) = [ALI/2.4 \times 10^9] \mu\text{Ci/ml}$ , where  $2 \times 10^4$  ml is the volume of air breathed per minute at work by "Reference Man" under working conditions of "light work."

The DAC values relate to one of two modes of exposure: either external submersion or the internal committed dose equivalents resulting from inhalation of radioactive materials. Derived air concentrations based upon submersion are for immersion in a semi-infinite cloud of uniform concentration and apply to each radionuclide separately.

The ALI and DAC values relate to exposure to the single radionuclide named, but also include contributions from the in-growth of any daughter radionuclide produced in the body by the decay of the parent. However, intakes that include both the parent and daughter radionuclides should be treated by the general method appropriate for mixtures.

*The value of ALI and DAC do not apply directly when the individual both ingests and inhales a radionuclide, when the individual is exposed to a mixture of radionuclides by either inhalation or ingestion or both, or when the individual is exposed to both internal and external radiation (see §20.1202). When an individual is exposed to radioactive materials which fall under several of the translocation classifications (i.e., Class D, Class W, or Class Y) of*

*the same radionuclide, the exposure may be evaluated as if it were a mixture of different radionuclides.*

It should be noted that the classification of a compound as Class D, W, or Y is based on the chemical form of the compound and does not take into account the radiological half-life of different radioisotopes. For this reason, values are given for Class D, W, and Y compounds, even for very short-lived radionuclides.

*See Table 2*

The columns in Table 2 of this appendix captioned "Effluents," "Air," and "Water," are applicable to the assessment and control of dose to the public, particularly in the implementation of the provisions of §20.1302. The concentration values given in Columns 1 and 2 of Table 2 are equivalent to the radionuclide concentrations which, if inhaled or ingested continuously over the course of a year, would produce a total effective dose equivalent of 0.05 rem (50 millirem or 0.5 millisieverts).

Consideration of non-stochastic limits has not been included in deriving the air and water effluent concentration limits because non-stochastic effects are presumed not to occur at the dose levels established for individual members of the public. For radionuclides, where the non-stochastic limit was governing in deriving the occupational DAC, the stochastic ALI was used in deriving the corresponding airborne effluent limit in Table 2. For this reason, the DAC and airborne effluent limits are not always proportional as was the case in appendix B to §§20.1 - 20.601.

The air concentration values listed in Table 2, Column 1, were derived by one of two methods. For those radionuclides for which the stochastic limit is governing, the occupational stochastic inhalation ALI was divided by  $2.4 \times 10^9$  ml, relating the inhalation ALI to the DAC, as explained above, and then divided by a factor of 300. The factor of 300 includes the following components: a factor of 50 to relate the 5-rem annual occupational dose limit to the 0.1 rem limit for members of the public, a factor of 3 to adjust for the difference in exposure time and the inhalation rate for a worker and that for members of the public; and a factor of 2 to adjust the occupational values (derived for adults) so that they are applicable to other age groups.

For those radionuclides for which submersion (external dose) is limiting, the occupational DAC in Table 1, Column 3, was divided by 219. The factor of 219 is composed of a factor of 50, as described above, and a factor of 4.38 relating occupational exposure for 2,000 hours per year to full-time exposure (8,760 hours per year). Note that an additional factor of 2 for

age considerations is not warranted in the submersion case.

The water concentrations were derived by taking the most restrictive occupational stochastic oral ingestion ALI and dividing by  $7.3 \times 10^7$ . The factor of  $7.3 \times 10^7$  (ml) includes the following components: the factors of 50 and 2 described above and a factor of  $7.3 \times 10^5$  (ml) which is the annual water intake of "Reference Man."

Note 2 of this appendix provides groupings of radionuclides which are applicable to unknown mixtures of radionuclides. These groupings (including occupational inhalation ALIs and DACs, air and water effluent concentrations and sewerage) require demonstrating that the most limiting radionuclides in successive classes are absent. The limit for the unknown mixture is defined when the presence of one of the listed radionuclides cannot be definitely excluded either from knowledge of the radionuclide composition of the source or from actual measurements.

*See Table 3*

The monthly average concentrations for release to sanitary sewers are applicable to the provisions in §20.2003. The concentration values were derived by taking the most restrictive occupational stochastic oral ingestion ALI and dividing by  $7.3 \times 10^6$  (ml). The factor of  $7.3 \times 10^6$  (ml) is composed of a factor of  $7.3 \times 10^5$  (ml), the annual water intake by "Reference Man," and a factor of 10, such that the concentrations, if the sewage released by the licensee were the only source of water ingested by a reference man during a year, would result in a committed effective dose equivalent of 0.5 rem.

[56 FR 23409, May 21, 1991; 56 FR 61352, Dec. 3, 1991, as amended at 57 FR 57879, Dec. 8, 1992. Redesignated at 58 FR 67659, Dec. 22, 1993]

Note: All tables in this section have been condensed to reflect only the radionuclides used in Ronan gauging devices. For a complete list of all radionuclides and their quantities, refer to a current copy of 10 CFR Part 20, Appendix B.



Atomic Number	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration (μCi/ml)
			Oral Ingestion ALI	Inhalation		Air (μCi/ml)	Water (μCi/ml)	
ALI (μCi)	DAC (μCi/ml)							
55	Cs-137	D, All Compounds	1E+2	2E+2	6E-8	2E-10	1E-6	1E-5
27	Co-60	W, See 55Co	5E+2	2E+2	7E-8	2E-10	3E-6	3E-5
		Y, See 55Co	2E+2	3E+1	1E-8	5E-11	--	--
95	Am-241	W, All Compounds	8E-1 Bone Surface	6E-3 Bone Surface	3E-12	--	--	--
			(1E+0)	(1E-2)	--	2E-14	2E-8	2E-7

**Appendix C to Part 20--Quantities<sup>(1)</sup> of Licensed Material Requiring Labeling**

Radionuclide	Quantity (μCi)
Americium-241	0.001
Cesium-137	10
Cobalt-60	1

for each radionuclide in the combination, the ratio between the quantity present in the combination and the limit otherwise established for the specific radionuclide when not in combination. The sum of such ratios for all radionuclides in the combination may not exceed "1" (i.e., "unity").

[56 FR 23465, May 21, 1991; 56 FR 61352, Dec. 3, 1991. Redesignated and amended at 58 FR 67659, Dec. 22, 1993; 60 FR 20186, Apr. 25, 1995]

<sup>1</sup>The quantities listed above were derived by taking 1/10th of the most restrictive ALI listed in table 1, columns 1 and 2, of appendix B to §§20.1001-20.2401 of this part, rounding to the nearest factor of 10, and arbitrarily constraining the values listed between 0.001 and 1,000 μCi. Values of 100 μCi have been assigned for radionuclides having a radioactive half-life in excess of 10<sup>9</sup> years (except rhenium, 1000 μCi) to take into account their low specific activity.

NOTE: For purposes of §§20.1902(e), 20.1905(a), and 20.2201(a) where there is involved a combination of radionuclides in known amounts, the limit for the combination should be derived as follows: determine,

**Appendix D to Part 20 -- United States Nuclear Regulatory Commission Regional  
Offices**

Region	Address	Telephone (24 Hour)
<b>Region I:</b>		
Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.	USNRC, Region I, 475 Allendale Road, King of Prussia, PA 19406.	(610) 337-5000, (FTS) 346-5000.
<b>Region II:</b>		
Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, Puerto Rico, South Carolina, Tennessee, Virginia, Virgin Islands, and West Virginia.	USNRC, Region II, Atlanta Federal Center, 61 Forsyth Street, SW., Suite 23T85, Atlanta, GA 30303.	(404) 562-4400, (FTS) 841-4503.
<b>Region III:</b>		
Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin.	USNRC, Region III, 801 Warrenville Road, Lisle, IL 60532-4351.	(708) 829-9500, (FTS) 829-9500.
<b>Region IV:</b>		
Alaska, Arizona, Arkansas, California, Colorado, Hawaii, Idaho, Kansas, Louisiana, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, Wyoming, and the U.S. territories and possessions in the Pacific.	USNRC, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, TX 76011.	(817) 860-8100, (FTS) 728-8100.
Field Office	USNRC, Region IV, Walnut Creek Field Office, 1450 Maria Lane, Suite 300, Walnut Creek, CA 94596.	(510) 975-0200

[56 FR 23468, May 21, 1991, as amended at 56 FR 41449, Aug. 21, 1991; 58 FR 64111, Dec. 6, 1993; 59 FR 17465, Apr. 13, 1994; 60 FR 24551, May 9, 1995; 62 FR 22880, Apr. 28, 1997]

## PART 30 -- RULES OF GENERAL APPLICABILITY TO DOMESTIC LICENSING OF BYPRODUCT MATERIAL

Note: This section and its corresponding schedules have been annotated to reflect only those regulations and nuclides which are pertinent to Ronan gauging devices. For a complete set of regulations or schedules please refer to a current copy of 10 CFR Part 30.

Sec.

- 30.1 Scope.
- 30.2 Resolution of conflict.
- 30.3 Activities requiring license.
- 30.4 Definitions.
- 30.5 Interpretations.
- 30.6 Communications.
- 30.7 Employee protection.
- 30.8 Information collection requirements: OMB approval.
- 30.9 Completeness and accuracy of information.
- 30.10 Deliberate misconduct.

### Exemptions

- 30.11 Specific exemptions.
- 30.14 Exempt concentrations.
- 30.15 Certain items containing byproduct material.
- 30.18 Exempt quantities.

### Licenses

- 30.31 Types of licenses.
- 30.32 Application for specific licenses.
- 30.33 General requirements for issuance of specific licenses.
- 30.34 Terms and conditions of licenses.
- 30.35 Financial assurance and recordkeeping for decommissioning.
- 30.36 Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.
- 30.37 Application for renewal of licenses.
- 30.38 Application for amendment of licenses.
- 30.39 Commission action on applications to renew or amend.
- 30.41 Transfer of byproduct material.

### Records, Inspections, Tests, and Reports

- 30.50 Reporting requirements.
- 30.51 Records.
- 30.52 Inspections.
- 30.53 Tests.

### Enforcement

- 30.61 Modification and revocation of licenses.
- 30.62 Right to cause the withholding or recall of byproduct material.
- 30.63 Violations.
- 30.64 Criminal penalties.

### Schedules

- 30.70 Schedule A -- exempt concentrations.
- 30.71 Schedule B.

### §30.1 Scope.

This part prescribes rules applicable to all persons in the United States governing domestic licensing of byproduct material under the Atomic Energy Act of 1954, as amended (68 Stat. 919), and under title II of the Energy Reorganization Act of 1974 (88 Stat. 1242), and exemptions from the domestic licensing requirements permitted by Section 81 of the Act. This part also gives notice to all persons who knowingly provide to any licensee, applicant, certificate of registration holder, contractor, or subcontractor, components, equipment, materials, or other goods or services, that relate to a licensee's, applicant's or certificate of registration holder's activities subject to this part, that they may be individually subject to NRC enforcement action for violation of §30.10.

[56 FR 40689, Aug. 15, 1991]

### §30.2 Resolution of conflict.

The requirements of this part are in addition to, and not in substitution for, other requirements of this chapter. In any conflict between the requirements in this part and a specific requirement in another part of the regulations in this chapter, the specific requirement governs.

[30 FR 8185, June 26, 1965]

### §30.3 Activities requiring license.

Except for persons exempt as provided in this part and part 150 of this chapter, no person shall manufacture, produce, transfer, receive, acquire, own, possess, or use byproduct material except as authorized in a specific or general license issued pursuant to the regulations in this chapter.

[30 FR 8185, June 26, 1965, as amended at 43 FR 6921, Feb. 17, 1978]

### §30.4 Definitions.

*Act* means the Atomic Energy Act of 1954 (68 Stat. 919), including any amendments thereto;

*Agreement State* means any state with which the Atomic Energy Commission or the Nuclear Regulatory Commission has entered into an

effective agreement under subsection 274b. of the Act. Non-agreement State means any other State;

*Alert* means events may occur, are in progress, or have occurred that could lead to a release of radioactive material but that the release is not expected to require a response by offsite response organizations to protect persons offsite.

*By product material* means any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material;

*Commencement of construction* means any clearing of land, excavation, or other substantial action that would adversely affect the natural environment of a site but does not include changes desirable for the temporary use of the land for public recreational uses, necessary borings to determine site characteristics or other preconstruction monitoring to establish background information related to the suitability of a site or to the protection of environmental values.

*Commission* means the Nuclear Regulatory Commission and its duly authorized representatives;

*Curie* means that amount of radioactive material which disintegrates at the rate of 37 billion atoms per second;

*Decommission* means 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.

*Dentist* means an individual licensed by a State or Territory of the United States, the District of Columbia, or the Commonwealth of Puerto Rico to practice dentistry.

*Department and Department of Energy* means the Department of Energy established by the Department of Energy Organization Act (Pub. L. 95 - 91, 91 Stat. 565, 42 U.S.C. 7101 et seq.) to the extent that the Department, or its duly authorized representatives, exercises functions formerly vested in the U.S. Atomic Energy Commission, its Chairman, members, officers and components and transferred to the U.S. Energy Research and Development Administration and to the Administrator thereof

pursuant to sections 104 (b), (c) and (d) of the Energy Reorganization Act of 1974 (Pub. L. 93 - 438, 88 Stat. 1233 at 1237, 42 U.S.C. 5814) and retransferred to the Secretary of Energy pursuant to section 301(a) of the Department of Energy Organization Act (Pub. L. 95 - 91, 91 Stat. 565 at 577 - 578, 42 U.S.C. 7151).

*Effective dose equivalent* means the sum of the products of the dose equivalent to the organ or tissue and the weighting factors applicable to each of the body organs or tissues that are irradiated. Weighting factors are: 0.25 for gonads, 0.15 for breast, 0.12 for red bone marrow, 0.12 for lungs, 0.03 for thyroid, 0.03 for bone surface, and 0.06 for each of the other five organs receiving the highest dose equivalent.

*Government agency* means any executive department, commission, independent establishment, corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States, or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the Government;

*License*, except where otherwise specified means a license for by-product material issued pursuant to the regulations in this part and parts 31 through 36 and 39 of this chapter;

*Medical use* means the intentional internal or external administration of byproduct material or the radiation therefrom to patients or human research subjects under the supervision of an authorized user as defined in 10 CFR Part 35.

*Microcurie* means that amount of radioactive material which disintegrates at the rate of 37 thousand atoms per second;

*Millicurie* means that amount of radioactive material which disintegrates at the rate of 37 million atoms per second;

*Person* means: (1) Any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency other than the Commission or the Department, except that the Department shall be considered a person within the meaning of the regulations in this part to the extent that its facilities and activities are subject to the licensing and related regulatory authority of the Commission pursuant to section 202 of the Energy Reorganization Act of 1974 (88 Stat. 1244), any State or any political subdivision of or any political entity within a State, any foreign government or nation or any political subdivision

of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing;

*Physician* means a medical doctor or doctor of osteopathy licensed by a State or Territory of the United States, the District of Columbia, or the Commonwealth of Puerto Rico to prescribe drugs in the practice of medicine;

*Podiatrist* means an individual licensed by a State or Territory of the United States, the District of Columbia, or the Commonwealth of Puerto Rico to practice podiatry.

*Principal activities*, as used in this part, means activities authorized by the license which are essential to achieving the purpose(s) for which the license was issued or amended. Storage during which no licensed material is accessed for use or disposal and activities incidental to decontamination or decommissioning are not principal activities.

*Production facility* means production facility as defined in the regulations contained in part 50 of this chapter;

*Research and development* means: (1) Theoretical analysis, exploration, or experimentation; or (2) the extension of investigative findings and theories of a scientific or technical nature into practical application for experimental and demonstration purposes, including the experimental production and testing of models, devices, equipment, materials and processes. "Research and development" as used in this part and parts 31 through 35 does not include the internal or external administration of byproduct material, or the radiation therefrom, to human beings;

*Sealed source* means any by product material that is encased in a capsule designed to prevent leakage or escape of the byproduct material; *Site area emergency* means events may occur, are in progress, or have occurred that could lead to a significant release of radioactive material and that could require a response by offsite response organizations to protect persons offsite.

*Source material* means source material as defined in the regulations contained in part 40 of this chapter;

*Special nuclear material* means special nuclear material as defined in the regulations contained in part 70 of this chapter;

*United States*, when used in a geographical sense, includes Puerto Rico and all territories and possessions of the United States;

*Utilization facility* means a utilization facility as defined in the regulations contained in part 50 of this chapter;

<sup>1</sup>The Department facilities and activities identified in section 202 are:

(1) Demonstration Liquid Metal Fast Breeder reactors when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(2) Other demonstration nuclear reactors, except those in existence on January 19, 1975, when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(3) Facilities used primarily for the receipt and storage of high-level radioactive wastes resulting from licensed activities.

(4) Retrievable Surface Storage Facilities and other facilities authorized for the express purpose of subsequent long-term storage of high-level radioactive waste generated by the Department, which are not used for, or are part of, research and development activities.

### **§30.5 Interpretations.**

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part and parts 31 through 36 and 39 by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

[30 FR 8185, June 26, 1965, as amended at 43 FR 6921, Feb. 17, 1978; 52 FR 8241, Mar. 17, 1987; 58 FR 7736, Feb. 9, 1993]

### **§30.6 Communications.**

(a) Unless otherwise specified or covered under the regional licensing program as provided in paragraph (b) of this section, any communication or report concerning the regulations in parts 30 through 36 and 39 of this chapter and any application filed under these regulations may be submitted to the Commission as follows:

(1) By mail addressed to: Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

(2) By delivery in person to the Commission's offices to the Director, Office of Nuclear Material Safety and Safeguards at:

(i) 2120 L Street, NW., Washington, DC; or

(ii) 11545 Rockville Pike, Two White Flint North, Rockville, Maryland.

(b) The Commission has delegated to the five Regional Administrators licensing authority for selected parts of its decentralized licensing program for nuclear materials as described in paragraph (b)(1) of this section. Any communication, report, or application covered under this licensing program must be submitted as specified in paragraph (b)(2) of this section.

(1) The delegated licensing program includes authority to issue, renew, amend, cancel, modify, suspend, or revoke licenses for nuclear materials issued pursuant to 10 CFR parts 30 through 36, 39, 40, and 70 to all persons for academic, medical, and industrial uses, with the following exceptions:

(i) Activities in the fuel cycle and special nuclear material in quantities sufficient to constitute a critical mass in any room or area. This exception does not apply to license modifications relating to termination of special nuclear material licenses that authorize possession of larger quantities when the case is referred for action from NRC's Headquarters to the Regional Administrators.

(ii) Health and safety design review of sealed sources and devices and approval, for licensing purposes, of sealed sources and devices.

(iii) Processing of source material for extracting of metallic compounds (including Zirconium, Hafnium, Tantalum, Titanium, Niobium, etc.).

(iv) Distribution of products containing radioactive material to persons exempt pursuant 10 CFR 32.11 through 32.26.

(v) New uses or techniques for use of byproducts, source, or special nuclear material.

(2) *Submissions* -- (i) *Region I*. The regional licensing program involves all Federal facilities in the region and non-Federal licensees in the following Region I non-Agreement States and the District of Columbia: Connecticut, Delaware, Maine, Massachusetts, New Jersey, Pennsylvania, and Vermont. All inquiries, communications, and application for a new license or an amendment or renewal of an existing license specified in paragraph (b)(1) of this section must be sent to: U.S. Nuclear Regulatory Commission, Region I, Nuclear Material Section B, 475 Allendale Road, King of Prussia, Pennsylvania 19406.

(ii) *Region II*. The regional licensing program involves all Federal facilities in the region and non-Federal licensees in the following Region II non-Agreement States and territories: Virginia, West Virginia, Puerto Rico, and the Virgin Islands. All inquiries, communications, and applications for a new license or an amendment or renewal of an existing license specified in paragraph (b)(1) of this section must be sent to U.S. Nuclear Regulatory Commission, Region II, Material Licensing/Inspection Branch, Atlanta Federal Center, 61 Forsyth Street, SW., Suite 23T85, Atlanta, Georgia, 30303.

(iii) *Region III*. The regional licensing program involves all Federal facilities in the region and non-Federal licensees in the following Region III non-Agreement States: Indiana, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. All inquiries, communications, and applications for a new license or an amendment or renewal of an existing license specified in paragraph (b)(1) of this section must be sent to: U.S. Nuclear Regulatory Commission, Region III, Material Licensing Section, 801 Warrenville Road, Lisle, Illinois 60532-4351.

(iv) *Region IV*. The regional licensing program involves all Federal facilities in the region and non-Federal licensees in the following Region IV non-Agreement States and a territory: Alaska, Hawaii, Montana, Oklahoma, South Dakota, Wyoming, and Guam. All inquiries, communications, and applications for a new license or an amendment or renewal of an existing license specified in paragraph (b)(1) of this section must be sent to: U.S. Nuclear Regulatory Commission, Region IV, Material Radiation Protection Section, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011.

[48 FR 16031, Apr. 14, 1983, as amended at 49 FR 19630, May 9, 1984; 49 FR 47824, Dec. 7, 1984; 50 FR 14693, Apr. 11, 1985; 51 FR 36000, Oct. 8, 1986; 52 FR 8241, Mar. 17, 1987; 52 FR 38392, Oct. 16, 1987; 52 FR 48093, Dec. 18, 1987; 53 FR 3862, Feb. 10, 1988; 53 FR 43420, Oct. 27, 1988; 58 FR 7736, Feb. 9, 1993; 58 FR 64111, Dec. 6, 1993; 59 FR 17465, Apr. 13, 1994; 60 FR 24551, May 9, 1995; 62 FR 22880, Apr. 28, 1997]

**§30.7 Employee protection.**

(a) Discrimination by a Commission licensee, an applicant for a Commission license, or a contractor or subcontractor of a Commission licensee or applicant against an employee for engaging in certain protected activities is prohibited. Discrimination includes discharge and other actions that relate to compensation, terms, conditions, or privileges of employment. The protected activities are established in section 211 of the Energy Reorganization Act of 1974, as amended, and in general are related to the administration or enforcement of a requirement imposed under the Atomic Energy Act or the Energy Reorganization Act.

(1) The protected activities include but are not limited to:

(i) Providing the Commission or his or her employer information about alleged violations of either of the statutes named in paragraph (a) introductory text of this section or possible violations of requirements imposed under either of those statutes;

(ii) Refusing to engage in any practice made unlawful under either of the statutes named in paragraph (a) introductory text or under these requirements if the employee has identified the alleged illegality to the employer;

(iii) Requesting the Commission to institute action against his or her employer for the administration or enforcement of these requirements;

(iv) Testifying in any Commission proceeding, or before Congress, or at any Federal or State proceeding regarding any provision (or proposed provision) of either of the statutes named in paragraph (a) introductory text.

(v) Assisting or participating in, or is about to assist or participate in, these activities.

(2) These activities are protected even if no formal proceeding is actually initiated as a result of the employee assistance or participation.

(3) This section has no application to any employee alleging discrimination prohibited by this section who, acting without direction from his or her employer (or the employer's agent), deliberately causes a violation of any requirement of the Energy Reorganization Act of 1974, as amended, or the Atomic Energy Act of 1954, as amended.

(b) Any employee who believes that he or she has been discharged or otherwise discriminated against by any person for engaging in protected activities specified in paragraph (a)(1) of this section may seek a remedy for the discharge or discrimination through an administrative proceeding in the Department of Labor. The administrative proceeding must be initiated within 180 days after an alleged violation occurs. The employee may do this by filing a complaint alleging the violation with the Department of Labor, Employment Standards Administration, Wage and Hour Division. The Department of Labor may order reinstatement, back pay, and compensatory damages.

(c) A violation of paragraphs (a), (e), or (f) of this section by a Commission licensee, an applicant for a Commission license, or a contractor or subcontractor of a Commission licensee or applicant may be grounds for --

(1) Denial, revocation, or suspension of the license.

(2) Imposition of a civil penalty on the licensee or applicant.

(3) Other enforcement action.

(d) Actions taken by an employer, or others, which adversely affect an employee may be predicated upon nondiscriminatory grounds. The prohibition applies when the adverse action occurs because the employee has engaged in protected activities. An employee's engagement in protected activities does not automatically render him or her immune from discharge or discipline for legitimate reasons or from adverse action dictated by nonprohibited considerations.

(e)(1) Each specific licensee, each applicant for a specific license, and each general licensee subject to part 19 shall prominently post the revision of NRC Form 3, "Notice to Employees," referenced in 10 CFR 19.11(c).

(2) The posting of NRC Form 3 must be at locations sufficient to permit employees protected by this section to observe a copy on the way to or from their place of work. Premises must be posted not later than 30 days after an application is docketed and remain posted while the application is pending before the Commission, during the term of the license, and for 30 days following license termination.

(3) Copies of NRC Form 3 may be obtained by writing to the Regional Administrator of the appropriate U.S. Nuclear Regulatory Commission Regional Office listed in Appendix

D to Part 20 of this chapter or by calling the NRC Information and Records Management Branch at (301) 415 - 7230.

(f) No agreement affecting the compensation, terms, conditions, or privileges of employment, including an agreement to settle a complaint filed by an employee with the Department of Labor pursuant to section 211 of the Energy Reorganization Act of 1974, as amended, may contain any provision which would prohibit, restrict, or otherwise discourage an employee from participating in protected activity as defined in paragraph (a)(1) of this section including, but not limited to, providing information to the NRC or to his or her employer on potential violations or other matters within NRC's regulatory responsibilities.

[58 FR 52408, Oct. 8, 1993, as amended at 60 FR 24551, May 9, 1995; 61 FR 6764, Feb. 22, 1996]

***§30.8 Information collection requirements: OMB approval.***

(a) The Nuclear Regulatory Commission has submitted the information collection requirements contained in this part to the Office of Management and Budget (OMB) for approval as required by the Paperwork Reduction Act (44 U.S.C. 3501 et seq.). The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. OMB has approved the information collection requirements contained in this part under control number 3150 - 0017.

(b) The approved information collection requirements contained in this part appear in §§ 30.9, 30.11, 30.15, 30.19, 30.20, 30.32, 30.34, 30.35, 30.36, 30.37, 30.38, 30.50, 30.51, 30.55, 30.56, and Appendices A, C, D, and E of this part.

(c) This part contains information collection requirements in addition to those approved under the control number specified in paragraph (a) of this section. These information collection requirements and the control numbers under which they are approved are as follows:

(1) In §§30.32, 30.37, and 30.38, NRC Form 313 is approved under control number 3150 - 0120.

(2) In §30.36, NRC Form 314 is approved under control number 3150 - 0028.

[49 FR 19625, May 9, 1984, as amended at 59 FR 61780, Dec. 2, 1994; 62 FR 52186, Oct. 6, 1997; 62 FR 63639, Dec. 2, 1997]

Effective Date Note: At 62 FR 63639, Dec. 2, 1997,

§30.8(b) was revised, effective Jan. 2, 1998. For the convenience of the user, the superseded text is set forth as follows:

***§30.8 Information collection requirements: OMB approval.***

\* \* \* \* \*

(b) The approved information collection requirements contained in this part appear in §§ 30.9, 30.11, 30.15, 30.18, 30.19, 30.20, 30.32, 30.34, 30.35, 30.36, 30.37, 30.38, 30.41, 30.50, 30.51, 30.55, and appendices A and C to this part.

\* \* \* \* \*

***§30.9 Completeness and accuracy of information.***

(a) Information provided to the Commission by an applicant for a license or by a licensee or information required by statute or by the Commission's regulations, orders, or license conditions to be maintained by the applicant or the licensee shall be complete and accurate in all material respects.

(b) Each applicant or licensee shall notify the Commission of information identified by the applicant or licensee as having for the regulated activity a significant implication for public health and safety or common defense and security. An applicant or licensee violates this paragraph only if the applicant or licensee fails to notify the Commission of information that the applicant or licensee has identified as having a significant implication for public health and safety or common defense and security.

Notification shall be provided to the Administrator of the appropriate Regional Office within two working days of identifying the information. This requirement is not applicable to information which is already required to be provided to the Commission by other reporting or updating requirements.

[52 FR 49371, Dec. 31, 1987]



**§30.10 Deliberate misconduct.**

(a) Any licensee, certificate of registration holder, applicant for a license or certificate of registration, employee of a licensee, certificate of registration holder or applicant; or any contractor (including a supplier or consultant), subcontractor, employee of a contractor or subcontractor of any licensee or certificate of registration holder or applicant for a license or certificate of registration, who knowingly provides to any licensee, applicant, certificate holder, contractor, or subcontractor, any components, equipment, materials, or other goods or services that relate to a licensee's, certificate holder's or applicant's activities in this part, may not:

(1) Engage in deliberate misconduct that causes or would have caused, if not detected, a licensee, 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 Commission; or

(2) Deliberately submit to the NRC, a licensee, certificate of registration holder, an applicant, or a licensee's, certificate holder's or applicant's, contractor or subcontractor, information that the person submitting the information knows to be incomplete or inaccurate in some respect material to the NRC.

(b) A person who violates paragraph (a)(1) or (a)(2) of this section may be subject to enforcement action in accordance with the procedures in 10 CFR part 2, subpart B.

(c) For the purposes of paragraph (a)(1) of this section, deliberate misconduct by a person means an intentional act or omission that the person knows:

(1) Would cause a licensee, 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 Commission; or

(2) Constitutes a violation of a requirement, procedure, instruction, contract, purchase order, or policy of a licensee, certificate of registration holder, applicant, contractor, or subcontractor.

[56 FR 40689, Aug. 15, 1991]

**Exemptions****§30.11 Specific exemptions.**

(a) The Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part and parts 31 through 36 and 39 of this chapter as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

(b) Any licensee's activities are exempt from the requirements of this part to the extent that its activities are licensed under the requirements of part 72 of this chapter.

(c) The Department of Energy is exempt from the requirements of this part to the extent that its activities are subject to the requirements of part 60 or 63 of this chapter.

(d) Except as specifically provided in part 61 of this chapter, any licensee is exempt from the requirements of this part to the extent that its activities are subject to the requirements of part 61 of this chapter.

[37 FR 5746, Mar. 21, 1972, as amended at 39 FR 26279, July 18, 1974; 40 FR 8784, Mar. 3, 1975; 43 FR 6921, Feb. 21, 1978; 45 FR 65530, Oct. 3, 1980; 46 FR 13979, Feb. 25, 1981; 47 FR 57480, Dec. 27, 1982; 52 FR 8241, Mar. 17, 1987; 58 FR 7736, Feb. 9, 1993]

**§30.14 Exempt concentrations.**

(a) Except as provided in paragraphs (c) and (d) of this section, any person is exempt from the requirements for a license set forth in section 81 of the Act and from the regulations in this part and parts 31 through 36 and 39 of this chapter to the extent that such person receives, possesses, uses, transfers, owns or acquires products or materials containing byproduct material in concentrations not in excess of those listed in §30.70.

(b) This section shall not be deemed to authorize the import of byproduct material or products containing byproduct material.

(c) A manufacturer, processor, or producer of a product or material in an agreement State is exempt from the requirements for a license set forth in section 81 of the Act and from the regulations in this part and parts 31, 32, 33, 34, 36 and 39 of this chapter to the extent that he transfers byproduct material contained in a product or material in concentrations not in excess of those specified in §30.70 and

introduced into the product or material by a licensee holding a specific license issued by an agreement State, the Commission, or the Atomic Energy Commission expressly authorizing such introduction. This exemption does not apply to the transfer of byproduct material contained in any food, beverage, cosmetic, drug, or other commodity or product designed for ingestion or inhalation by, or application to, a human being.

(d) No person may introduce byproduct material into a product or material knowing or having reason to believe that it will be transferred to persons exempt under this section or equivalent regulations of an Agreement State, except in accordance with a license issued pursuant to §32.11 of this chapter or the general license provided in §150.20 of this chapter.

[30 FR 8185, June 26, 1965, as amended at 40 FR 8785, Mar. 3, 1975; 43 FR 6921, Feb. 17, 1978; 52 FR 8241, Mar. 17, 1987; 58 FR 7736, Feb. 9, 1993]

**§30.15 Certain items containing byproduct material.**

(a) Except for persons who apply byproduct material to, or persons who incorporate byproduct material into, the following products, or persons who initially transfer for sale or distribution the following products containing byproduct material, any person is exempt from the requirements for a license set forth in section 81 of the Act and from the regulations in parts 20 and 30 through 36 and 39 of this chapter to the extent that such person receives, possesses, uses, transfers, owns, or acquires the following products:

(1) Timepieces or hands or dials containing not more than the following specified quantities of byproduct material and not exceeding the following specified levels of radiation:

- (i) 25 millicuries of tritium per timepiece,
- (ii) 5 millicuries of tritium per hand,
- (iii) 15 millicuries of tritium per dial (bezels when used shall be considered as part of the dial),
- (iv) 100 microcuries of promethium 147 per watch or 200 microcuries of promethium 147 per any other timepiece,
- (v) 20 microcuries of promethium 147 per watch hand or 40 microcuries of promethium 147 per other timepiece hand,

(vi) 60 microcuries of promethium 147 per watch dial or 120 microcuries of promethium 147 per other timepiece dial (bezels when used shall be considered as part of the dial),

(vii) The levels of radiation from hands and dials containing promethium 147 will not exceed, when measured through 50 milligrams per square centimeter of absorber:

(A) For wrist watches, 0.1 millirad per hour at 10 centimeters from any surface,

(B) For pocket watches, 0.1 millirad per hour at 1 centimeter from any surface,

(C) For any other timepiece, 0.2 millirad per hour at 10 centimeters from any surface.

(2) Lock illuminators containing not more than 15 millicuries of tritium or not more than 2 millicuries of promethium 147 installed in automobile locks. The levels of radiation from each lock illuminator containing promethium 147 will not exceed 1 millirad per hour at 1 centimeter from any surface when measured through 50 milligrams per square centimeter of absorber.

(3) Balances of precision containing not more than 1 millicurie of tritium per balance or not more than 0.5 millicurie of tritium per balance part.

(4) Automobile shift quadrants containing not more than 25 millicuries of tritium.

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

(6) Thermostat dials and pointers containing not more than 25 millicuries of tritium per thermostat.

(7) [Reserved]

(8) Electron tubes: *Provided*, That each tube does not contain more than one of the following specified quantities of byproduct material:

(i) 150 millicuries of tritium per microwave receiver protector tube or 10 millicuries of tritium per any other electron tube;

(ii) 1 microcurie of cobalt-60;

(iii) 5 microcuries of nickel-63;

(iv) 30 microcuries of krypton-85;

(v) 5 microcuries of cesium-137;

(vi) 30 microcuries of promethium-147;

*And provided further*, That the levels of radiation from each electron tube containing byproduct material do not exceed 1 millirad per hour at 1 centimeter from any surface when

measured through 7 milligrams per square centimeter of absorber.<sup>(1)</sup>

(9) Ionizing radiation measuring instruments containing, for purposes of internal calibration or standardization, one or more sources of byproduct material: *Provided, That*;

(i) Each source contains no more than one exempt quantity set forth in §30.71, Schedule B, and

(ii) Each instrument contains no more than 10 exempt quantities. For purposes of this paragraph (a)(9), an instrument's source(s) may contain either one type or different types of radionuclides and an individual exempt quantity may be composed of fractional parts of one or more of the exempt quantities in §30.71, Schedule B, provided that the sum of such fractions shall not exceed unity.

(iii) For purposes of this paragraph (a)(9), 0.05 microcurie of americium-241 is considered an exempt quantity under §30.71, Schedule B.

(10) Spark gap irradiators containing not more than 1 microcurie of cobalt-60 per spark gap irradiator for use in electrically ignited fuel oil burners having a firing rate of at least 3 gallons per hour (11.4 liters per hour).

(b) Any person who desires to apply byproduct material to, or to incorporate byproduct material into, the products exempted in paragraph (a) of this section, or who desires to initially transfer for sale or distribution such products containing byproduct material, should apply for a specific license pursuant to §32.14 of this chapter, which license states that the product may be distributed by the licensee to persons exempt from the regulations pursuant to paragraph (a) of this section.

[31 FR 5316, Apr. 2, 1966, as amended at 31 FR 14349, Nov. 8, 1966; 32 FR 785, Jan. 24, 1967; 32 FR 6434, Apr. 26, 1967; 32 FR 13921, Oct. 6, 1967; 34 FR 6651, Apr. 18, 1969; 34 FR 19546, Dec. 11, 1969; 35 FR 6427, Apr. 22, 1970; 35 FR 8820, June 6, 1970; 43 FR 2387, Jan. 17, 1978; 43 FR 6921, Feb. 17, 1978; 46 FR 26471, May 13, 1981; 46 FR 46876, Sept. 23, 1981; 52 FR 8241, Mar. 17, 1987; 58 FR 7736, Feb. 9, 1993]

<sup>1</sup> For purposes of this paragraph "electron tubes" include spark gap tubes, power tubes, gas tubes including glow lamps, receiving tubes, microwave tubes, indicator tubes, pickup tubes, radiation detection tubes, and any other

completely sealed tube that is designed to conduct or control electrical currents.

### **§30.18 Exempt quantities.**

(a) Except as provided in paragraphs (c) and (d) of this section, any person is exempt from the requirements for a license set forth in section 81 of the Act and from the regulations in parts 30 through 34, 36 and 39 of this chapter to the extent that such person receives, possesses, uses, transfers, owns, or acquires byproduct material in individual quantities each of which does not exceed the applicable quantity set forth in §30.71, Schedule B.

(b) Any person who possesses byproduct material received or acquired prior to September 25, 1971 under the general license then provided in §31.4 of this chapter is exempt from the requirements for a license set forth in section 81 of the Act and from the regulations in parts 30 through 34 of this chapter to the extent that such person possesses, uses, transfers, or owns such byproduct material.

(c) This section does not authorize for purposes of commercial distribution the production, packaging, repackaging, or transfer of byproduct material or the incorporation of byproduct material into products intended for commercial distribution.

(d) No person may, for purposes of commercial distribution, transfer byproduct material in the individual quantities set forth in §30.71 Schedule B, knowing or having reason to believe that such quantities of byproduct material will be transferred to persons exempt under this section or equivalent regulations of an Agreement State, except in accordance with a license issued under §32.18 of this chapter, which license states that the byproduct material may be transferred by the licensee to persons exempt under this section or the equivalent regulations of an Agreement State.

[35 FR 6427, Apr. 22, 1970, as amended at 36 FR 16898, Aug. 26, 1971; 43 FR 6921, Feb. 17, 1978; 52 FR 8241, Mar. 17, 1987; 58 FR 7736, Feb. 9, 1993]

## **Licenses**

**§30.31 Types of licenses.**

Licenses for byproduct material are of two types: General and specific.

(a) The Commission issues a specific license to a named person who has filed an application for the license under the provisions of this part and parts 32 through 36, and 39.

(b) A general license is provided by regulation, grants authority to a person for certain activities involving byproduct material, and is effective without the filing of an application with the Commission or the issuance of a licensing document to a particular person. However, registration with the Commission may be required by the particular general license.

**§30.32 Application for specific licenses.**

(a) A person may file an application in duplicate on NRC Form 313, "Application for Material License," in accordance with the instructions in §30.6 of this chapter. Information contained in previous applications, statements or reports filed with the Commission or the Atomic Energy Commission may be incorporated by reference, provided that the reference is clear and specific.

(b) The Commission may at any time after the filing of the original application, and before the expiration of the license, require further statements in order to enable the Commission to determine whether the application should be granted or denied or whether a license should be modified or revoked.

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

(d) An application for license filed pursuant to the regulations in this part and parts 32 through 35 of this chapter will be considered also as an application for licenses authorizing other activities for which licenses are required by the Act, provided that the application specifies the additional activities for which licenses are requested and complies with regulations of the Commission as to applications for such licenses.

(e) Each application for a byproduct material license, other than a license exempted from part 170 of this chapter, shall be accompanied by the fee prescribed in §170.31 of this chapter. No fee will be required to accompany an application for renewal or amendment of a license, except as provided in §170.31 of this chapter.

(f) An application for a license to receive and possess byproduct material for the conduct of any activity which the Commission has determined pursuant to subpart A of part 51 of this chapter will significantly affect the quality of the environment shall be filed at least 9 months prior to commencement of construction of the plant or facility in which the activity will be conducted and shall be accompanied by any Environmental Report required pursuant to subpart A of part 51 of this chapter.

(g) An application for a specific license to use byproduct 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 Commission under §32.210 of this chapter or with an Agreement State; or

(2) Contain the information identified in §32.210(c).

(h) As provided by §30.35, certain applications for specific licenses filed under this part and parts 32 through 35 of this chapter must contain a proposed decommissioning funding plan or a certification of financial assurance for decommissioning. In the case of renewal applications submitted before July 27, 1990, this submittal may follow the renewal application but must be submitted on or before July 27, 1990.

(i)(1) Each application to possess radioactive materials in unsealed form, on foils or plated sources, or sealed in glass in excess of the quantities in §30.72, "Schedule C -- Quantities of Radioactive Materials Requiring Consideration of the Need for an Emergency Plan for Responding to a Release," must contain either:

(i) An evaluation showing that the maximum dose to a person offsite due to a release of radioactive materials would not exceed 1 rem effective dose equivalent or 5 rems to the thyroid; or

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

(2) One or more of the following factors may be used to support an evaluation submitted under paragraph (i)(1)(i) of this section:

(i) The radioactive material is physically separated so that only a portion could be involved in an accident;

(ii) All or part of the radioactive material is not subject to release during an accident because of the way it is stored or packaged;

(iii) The release fraction in the respirable size range would be lower than the release fraction shown §30.72 due to the chemical or physical form of the material;

(iv) The solubility of the radioactive material would reduce the dose received;

(v) Facility design or engineered safety features in the facility would cause the release fraction to be lower than shown in §30.72;

(vi) Operating restrictions or procedures would prevent a release fraction as large as that shown in §30.72; or

(vii) Other factors appropriate for the specific facility.

(3) An emergency plan for responding to a release of radioactive material submitted under paragraph (i)(1)(ii) of this section must include the following information:

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

(ii) Types of accidents. An identification of each type of radio-active materials accident for which protective actions may be needed.

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

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

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

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

(vii) Responsibilities. A brief description of the responsibilities of licensee personnel should an accident occur, including identification of personnel responsible for promptly notifying offsite response organizations and the NRC; also responsibilities for developing, maintaining, and updating the plan.

(viii) Notification and coordination. A commitment to and a brief description of the means to promptly notify offsite response organizations and request offsite assistance, including medical assistance for the treatment of contaminated injured onsite workers when appropriate. A control point must be established. The notification and coordination must be

planned so that unavailability of some personnel, parts of the facility, and some equipment will not prevent the notification and coordination. The licensee shall also commit to notify the NRC operations center immediately after notification of the appropriate offsite response organizations and not later than one hour after the licensee declares an emergency.<sup>(1)</sup>

(x) Training. A brief description of the frequency, performance objectives and plans for the training that the licensee will provide workers on how to respond to an emergency including any special instructions and orientation tours the licensee would offer to fire, police, medical and other emergency personnel. The training shall familiarize personnel with site-specific emergency procedures. Also, the training shall thoroughly prepare site personnel for their responsibilities in the event of accident scenarios postulated as most probable for the specific site, including the use of team training for such scenarios.

(xi) Safe shutdown. A brief description of the means of restoring the facility to a safe condition after an accident.

(xii) Exercises. Provisions for conducting quarterly communications checks with offsite response organizations and biennial onsite exercises to test response to simulated emergencies. Quarterly communications checks with offsite response organizations must include the check and update of all necessary telephone numbers. The licensee shall invite offsite response organizations to participate in the biennial exercises. Participation of offsite response organizations in biennial exercises although recommended is not required. Exercises must use accident scenarios postulated as most probable for the specific site and the scenarios shall not be known to most exercise participants. The licensee shall critique each exercise using individuals not having direct implementation responsibility for the plan. Critiques of exercises must evaluate the appropriateness of the plan, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the response. Deficiencies found by the critiques must be corrected.

(xiii) Hazardous chemicals. A certification that the applicant has met its responsibilities under the Emergency Planning and Community Right-to-Know Act of 1986, title III, Pub. L. 99 - 499, if applicable to the applicant's activities at

the proposed place of use of the byproduct material.

(4) The licensee shall allow the offsite response organizations expected to respond in case of an accident 60 days to comment on the licensee's emergency plan before submitting it to NRC. The licensee shall provide any comments received within the 60 days to the NRC with the emergency plan.

(ix) Information to be communicated. A brief description of the types of information on facility status, radioactive releases, and recommended protective actions, if necessary, to be given to offsite response organizations and to the NRC.

[30 FR 8185, June 26, 1965, as amended at 36 FR 145, Jan. 6, 1971; 37 FR 5747, Mar. 21, 1972; 43 FR 6922, Feb. 17, 1978; 49 FR 9403, Mar. 12, 1984; 49 FR 27924, July 9, 1984; 52 FR 27786, July 24, 1987; 53 FR 24044, June 27, 1988; 54 FR 14060, Apr. 7, 1989]

<sup>1</sup> These reporting requirements do not supercede or release licensees of complying with the requirements under the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Pub. L. 99 - 499 or other state or federal reporting requirements.

### ***§30.33 General requirements for issuance of specific licenses.***

(a) An application for a specific license will be approved if:

- (1) The application is for a purpose authorized by the Act;
- (2) The applicant's proposed equipment and facilities are adequate to protect health and minimize danger to life or property;
- (3) The applicant is qualified by training and experience to use the material for the purpose requested in such manner as to protect health and minimize danger to life or property;
- (4) The applicant satisfies any special requirements contained in parts 32 through 36 and 39; and

(5) In the case of an application for a license to receive and possess byproduct material for the conduct of any activity which the Commission determines will significantly affect the quality of the environment, the Director of Nuclear Material Safety and Safeguards or his designee, before commencement of construction of the plant or facility in which the activity will be conducted, on the basis of information filed and evaluations made pursuant to subpart A of part

51 of this chapter, has concluded, after weighing the environmental, economic, technical, and other benefits against environmental costs and considering available alternatives, that the action called for is the issuance of the proposed license, with any appropriate conditions to protect environmental values. Commencement of construction prior to such conclusion shall be grounds for denial of a license to receive and possess byproduct material in such plant or facility. As used in this paragraph the term "commencement of construction" means any clearing of land, excavation, or other substantial action that would adversely affect the environment of a site. The term does not mean site exploration, necessary roads for site exploration, borings to determine foundation conditions, or other preconstruction monitoring or testing to establish background information related to the suitability of the site or the protection of environmental values.

(b) Upon a determination that an application meets the requirements of the Act, and the regulations of the Commission, the Commission will issue a specific license authorizing the possession and use of byproduct material (Form NRC 374, "Byproduct Material License").

[30 FR 8185, June 26, 1965, as amended at 36 FR 12731, July 7, 1971; 37 FR 5747, Mar. 21, 1972; 39 FR 26279, July 18, 1974; 43 FR 6922, Feb. 17, 1978; 49 FR 9403, Mar. 12, 1984; 52 FR 8241, Mar. 17, 1987; 58 FR 7736, Feb. 9, 1993]

### ***§30.34 Terms and conditions of licenses.***

(a) Each license issued pursuant to the regulations in this part and the regulations in parts 31 through 36 and 39 of this chapter shall be subject to all the provisions of the Act, now or hereafter in effect, and to all valid rules, regulations and orders of the Commission.

(b) No license issued or granted pursuant to the regulations in this part and parts 31 through 36, and 39 nor any right under a license shall be transferred, assigned or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of any license to any person, unless the Commission shall, after securing full information, find that the transfer is in accordance with the provisions of the Act and shall give its consent in writing.

(c) Each person licensed by the Commission pursuant to the regulations in this part and parts 31 through 36 and 39 shall confine his possession and use of the byproduct material to the locations and purposes authorized in the license. Except as otherwise provided in the license, a license issued pursuant to the regulations in this part and parts 31 through 36 and 39 of this chapter shall carry with it the right to receive, acquire, own, and possess byproduct material. Preparation for shipment and transport of byproduct material shall be in accordance with the provisions of part 71 of this chapter.

(d) Each license issued pursuant to the regulations in this part and parts 31 through 36 and 39 shall be deemed to contain the provisions set forth in section 183b. - d., inclusive, of the Act, whether or not these provisions are expressly set forth in the license.

(e) The Commission may incorporate, in any license issued pursuant to the regulations in this part and parts 31 through 36 and 39, at the time of issuance, or thereafter by appropriate rule, regulation or order, such additional requirements and conditions with respect to the licensee's receipt, possession, use and transfer of byproduct material as it deems appropriate or necessary in order to:

- (1) Promote the common defense and security;
- (2) Protect health or to minimize danger to life or property;
- (3) Protect restricted data;
- (4) Require such reports and the keeping of such records, and to provide for such inspections of activities under the license as may be necessary or appropriate to effectuate the purposes of the Act and regulations thereunder.

(f) Licensees required to submit emergency plans by §30.32(i) shall follow the emergency plan approved by the Commission. The licensee may change the approved without Commission approval only if the changes do not decrease the effectiveness of the plan. The licensee shall furnish the change to the appropriate NRC Regional Office specified in §30.6 and to affected offsite response organizations within six months after the change is made. Proposed changes that decrease, or potentially decrease, the effectiveness of the approved emergency plan may not be implemented without prior application to and prior approval by the Commission.

(g) Each licensee preparing technetium-99m radiopharmaceuticals from molybdenum-99/technetium-99m generators shall test the generator eluates for molybdenum-99 breakthrough in accordance with §35.204 of this chapter. The licensee shall record the results of each test and retain each record for three years after the record is made.

(h)(1) Each general licensee that is required to register by Sec. 31.5(c)(13) of this chapter and each specific licensee shall notify the appropriate NRC Regional Administrator, in writing, immediately following the filing of a voluntary or involuntary petition for bankruptcy under any chapter of title 11 (Bankruptcy) of the United States Code by or against:

(i) The licensee;

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

(iii) An affiliate (as that term is defined in 11 U.S.C. 101(2)) of the licensee.

(2) This notification must indicate:

(i) The bankruptcy court in which the petition for bankruptcy was filed; and

(ii) The date of the filing of the petition.

### ***§30.35 Financial assurance and recordkeeping for decommissioning.***

(a) Each applicant for a specific license authorizing the possession and use of unsealed byproduct material of half-life greater than 120 days and in quantities exceeding  $10^5$  times the applicable quantities set forth in appendix B to part 30 shall submit a decommissioning funding plan as described in paragraph (e) of this section. The decommissioning funding plan must also be submitted when a combination of isotopes is involved if  $R$  divided by  $10^5$  is greater than 1 (unity rule), where  $R$  is defined here as the sum of the ratios of the quantity of each isotope to the applicable value in appendix B to part 30.

(b) Each applicant for a specific license authorizing possession and use of byproduct material of half-life greater than 120 days and in quantities specified in paragraph (d) of this section shall either --

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

(2) Submit a certification that financial assurance for decommissioning has been provided in the amount prescribed by paragraph (d) of this section using one of the methods

described in paragraph (f) of this section. For an applicant, this certification may state that the appropriate assurance will be obtained after the application has been approved and the license issued but before the receipt of licensed material. If the applicant defers execution of the financial instrument until after the license has been issued, a signed original of the financial instrument obtained to satisfy the requirements of paragraph (f) of this section must be submitted to NRC before receipt of licensed material. If the applicant does not defer execution of the financial instrument, the applicant shall submit to NRC, as part of the certification, a signed original of the financial instrument obtained to satisfy the requirements of paragraph (f) of this section.

(c)(1) Each holder of a specific license issued on or after July 27, 1990, which is of a type described in paragraph (a) or (b) of this section, shall provide financial assurance for decommissioning in accordance with the criteria set forth in this section.

(2) Each holder of a specific license issued before July 27, 1990, and of a type described in paragraph (a) of this section shall submit, on or before July 27, 1990, a decommissioning funding plan as described in paragraph (e) of this section or a certification of financial assurance for decommissioning in an amount at least equal to \$750,000 in accordance with the criteria set forth in this section. If the licensee submits the certification of financial assurance rather than a decommissioning funding plan, the licensee shall include a decommissioning funding plan in any application for license renewal.

(3) Each holder of a specific license issued before July 27, 1990, and of a type described in paragraph (b) of this section shall submit, on or before July 27, 1990, a decommissioning funding plan as described, in paragraph (e) of this section, or a certification of financial assurance for decommissioning in accordance with the criteria set forth in this section.

(4) Any licensee who has submitted an application before July 27, 1990, for renewal of license in accordance with §30.37 shall provide financial assurance for decommissioning in accordance with paragraphs (a) and (b) of this section. This assurance must be submitted when this rule becomes effective November 24, 1995.

(d) Table of required amounts of financial assurance for decommissioning by quantity of material.

greater than  $10^4$  but less than or equal to  $10^5$  times the applicable quantities of appendix B to part 30 in unsealed form. (For a combination of isotopes, if R, as defined in §30.35(a), divided by  $10^4$  is greater than 1 but R divided by  $10^5$  is less than or equal to 1.) .... \$750,000

greater than  $10^3$  but less than or equal to  $10^4$  times the applicable quantities of appendix B to part 30 in unsealed form. (For a combination of isotopes, if R, as defined in §30.35(a), divided by  $10^3$  is greater than 1 but R divided by  $10^4$  is less than or equal to 1.) .... \$150,000

greater than  $10^{10}$  times the applicable quantities of appendix B to part 30 in sealed sources or plated foils. (For a combination of isotopes, if R, as defined in §30.35(a), divided by  $10^{10}$  is greater than 1.) .... \$75,000

(e) Each decommissioning funding plan must contain a cost estimate for decommissioning and a description of the method of assuring funds for decommissioning from paragraph (f) of this section, including means for adjusting cost estimates and associated funding levels periodically over the life of the facility. The decommissioning funding plan must also contain a certification by the licensee that financial assurance for decommissioning has been provided in the amount of the cost estimate for decommissioning and a signed original of the financial instrument obtained to satisfy the requirements of paragraph (f) of this section.

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

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

(2) A surety method, insurance, or other guarantee method. These methods guarantee that decommissioning costs will be paid. A surety method may be in the form of a surety bond, letter of credit, or line of credit. A parent company guarantee of funds for decommissioning costs based on a financial test



may be used if the guarantee and test are as contained in appendix A to 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 C to this part. For commercial companies that do not issue bonds, a guarantee of funds by the applicant or licensee for decommissioning costs may be used if the guarantee and test are as contained in appendix D to this part. 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 E to this part. A guarantee by the applicant or licensee may not be used in combination with any other financial methods used to satisfy the requirements of this section or in any situation where the applicant or licensee has a parent company holding majority control of the voting stock of the company. Any surety method or insurance used to provide financial assurance for decommissioning must contain the following conditions:

(i) The surety method or insurance must be open-ended or, if written for a specified term, such as five years, must be renewed automatically unless 90 days or more prior to the renewal date, the issuer notifies the Commission, the beneficiary, and the licensee of its intention not to renew. The surety method or insurance must also provide that the full face amount be paid to the beneficiary automatically prior to the expiration without proof of forfeiture if the licensee fails to provide a replacement acceptable to the Commission within 30 days after receipt of notification of cancellation.

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

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

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

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

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

(g) Each person licensed under this part or parts 32 through 36 and 39 of this chapter shall keep records of information important to the decommissioning of a facility in an identified location until the site is released for unrestricted use. Before licensed activities are transferred or assigned in accordance with §30.34(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 important to the decommissioning of a facility are kept for other purposes, reference to these records and their locations may be used. Information the Commission considers important to decommissioning consists of --

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

concrete. These records must include any known information on identification of involved nuclides, quantities, forms, and concentrations.

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

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

(i) All areas designated and formerly designated restricted areas as defined in 10 CFR 20.1003 (For requirements prior to January 1, 1994, see 10 CFR 20.3 as contained in the CFR edition revised as of January 1, 1993.);

(ii) All areas outside of restricted areas that require documentation under §30.35(g)(1).

(iii) All areas outside of restricted areas where current and previous wastes have been buried as documented under 10 CFR 20.2108; and

(iv) All areas outside of restricted areas that contain material such that, if the license expired, the licensee would be required to either decontaminate the area to meet the criteria for decommissioning in 10 CFR part 20, subpart E, or apply for approval for disposal under 10 CFR 20.2002.

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

[53 FR 24044, June 27, 1988, as amended at 56 FR 23471, May 21, 1991; 58 FR 39633, July 26, 1993; 58 FR 67659, Dec. 22, 1993; 58 FR 68730, Dec. 29, 1993; 59 FR 1618, Jan. 12, 1994; 60 FR 38238, July 26, 1995; 61 FR 24673, May 16, 1996; 62 FR 39090, July 21, 1997]

**§30.36 Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.**

(a)(1) Except as provided in paragraph (a)(2) of this section, each specific license expires at the end of the day on the expiration date stated in the license unless the licensee has filed an application for renewal under §30.37 not less than 30 days before the expiration date stated in the existing license (or, for those licenses subject to paragraph (a)(2) of this section, 30 days before the deemed expiration date in that paragraph). If an application for renewal has been filed at least 30 days before the expiration date stated in the existing license (or, for those licenses subject to paragraph (a)(2) of this section, 30 days before the deemed expiration date in that paragraph), the existing license expires at the end of the day on which the Commission makes a final determination to deny the renewal application or, if the determination states an expiration date, the expiration date stated in the determination.

(2) Each specific license that has an expiration date after July 1, 1995, and is not one of the licenses described in paragraph (a)(3) of this section, shall be deemed to have an expiration date that is five years after the expiration date stated in the current license.

(3) The following specific licenses are not subject to, or otherwise affected by, the provisions of paragraph (a)(2) of this section:

(i) Specific licenses for which, on February 15, 1996, an evaluation or an emergency plan is required in accordance with §30.32(i);

(ii) Specific licenses whose holders are subject to the financial assurance requirements specified in 10 CFR 30.35, and on February 15, 1996, the holders either:

(A) Have not submitted a decommissioning funding plan or certification of financial assurance for decommissioning; or

(B) Have not received written notice that the decommissioning funding plan or certification of financial assurance for decommissioning is acceptable;

(iii) Specific licenses whose holders are listed in the SDMP List published in NUREG 1444, Supplement 1 (November 1995);

(iv) Specific licenses whose issuance, amendment, or renewal, as of February 15, 1996, is not a categorical exclusion under 10 CFR 51.22©

(14) and, therefore, need an environmental assessment or environmental impact statement pursuant to Subpart A of Part 51 of this chapter;

(v) Specific licenses whose holders have not had at least one NRC inspection of licensed activities before February 15, 1996;

(vi) Specific licenses whose holders, as the result of the most recent NRC inspection of licensed activities conducted before February 15, 1996, have been:

(A) Cited for a Severity Level I, II, or III violation in a Notice of Violation;

(B) Subject to an Order issued by the NRC; or

(C) Subject to a Confirmatory Action Letter issued by the NRC.

(vii) Specific licenses with expiration dates before July 1, 1995, for which the holders have submitted applications for renewal under 10 CFR 30.37 of this part.

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

(c) Each specific license continues in effect, beyond the expiration date if necessary, with respect to possession of byproduct material until the Commission notifies the licensee in writing that the license is terminated. During this time, the licensee shall --

(1) Limit actions involving byproduct material to those related to decommissioning; and

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

(d) Within 60 days of the occurrence of any of the following, consistent with the administrative directions in §30.6, each licensee shall provide notification to the NRC 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 NRC requirements, or submit within 12 months of notification a decommissioning plan, if required by paragraph (g)(1) of this section, and begin decommissioning upon approval of that plan if --

(1) The license has expired pursuant to paragraph (a) or (b) of this section; 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 NRC requirements; or

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

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

(e) Coincident with the notification required by paragraph (d) of this section, the licensee shall maintain in effect all decommissioning financial assurances established by the licensee pursuant to §30.35 in conjunction with a license issuance or renewal or as required by this section. 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 paragraph (g)(4)(v) of this section.

(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 rule becomes effective November 24, 1995.

(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 Commission.

(f) The Commission may grant a request to extend the time periods established in paragraph (d) if the Commission 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 30 days before notification pursuant to paragraph (d) of this section. The schedule for decommissioning set forth in paragraph (d) of this section may not commence until the Commission has made a determination on the request.

(g)(1) A decommissioning plan must be submitted if required by license condition or if the procedures and activities necessary to carry out decommissioning of the site or separate

building or outdoor area have not been previously approved by the Commission and these procedures could increase potential health and safety impacts to workers or to the public, such as in any of the following cases:

(i) Procedures would involve techniques not applied routinely during cleanup or maintenance operations; 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 Commission may approve an alternate schedule for submittal of a decommissioning plan required pursuant to paragraph (d) of this section if the Commission 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 paragraph (g)(1) of this section 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;

(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 paragraph (i) of this section.

(5) The proposed decommissioning plan will be approved by the Commission 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 paragraph (i) of this section, 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 paragraph (i) of this section, 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.

(i) The Commission 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 Commission determines that the alternative is warranted by consideration of the following:

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

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

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

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

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

(j) As the final step in decommissioning, the licensee shall --

(1) Certify the disposition of all licensed material, including accumulated wastes, by

submitting a completed NRC Form 314 or equivalent information; and

(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 10 CFR part 20, subpart E. The licensee shall, as appropriate--

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

(ii) Workers would be entering areas not normally occupied where surface contamination and radiation levels are significantly higher than routinely will be terminated by written notice to the licensee when the Commission determines that:

(1) Byproduct 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 10 CFR part 20, subpart E; or

(ii) Other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E.

(4) Records required by §30.51 (d) and (f) have been received.

[59 FR 36034, July 15, 1994, as amended at 60 FR 38238, July 26, 1995; 61 FR 1114, Jan. 16, 1996; 61 FR 24673, May 16, 1996; 61 FR

29637, June 12, 1996; 62 FR 39090, July 21, 1997]

### **§30.37 Application for renewal of licenses.**

(a) Application for renewal of a specific license must be filed on NRC Form 313 and in accordance with §30.32.

(b) If any licensee granted the extension described in 10 CFR 30.36(a)(2) has a currently pending renewal application for the extended license, that application will be considered withdrawn by the licensee and any renewal fees paid by the licensee for that application will be refunded.

[59 FR 36035, July 15, 1994, as amended at 61 FR 1114, Jan. 16, 1996]

### **§30.38 Application for amendment of licenses.**

Applications for amendment of a license shall be filed on Form NRC - 313 in accordance with §30.32 and shall specify the respects in which the licensee desires its license to be amended and the grounds for the amendment.

[49 FR 19625, May 9, 1984]

### **§30.39 Commission action on applications to renew or amend.**

In considering an application by a licensee to renew or amend his license the Commission will apply the applicable criteria set forth in §30.33 and parts 32 through 36 and 39 of this chapter.

[30 FR 8185, June 26, 1965, as amended at 43 FR 6922, Feb. 17, 1978; 52 FR 8241, Mar. 17, 1987; 58 FR 7736, Feb. 9, 1993]

### **§30.41 Transfer of byproduct material.**

(a) No licensee shall transfer byproduct material except as authorized pursuant to this section.

(b) Except as otherwise provided in his license and subject to the provisions of paragraphs (c) and (d) of this section, any licensee may transfer byproduct material:

(1) To the Department;

(2) To the agency in any Agreement State which regulates radioactive material pursuant to an agreement under section 274 of the Act;

(3) To any person exempt from the licensing requirements of the Act and regulations in this

part, to the extent permitted under such exemption;

(4) To any person in an Agreement State, subject to the jurisdiction of that State, who has been exempted from the licensing requirements and regulations of that State, to the extent permitted under such exemption;

(5) To any person authorized to receive such byproduct material under terms of a specific license or a general license or their equivalents issued by the Atomic Energy Commission, the Commission, or an Agreement State;

(6) To a person abroad pursuant to an export license issued under part 110 of this chapter; or

(7) As otherwise authorized by the Commission in writing.

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

(d) The following methods for the verification required by paragraph (c) of this section are acceptable:

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

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

(3) For emergency shipments the transferor may accept oral certification by the transferee that he is authorized by license or registration certificate to receive the type, form, and quantity of byproduct material to be transferred, specifying the license or registration certificate number, issuing agency and expiration date: Provided, That the oral certification is confirmed in writing within 10 days;

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

(5) When none of the methods of verification described in paragraphs (d)(1) to (4) of this section are readily available or when a transferor desires to verify that information received by one of such methods is correct or up-to-date, the transferor may obtain and record confirmation from the Commission or the licensing agency of an Agreement State that the transferee is licensed to receive the byproduct material.

[38 FR 33969, Dec. 10, 1973, as amended at 40 FR 8785, Mar. 3, 1975; 43 FR 6922, Feb. 17, 1978]

## Records, Inspections, Tests, and Reports

### ***§30.50 Reporting requirements.***

(a) *Immediate report.* Each licensee shall notify the NRC as soon as possible but not later than 4 hours after the discovery of an event that prevents immediate protective actions necessary to avoid exposures to radiation or radioactive materials that could exceed regulatory limits or releases of licensed material that could exceed regulatory limits (events may include fires, explosions, toxic gas releases, etc.).

(b) *Twenty-four hour report.* Each licensee shall notify the NRC within 24 hours after the discovery of any of the following events involving licensed material:

(1) An unplanned contamination event that:

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

(ii) Involves a quantity of material greater than five times the lowest annual limit on intake specified in appendix B of §§20.1001 - 20.2401 of 10 CFR part 20 for the material; and

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

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

(i) The equipment is required by regulation or license condition to prevent releases exceeding regulatory limits, to prevent exposures to radiation and radioactive materials exceeding regulatory limits, or to mitigate the consequences of an accident;

(ii) The equipment is required to be available and operable when it is disabled or fails to function; and

(iii) No redundant equipment is available and operable to perform the required safety function.

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

(4) An unplanned fire or explosion damaging any licensed material or any device, container, or equipment containing licensed material when:

(i) The quantity of material involved is greater than five times the lowest annual limit on intake specified in appendix B of §§20.1001 - 20.2401 of 10 CFR part 20 for the material; and

(ii) The damage affects the integrity of the licensed material or its container.

(c) Preparation and submission of reports. Reports made by licensees in response to the requirements of this section must be made as follows:

(1) Licensees shall make reports required by paragraphs (a) and (b) of this section by telephone to the NRC Operations Center.<sup>(1)</sup> To the extent that the information is available at the time of notification, the information provided in these reports must include:

(i) The caller's name and call back telephone number;

(ii) A description of the event, including date and time;

(iii) The exact location of the event;

(iv) The isotopes, quantities, and chemical and physical form of the licensed material involved; and

(v) Any personnel radiation exposure data available.

(2) Written report. Each licensee who makes a report required by paragraph (a) or (b) of this section shall submit a written follow-up report within 30 days of the initial report. Written reports prepared pursuant to other regulations may be submitted to fulfill this requirement if the reports contain all of the necessary information and the appropriate distribution is made. These written reports must be sent to the U.S. Nuclear Regulatory Commission, Document Control Desk, Washington, DC 20555, with a copy to the appropriate NRC Regional office listed in appendix D of 10 CFR part 20. The reports must include the following:

(i) A description of the event, including the probable cause and the manufacturer and model number (if applicable) of any equipment that failed or malfunctioned;

(ii) The exact location of the event;

(iii) The isotopes, quantities, and chemical and physical form of the licensed material involved;

(iv) Date and time of the event;

(v) Corrective actions taken or planned and the results of any evaluations or assessments; and

(vi) The extent of exposure of individuals to radiation or to radioactive materials without identification of individuals by name.

(3) The provisions of §30.50 do not apply to licensees subject to the notification requirements in §50.72. They do apply to those part 50 licensees possessing material licensed under part 30, who are not subject to the notification requirements in §50.72.

[56 FR 40767, Aug. 16, 1991, as amended at 59 FR 14086, Mar. 25, 1994]

<sup>1</sup> The commercial telephone number for the NRC Operations Center is (301) 816 - 5100.

### **§30.51 Records.**

(a) Each person who receives byproduct material pursuant to a license issued pursuant to the regulations in this part and parts 31 through 36 of this chapter shall keep records showing the receipt, transfer, and disposal of the byproduct material as follows:

(1) The licensee shall retain each record of receipt of byproduct material as long as the material is possessed and for three years following transfer or disposal of the material.

(2) The licensee who transferred the material shall retain each record of transfer for three years after each transfer unless a specific requirement in another part of the regulations in this chapter dictates otherwise.

(3) The licensee who disposed of the material shall retain each record of disposal of byproduct material until the Commission terminates each license that authorizes disposal of the material.

(b) The licensee shall retain each record that is required by the regulations in this part and parts 31 through 36 of this chapter or by license condition 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 Commission terminates each license that authorizes the activity that is subject to the recordkeeping requirement.

(c)(1) Records which must be maintained pursuant to this part and parts 31 through 36 of this chapter 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 Commission 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 shall maintain adequate safeguards against tampering with and loss of records.

(2) If there is a conflict between the Commission's regulations in this part and parts 31 through 36 and 39 of this chapter, license condition, or other written Commission approval or authorization pertaining to the retention period for the same type of record, the retention period specified in the regulations in this part and parts 31 through 36 and 39 of this chapter for such records shall apply unless the Commission, pursuant to §30.11, has granted a specific exemption from the record retention requirements specified in the regulations in this part or parts 31 through 36 and 39 of this chapter.

(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 appropriate NRC Regional Office:

(1) Records of disposal of licensed material made under §§20.2002 (including burials authorized before January 28, 1981<sup>(1)</sup>), 20.2003, 20.2004, 20.2005; and

(2) Records required by §20.2103(b)(4).

(e) If licensed activities are transferred or assigned in accordance with §30.34(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 §§20.2002 (including burials authorized before January 28, 1981), 20.2003, 20.2004, 20.2005; and

(2) Records required by §20.2103(b)(4).

(f) Prior to license termination, each licensee shall forward the records required by §30.35(g) to the appropriate NRC Regional Office.

[41 FR 18301, May 5, 1976, as amended at 43 FR 6922, Feb. 17, 1978; 52 FR 8241, Mar. 17, 1987; 53 FR 19245, May 27, 1988; 58 FR 7736, Feb. 9, 1993; 61 FR 24673, May, 16, 1996]

<sup>1</sup> A previous §20.304 permitted burial of small quantities of licensed materials in soil before January 28, 1981, without specific Commission authorization. See §20.304 contained in the 10 CFR, parts 0 to 199, edition revised as of January 1, 1981.

### **§30.52 Inspections.**

(a) Each licensee shall afford to the Commission at all reasonable times opportunity to inspect byproduct material and the premises and facilities wherein byproduct material is used or stored.

(b) Each licensee shall make available to the Commission for inspection, upon reasonable notice, records kept by him pursuant to the regulations in this chapter.

[30 FR 8185, June 26, 1965]

### **§30.53 Tests.**

Each licensee shall perform, or permit the Commission to perform, such tests as the Commission deems appropriate or necessary for the administration of the regulations in this part and parts 31 through 36 and 39 of this chapter, including tests of:

(a) Byproduct material;

(b) Facilities wherein byproduct material is utilized or stored;

(c) Radiation detection and monitoring instruments; and

(d) Other equipment and devices used in connection with the utilization or storage of byproduct material.

[30 FR 8185, June 26, 1965, as amended by 43 FR 6922, Feb. 17, 1978; 52 FR 8241, Mar. 17, 1987; 58 FR 7736, Feb. 9, 1993]



## Enforcement

### ***§30.61 Modification and revocation of licenses.***

(a) The terms and conditions of each license issued pursuant to the regulations in this part and parts 31 through 35 of this chapter shall be subject to amendment, revision or modification by reason of amendments to the Act, or by reason of rules, regulations and orders issued in accordance with the terms of the Act.

(b) Any license may be revoked, suspended or modified, in whole or in part, for any material false statement in the application or any statement of fact required under section 182 of the Act, or because of conditions revealed by such application or statement of fact or any report, record or inspection or other means which would warrant the Commission to refuse to grant a license on an original application, or for violation of, or failure to observe any of the terms and provisions of the Act or of any rule, regulation or order of the Commission.

(c) Except in cases of willfulness or those in which the public health, interest or safety requires otherwise, no license shall be modified, suspended or revoked unless, prior to the institution of proceedings therefor, facts or conduct which may warrant such action shall have been called to the attention of the licensee in writing and the licensee shall have been accorded an opportunity to demonstrate or achieve compliance with all lawful requirements.

[30 FR 8185, June 26, 1965, as amended at 35 FR 11460, July 17, 1970; 43 FR 6922, Feb. 17, 1978]

### ***§30.62 Right to cause the withholding or recall of byproduct material.***

The Commission may cause the withholding or recall of byproduct material from any licensee who is not equipped to observe or fails to observe such safety standards to protect health as may be established by the Commission, or who uses such materials in violation of law or regulation of the Commission, or in a manner other than as disclosed in the application therefor or approved by the Commission.

[30 FR 8185, June 26, 1965, as amended at 40 FR 8785, Mar. 3, 1975]

### ***§30.63 Violations.***

(a) The Commission may obtain an injunction or other court order to prevent a violation of the provisions of --

(1) The Atomic Energy Act of 1954, as amended;

(2) Title II of the Energy Reorganization Act of 1974, as amended; or

(3) A regulation or order issued pursuant to those Acts.

(b) The Commission may obtain a court order for the payment of a civil penalty imposed under section 234 of the Atomic Energy Act:

(1) For violations of --

(i) Sections 53, 57, 62, 63, 81, 82, 101, 103, 104, 107, or 109 of the Atomic Energy Act of 1954, as amended;

(ii) Section 206 of the Energy Reorganization Act;

(iii) Any rule, regulation, or order issued pursuant to the sections specified in paragraph (b)(1)(i) of this section;

(iv) Any term, condition, or limitation of any license issued under the sections specified in paragraph (b)(1)(i) of this section.

(2) For any violation for which a license may be revoked under section 186 of the Atomic Energy Act of 1954, as amended.

[57 FR 55072, Nov. 24, 1992]

### ***§30.64 Criminal penalties.***

(a) Section 223 of the Atomic Energy Act of 1954, as amended, provides for criminal sanctions for willful violation of, attempted violation of, or conspiracy to violate, any regulation issued under sections 161b, 161i, or 161o of the Act. For purposes of section 223, all the regulations in part 30 are issued under one or more of sections 161b, 161i, or 161o, except for the sections listed in paragraph (b) of this section.

(b) The regulations in part 30 that are not issued under sections 161b, 161i, or 161o for the purposes of section 223 are as follows: §§30.1, 30.2, 30.4, 30.5, 30.6, 30.8, 30.11, 30.12, 30.13, 30.15, 30.16, 30.31, 30.32, 30.33, 30.37, 30.38, 30.39, 30.61, 30.62, 30.63, 30.64, 30.70, 30.71, and 30.72.

[57 FR 55072, Nov. 24, 1992]

**Schedules**

Cobalt 60 (Co-60)	1
Americium 241 (Am-241)	0.05

**§30.70 Schedule A -- exempt concentrations.**

[35 FR 6427, Apr. 22, 1970, as amended at 36 FR 16898, Aug. 26, 1971; 59 FR 5519, Feb. 7, 1994]

Element (Atomic Number)	Isotope	Col. 1	Col. 2
		Gas Concentration $\mu\text{Ci/ml}^1$	Liquid and Solid Concentration $\mu\text{Ci/ml}^2$
Cesium(55)	Cs131	—	$1 \times 10^{-4}$
	Cs134m	—	$2 \times 10^{-2}$
	Cs134	—	$6 \times 10^{-2}$
Cobalt(27)	Co57	—	$5 \times 10^{-3}$
	Co58	—	$1 \times 10^{-3}$
	Co60	—	$5 \times 10^{-4}$

**Footnotes to Schedule A**

1. Values are given only for those materials normally used as gases.
2.  $\mu\text{Ci/gm}$  for solids.

NOTE 1: Many radioisotopes disintegrate into isotopes which are also radioactive. In expressing the concentrations in Schedule A, the activity stated is that of the parent isotope and takes into account the daughters.

NOTE 2: For purposes of 30.14 where there is involved a combination of isotopes, the limit for the combination should be derived as follows: Determine for each isotope in the product the ratio between the concentration present in the product and the exempt concentration established in Schedule A for the specific isotope when not in combination. The sum of such ratios may not exceed "1" (i.e., unity). Example:

$$\frac{\text{Concentration of isotope A in product}}{\text{Exempt concentration of isotope A}} + \frac{\text{Concentration of isotope B in product}}{\text{Exempt concentration of isotope B}} \leq 1$$

[30 FR 8185, June 26, 1965, as amended at 35 FR 3982, Mar. 3, 1970; 38 FR 29314, Oct. 24, 1973; 59 FR 5520, Feb. 7, 1994]

**§30.71 Schedule B.**

Byproduct Material	Microcuries
Cesium 137 (Cs-137)	10

## PART 31 -- GENERAL DOMESTIC LICENSES FOR BYPRODUCT MATERIAL

Note: This section and its corresponding schedules have been annotated to reflect only those regulations and nuclides which are pertinent to Ronan gauging devices. For a complete set of regulations or schedules please refer to a current copy of 10 CFR Part 30.

Sec.

31.1 Purpose and scope.

31.2 Terms and conditions.

31.5 Certain detecting, measuring, gauging, or controlling devices and certain devices for producing light or an ionized atmosphere.

31.8 Americium - 241 in the form of calibration or reference sources.

31.9 General license to own byproduct material.

### ***§31.1 Purpose and scope.***

This part establishes general licenses for the possession and use of byproduct material and a general license for ownership of byproduct material. Specific provisions of 10 CFR Part 30 are applicable to general licenses established by this part. These provisions are specified in Sec. 31.2 or in the particular general license.

### ***§31.2 Terms and conditions.***

The general licenses provided in this part are subject to the general provisions of Part 30 of this chapter (Secs. 30.1 through 30.10), the provisions of Secs. 30.14(d), 30.34(a) to (e), 30.41, 30.50 to 30.53, 30.61 to 30.63, and Parts 19,20, and 21, of this chapter<sup>1</sup> unless indicated otherwise in the specific provision of the general license.

<sup>1</sup> Attention is directed particularly to the provisions of Part 20 of this chapter concerning labeling of containers.

### ***§31.5 Certain detecting, measuring, gauging, or controlling devices and certain devices for producing light or an ionized atmosphere.<sup>(2)</sup>***

(a) A general license is hereby issued to commercial and industrial firms and research, educational and medical institutions, individuals in the conduct of their business, and Federal, State or local government agencies to acquire, receive, possess, use or transfer, in accordance with the provisions of paragraphs (b), (c) and (d) of this section, byproduct material contained in

devices designed and manufactured for the purpose of detecting, measuring, gauging or controlling thickness, density, level, interface location, radiation, leakage, or qualitative or quantitative chemical composition, or for producing light or an ionized atmosphere.

(b)(1) The general license in paragraph (a) of this section applies only to byproduct material contained in devices which have been manufactured or initially transferred and labeled in accordance with the specifications contained in--

(i) A specific license issued under Sec. 32.51 of this chapter; or

(ii) An equivalent specific license issued by an Agreement State.

(2) The devices must have been received from one of the specific licensees described in paragraph (b)(1) of this section or through a transfer made under paragraph (c)(9) of this section.

(c) Any person who acquires, receives, possesses, uses or transfers byproduct material in a device pursuant to the general license in paragraph (a) of this section:

(1) Shall assure that all labels affixed to the device at the time of receipt and bearing a statement that removal of the label is prohibited are maintained thereon and shall comply with all instructions and precautions provided by such labels;

(2) Shall assure that the device is tested for leakage of radioactive material and proper operation of the on-off mechanism and indicator, if any, at no longer than six-month intervals or at such other intervals as are specified in the label; however:

(i) Devices containing only krypton need not be tested for leakage of radioactive material, and

(ii) Devices containing only tritium or not more than 100 microcuries of other beta and/or gamma emitting material or 10 microcuries of alpha emitting material and devices held in storage in the original shipping container prior to initial installation need not be tested for any purpose; (3) Shall assure that the tests required by paragraph (c)(2) of this section and other testing, installation, servicing, and removal from installation involving the radioactive materials, its shielding or containment, are performed:

(i) In accordance with the instructions provided by the labels; or

(ii) By a person holding a specific license pursuant to parts 30 and 32 of this chapter or from an Agreement State to perform such activities;

(4) Shall maintain records showing compliance with the requirements of paragraphs (c)(2) and (c)(3) of this section. The records must show the results of tests. The records also must show the dates of performance of, and the names of persons performing, testing, installing, servicing, and removing from the installation radioactive material and its shielding or containment. The licensee shall retain these records as follows:

(i) Each record of a test for leakage or radioactive material required by paragraph (c)(2) of this section must be retained for three years after the next required leak test is performed or until the sealed source is transferred or disposed of.

(ii) Each record of a test of the on-off mechanism and indicator required by paragraph (c)(2) of this section must be retained for three years after the next required test of the on-off mechanism and indicator is performed or until the sealed source is transferred or disposed of.

(iii) Each record that is required by paragraph (c)(3) of this section must be retained for three years from the date of the recorded event or until the device is transferred or disposed of.

(5) Shall immediately suspend operation of the device if there is a failure of, or damage to, or any indication of a possible failure of or damage to, the shielding of the radioactive material or the on-off mechanism or indicator, or upon the detection of 185 bequerel (0.005 microcurie) or more removable radioactive material. The device may not be operated until it has been repaired by the manufacturer or other person holding a specific license to repair such devices that was issued under parts 30 and 32 of this chapter or by an Agreement State. The device and any radioactive material from the device may only be disposed of by transfer to a person authorized by a specific license to receive the byproduct material in the device or as otherwise approved by the Commission. A report containing a brief description of the event and the remedial action taken; and, in the case of detection of 0.005 microcurie or more removable radioactive material or failure of or damage to a source likely to result in contamination of the premises or the environs, a plan for ensuring that the

premises and environs are acceptable for unrestricted use, must be furnished to the Director of Nuclear Material Safety and Safeguards, ATTN: GLTS, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001 within 30 days. Under these circumstances, the criteria set out in Sec. 20.1402, "Radiological criteria for unrestricted use," may be applicable, as determined by the Commission on a case-by-case basis;

(6) Shall not abandon the device containing byproduct material;

(7) Shall not export the device containing byproduct material except in accordance with part 110 of this chapter;

(8)(i) Shall transfer or dispose of the device containing byproduct material only by export as provided by paragraph (c)(7) of this section, by transfer to another general licensee as authorized in paragraph (c)(9) of this section, or to a person authorized to receive the device by a specific license issued under parts 30 and 32 of this chapter, or part 30 of this chapter that authorizes waste collection, or equivalent regulations of an Agreement State, or as otherwise approved under paragraph (c)(8)(iii) of this section.

(ii) Shall furnish a report to the Director of Nuclear Material Safety and Safeguards, ATTN: GLTS, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001 within 30 days after the transfer of a device to a specific licensee or export. The report must contain--

(A) The identification of the device by manufacturer's (or initial transferor's) name, model number, and serial number;

(B) The name, address, and license number of the person receiving the device (license number not applicable if exported); and

(C) The date of the transfer.

(iii) Shall obtain written NRC approval before transferring the device to any other specific licensee not specifically identified in paragraph (c)(8)(i) of this section.

(9) Shall transfer the device to another general licensee only if--

(i) The device remains in use at a particular location. In this case, the transferor shall give the transferee a copy of this section, a copy of Secs. 31.2, 30.51, 20.2201, and 20.2202 of this chapter, and any safety documents identified in the label of the device. Within 30 days of the transfer, the transferor shall report to the Director of Nuclear Material Safety and Safeguards,

ATTN: GLTS, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001--

(A) The manufacturer's (or initial transferor's) name;

(B) The model number and the serial number of the device transferred;

(C) The transferee's name and mailing address for the location of use; and

(D) The name, title, and phone number of the responsible individual identified by the transferee in accordance with paragraph (c)(12) of this section to have knowledge of and authority to take actions to ensure compliance with the appropriate regulations and requirements; or

(ii) The device is held in storage by an intermediate person in the original shipping container at its intended location of use prior to initial use by a general licensee.

(10) Shall comply with the provisions of §§20.2201, and 20.2202 of this chapter for reporting radiation incidents, theft or loss of licensed material, but shall be exempt from the other requirements of parts 19, 20, and 21, of this chapter.

(11) Shall respond to written requests from the Nuclear Regulatory Commission to provide information relating to the general license within 30 calendar days of the date of the request, or other time specified in the request. If the general licensee cannot provide the requested information within the allotted time, it shall, within that same time period, request a longer period to supply the information by submitting a letter to the Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001 and provide written justification as to why it cannot comply.

(12) Shall appoint an individual responsible for having knowledge of the appropriate regulations and requirements and the authority for taking required actions to comply with appropriate regulations and requirements. The general licensee, through this individual, shall ensure the day-to-day compliance with appropriate regulations and requirements. This appointment does not relieve the general licensee of any of its responsibility in this regard.

(13)(i) Shall register, in accordance with paragraphs (c)(13)(ii) and (iii) of this section, devices containing at least 370 MBq (10 mCi) of cesium-137, 3.7 MBq (0.1 mCi) of strontium-90,

37 MBq (1 mCi) of cobalt-60, or 37 MBq (1 mCi) of americium-241 or any other transuranic (i.e., element with atomic number greater than uranium (92)), based on the activity indicated on the label. Each address for a location of use, as described under paragraph (c)(13)(iii)(D) of this section, represents a separate general licensee and requires a separate registration and fee.

(ii) If in possession of a device meeting the criteria of paragraph (c)(13)(i) of this section, shall register these devices annually with the Commission and shall pay the fee required by Sec. 170.31 of this chapter. Registration must be done by verifying, correcting, and/or adding to the information provided in a request for registration received from the Commission. The registration information must be submitted to the NRC within 30 days of the date of the request for registration or as otherwise indicated in the request. In addition, a general licensee holding devices meeting the criteria of paragraph (c)(13)(i) of this section is subject to the bankruptcy notification requirement in Sec. 30.34(h) of this chapter.

(iii) In registering devices, the general licensee shall furnish the following information and any other information specifically requested by the Commission--

(A) Name and mailing address of the general licensee.

(B) Information about each device: the manufacturer (or initial transferor), model number, serial number, the radioisotope and activity (as indicated on the label).

(C) Name, title, and telephone number of the responsible person designated as a representative of the general licensee under paragraph (c)(12) of this section.

(D) Address or location at which the device(s) are used and/or stored. For portable devices, the address of the primary place of storage.

(E) Certification by the responsible representative of the general licensee that the information concerning the device(s) has been verified through a physical inventory and checking of label information.

(F) Certification by the responsible representative of the general licensee that they are aware of the requirements of the general license.

(iv) Persons generally licensed by an Agreement State with respect to devices meeting the criteria in paragraph (c)(13)(i) of this section

are not subject to registration requirements if the devices are used in areas subject to NRC jurisdiction for a period less than 180 days in any calendar year. The Commission will not request registration information from such licensees.

(14) Shall report changes to the mailing address for the location of use (including change in name of general licensee) to the Director of Nuclear Material Safety and Safeguards, ATTN: GLTS, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001 within 30 days of the effective date of the change. For a portable device, a report of address change is only required for a change in the device's primary place of storage.

(15) May not hold devices that are not in use for longer than 2 years. If devices with shutters are not being used, the shutter must be locked in the closed position. The testing required by paragraph (c)(2) of this section need not be performed during the period of storage only. However, when devices are put back into service or transferred to another person, and have not been tested within the required test interval, they must be tested for leakage before use or transfer and the shutter tested before use. Devices kept in standby for future use are excluded from the two-year time limit if the general licensee performs quarterly physical inventories of these devices while they are in standby.

(d) The general license in paragraph (a) of this section does not authorize the manufacture or import of devices containing byproduct material.

<sup>2</sup> Persons possessing byproduct material in devices under a general license in Sec. 31.5 before January 15, 1975, may continue to possess, use, or transfer that material in accordance with the labeling requirements of Sec. 31.5 in effect on January 14, 1975.

### ***§31.8 Americium-241 in the form of calibration or reference sources.***

(a) A general license is hereby issued to those persons listed below to own, receive, acquire, possess, use and transfer, in accordance with the provisions of paragraphs (b) and (c) of this section, americium-241 in the form of calibration or reference sources:

(1) Any person in a non-Agreement State who holds a specific license issued pursuant to this chapter which authorizes him to receive, possess,

use and transfer byproduct material, source material, or special nuclear material; and

(2) Any Government agency, as defined in §30.4(g) of this chapter, which holds a specific license issued pursuant to this chapter which authorizes it to receive, possess, use and transfer byproduct material, source material, or special nuclear material.

(b) The general license in paragraph (a) of this section applies only to calibration or reference sources which have been manufactured or initially transferred in accordance with the specifications contained in a specific license issued pursuant to §32.57 of this chapter or in accordance with the specifications contained in a specific license issued to the manufacturer by an Agreement State which authorizes manufacture of the sources for distribution to persons generally licensed by the Agreement State.

(c) The general license in paragraph (a) of this section is subject to the provisions of §§30.14(d), 30.34 (a) to (e), and 30.50 to 30.63 of this chapter, and to the provisions of parts 19, 20, and 21, of this chapter. In addition, persons who own, receive, acquire, possess, use and transfer one or more calibration or reference sources pursuant to this general license:

(1) Shall not possess at any one time, at any one location of storage or use, more than 5 microcuries of americium-241 in such sources:

(2) Shall not receive, possess, use or transfer such source unless the source, or the storage container, bears a label which includes the following statement or a substantially similar statement which contains the information called for in the following statement:<sup>(1)</sup>

The receipt, possession, use and transfer of this source, Model XX, Serial No. XX, are subject to a general license and the regulations of the United States Nuclear Regulatory Commission or of a State with which the Commission has entered into an agreement for the exercise of regulatory authority. Do not remove this label.

**CAUTION -- RADIOACTIVE MATERIAL -- THIS SOURCE CONTAINS AMERICIUM-241. DO NOT TOUCH RADIOACTIVE PORTION OF THIS SOURCE.**

(Name of manufacturer or initial transferor)

(3) Shall not transfer, abandon, or dispose of such source except by transfer to a person authorized by a license pursuant to this chapter

or from an Agreement State to receive the source.

(4) Shall store such source, except when the source is being used, in a closed container adequately designed and constructed to contain americium - 241 which might otherwise escape during storage.

(5) Shall not use such source for any purpose other than the calibration of radiation detectors or the standardization of other sources.

(d) This general license does not authorize the manufacture or import of calibration or reference sources containing americium-241.

(e) This general license does not authorize the export of calibration or reference sources containing americium-241.

[30 FR 8189, June 26, 1965, as amended at 38 FR 22220, Aug. 17, 1973; 40 FR 8785, Mar. 3, 1975; 42 FR 28896, June 6, 1977; 43 FR 6922, Feb. 17, 1978; 56 FR 40767, Aug. 16, 1991]

<sup>1</sup> Sources generally licensed under this section prior to January 19, 1975 may bear labels authorized by the regulations in effect on January 1, 1975.

### ***§31.9 General license to own byproduct material.***

A general license is hereby issued to own byproduct material without regard to quantity. Notwithstanding any other provision of this chapter, a general licensee under this paragraph is not authorized to manufacture, produce, transfer, receive, possess, use, import or export byproduct material, except as authorized in a specific license.

[30 FR 8189, June 26, 1965]

## **PART 32--SPECIFIC DOMESTIC LICENSES TO MANUFACTURE OR TRANSFER CERTAIN ITEMS CONTAINING BYPRODUCT MATERIAL**

### **Subpart B—Generally Licensed Items.**

32.51 Byproduct material contained in devices for use under 31.5; requirements for license to manufacture or initially transfer.

32.51a Same: Conditions of license

### **Subpart B – Generally Licensed Items**

#### ***§32.51 Byproduct material contained in devices for use under §31.5; requirements for license to manufacture or initially transfer.***

(a) An application for a specific license to manufacture, or initially transfer devices containing byproduct material to persons generally licensed under §31.5 of this chapter or equivalent regulations of an Agreement State will be approved if:

(1) The applicant satisfies the general requirements of §30.33 of this chapter;

(2) The applicant submits sufficient information relating to the design, manufacture, prototype testing, quality control, labels, proposed uses, installation, servicing, leak testing, operating and safety instructions, and potential hazards of the device to provide reasonable assurance that:

(i) The device can be safely operated by persons not having training in radiological protection;

(ii) Under ordinary conditions of handling, storage, and use of the device, the byproduct material contained in the device will not be released or inadvertently removed from the device, and it is unlikely that any person will receive in 1 year a dose in excess of 10 percent of the annual limits specified in §20.1201(a) of this chapter; and

(iii) Under accident conditions (such as fire and explosion) associated with handling, storage and use of the device, it is unlikely that any person would receive an external radiation dose or dose commitment in excess of the dose to the appropriate organ as specified in Column IV of the table in §32.24.

(3) Each device bears a durable, legible, clearly visible label or labels approved by the Commission which contain in a clearly identified and separate statement:

- (i) Instructions and precautions necessary to assure safe installation, operation, and servicing of the device (documents such as operating and service manuals may be identified in the label and used to provide this information);
- (ii) The requirements, or lack of requirement, for leak testing, or for testing any on-off mechanism and indicator, including the maximum time interval for such testing, and the identification of the radioisotope, quantity of radioactivity, and the date of determination of the quantity; and
- (iii) The information called for in the following statement in the same or substantially similar form:<sup>1</sup>

The receipt, possession, use, and transfer of this device Model \_\_\_\_\_<sup>2</sup> Serial No. \_\_\_\_\_<sup>2</sup>, are subject to a general license or the equivalent and the regulations of the U.S. NRC or of a State with which the NRC has entered into an agreement for the exercise of regulatory authority. This label shall be maintained on the device in a legible condition. Removal of this label is prohibited.

**CAUTION - RADIOACTIVE MATERIAL**

(Name of manufacturer, or initial transferor.)<sup>2</sup>

(b) In the event that the applicant desires that the device be required to be tested at intervals longer than six months, either for proper operation of the on-off mechanism and indicator, if any, or for leakage of radioactive material of for both, he shall include in this application sufficient information to demonstrate that such longer interval is justified by performance characteristics of the device or similar devices, and by design features which have a significant bearing on the probability or consequences of leakage of radioactive material from the device or failure of the on-off mechanism and indicator. In determining the acceptable interval for the test for leakage of radioactive material, the Commission will consider information which includes, but is not limited to:

- (1) Primary containment (source capsule);
- (2) Protection of primary containment;
- (3) Method of sealing containment;

- (4) Containment construction materials;
- (5) Form of contained radioactive material;
- (6) Maximum temperature withstood during prototype tests;
- (7) Maximum pressure withstood during prototype tests;
- (8) Maximum quantity of contained radioactive material;
- (9) Radiotoxicity of contained radioactive material; and
- (10) Operating experience with identical devices or similarly designed and constructed devices.

(c) In the event the applicant desires that the general licensee under §31.5 of this chapter, or under equivalent regulations of an Agreement State, be authorized to install the device, collect the sample to be analyzed by a specific licensee for leakage of radioactive material, service the device, test the on-off mechanism and indicator, or remove the device from installation, the applicant shall include in the application written instructions to be followed by the general licensee, estimated calendar quarter doses associated with such activity or activities, and the bases for these estimates. The submitted information must demonstrate that performance of this activity or activities by an individual untrained in radiological protection, in addition to other handling, storage, and use of devices under the general license, is unlikely to cause that individual to receive a dose in excess of 10 percent of the annual limits specified in §20.1201(a) of this chapter.

<sup>1</sup>Devices licensed under §32.51 prior to January 19,1975 may bear labels authorized by the regulations in effect on January 1,1975.

<sup>2</sup>The model, serial number, and the name of the manufacturer, or initial transferor may be omitted from this label provided the information is elsewhere specified in labeling affixed to the device.

[39 FR 43533, Dec.16,1974, as amended at 40 FR 8785, Mar.3,1975; 42 FR 25721, May 19,1977; 43 FR 6923, Feb.17,1978; 58 FR 67660, Dec.22,1993; 59 FR 5520, Feb.7,1994]

**§32.51a Same: Conditions of licenses.**

Each person licensed under §32.51 shall:

- (a) Furnish a copy of the general license contained in §31.5 of this chapter to each person to whom he directly or through an intermediate



person transfers byproduct material in a device for use pursuant to the general license contained in §31.5 of this chapter.

(b) Furnish a copy of the general license contained in the Agreement State's regulation equivalent to §31.5 of this chapter, or alternatively, furnish a copy of the general license contained in §31.5 of this chapter, to each person to whom he directly or through an intermediate person transfers byproduct material in a device for use pursuant to the general license of an Agreement State. If a copy of the general license in §31.5 of this chapter is furnished to such person, it shall be accompanied by a note explaining that use of the device is regulated by the Agreement State under requirements substantially the same as those in §31.5 of this chapter.

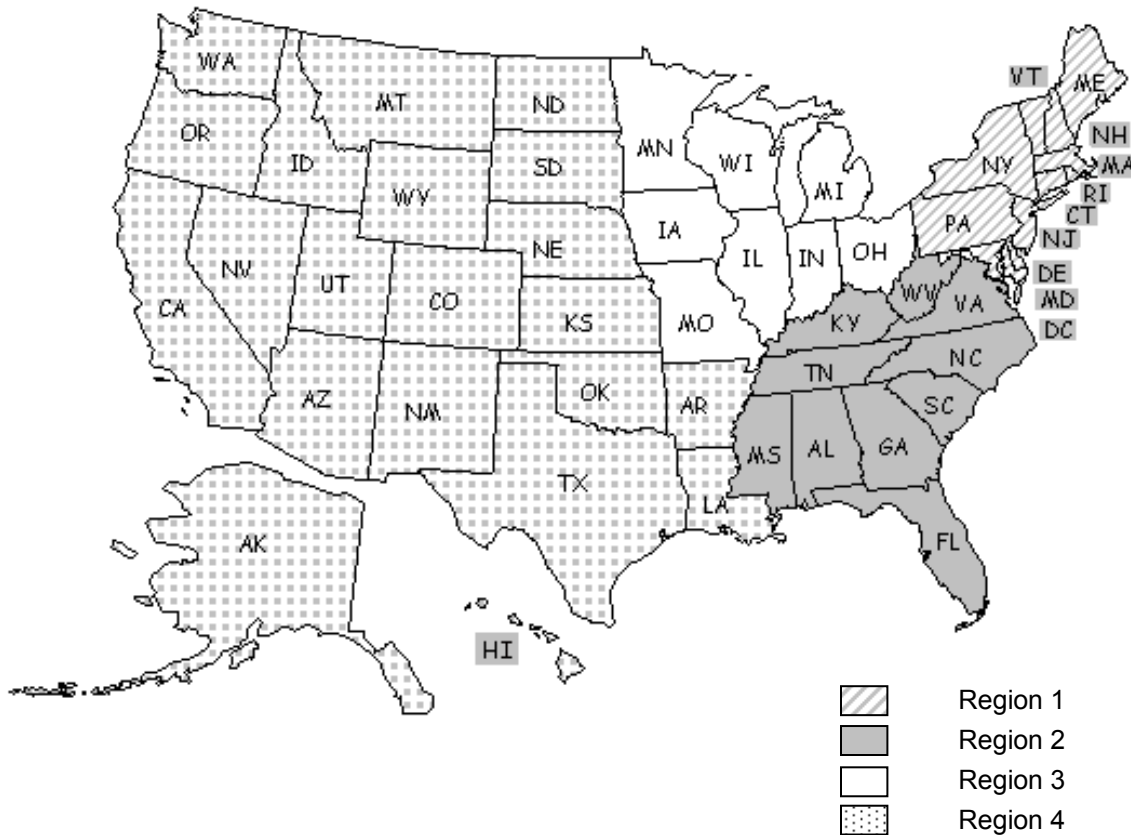
[39 FR 43533, Dec.16,1974]

## **NRC and Agreement State Directory**

The NRC oversees the use of radioactive materials within the United States and its territories. To facilitate this, the US NRC divides the United States into four regions. Each NRC region has its own office. Below, and on the following pages, you will find a map showing the various NRC regions and a directory of NRC office addresses and contact information.

In addition to the NRC regional offices, many states run their own regulatory programs that directly oversee the use of radioactive materials within the confines of their state lines. These states are known as "Agreement States", since they have entered into an agreement with the NRC to police day-to-day activities involving radioactive materials within their borders. On the following pages you will find a map showing all of the Agreement and Non-Agreement states and a directory of Agreement State addresses and contact information. Non-Agreement States are directly overseen by the NRC region that they fall into. If you reside in a Non-Agreement State you should contact the appropriate NRC Regional Office for your State.

NRC Regional Map

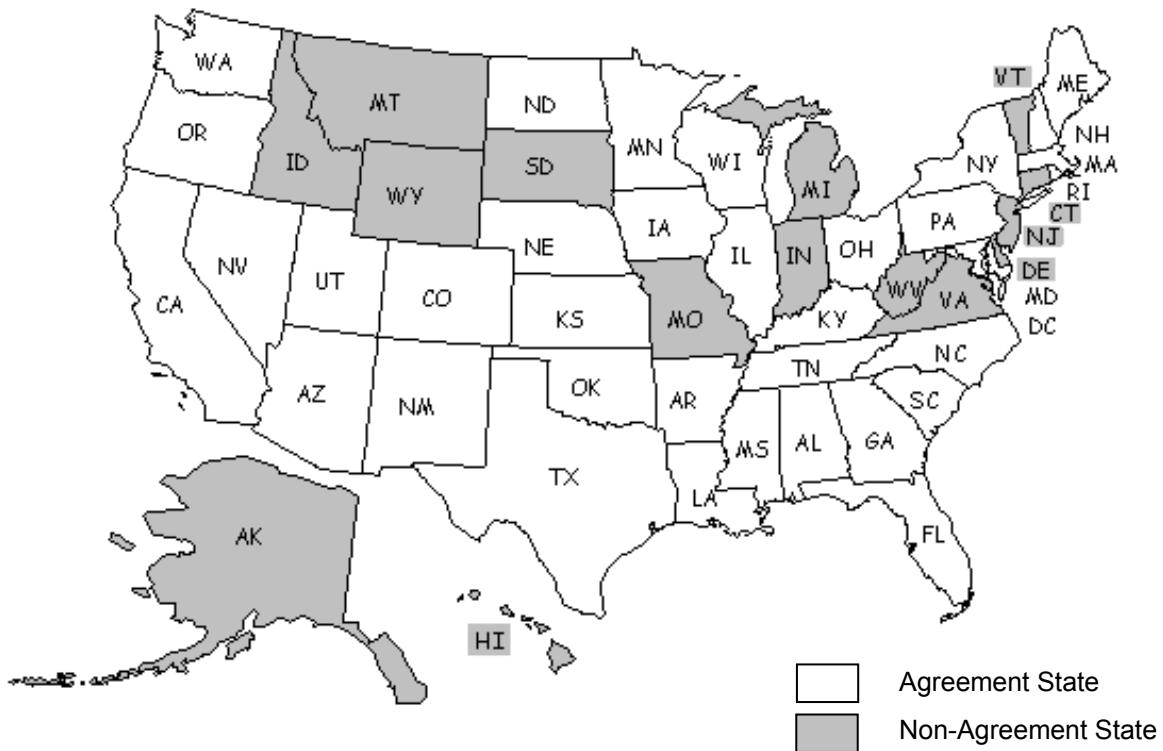


NRC Regional Office Directory

Region	Address	Telephone (24 Hour)
<p><b>Region I:</b> Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.</p>	<p>USNRC, Region I, 475 Allendale Road King of Prussia, PA 19406.</p>	<p>(610) 337-5000, (FTS) 346-5000.</p>
<p><b>Region II:</b> Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, Puerto Rico, South Carolina, Tennessee, Virginia, Virgin Islands, and West Virginia.</p>	<p>USNRC, Region II, Atlanta Federal Center, 61 Forsyth Street, SW., Suite 23T85, Atlanta, GA 30303.</p>	<p>(404) 562-4400, (FTS) 841-4503.</p>
<p><b>Region III:</b> Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin.</p>	<p>USNRC, Region III, 801 Warrenville Road Lisle, IL 60532-4351.</p>	<p>(708) 829-9500, (FTS) 829-9500.</p>

<p><b>Region IV:</b> Alaska, Arizona, Arkansas, California, Colorado, Hawaii, Idaho, Kansas, Louisiana, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, Wyoming, and the U.S. territories and possessions in the Pacific.</p>	<p>USNRC, Region IV, 611 Ryan Plaza Drive Suite 400, Arlington, TX 76011.</p>	<p>(817) 860-8100, (FTS) 728-8100.</p>
<p>Field Office</p>	<p>USNRC, Region IV, Walnut Creek Field Office, 1450 Maria Lane, Suite 300, Walnut Creek, CA 94596.</p>	<p>(510) 975-0200</p>

Agreement State Map



State Directory

<b>Alabama</b>		
Agreement State	Non-Agreement State	State Liaison Officer
Kirksey E. Whatley, Director Office of Radiation Control Alabama Department of Public Health 201 Monroe Street, P.O. Box 303017 Montgomery, AL 36130-3017  PH (334)206-5391 FX (334)206-5387 INET: <a href="mailto:kwhatley@adph.state.al.us">kwhatley@adph.state.al.us</a>		Kirksey E. Whatley, Director Office of Radiation Control Alabama Department of Public Health 201 Monroe Street, P.O. Box 303017 Montgomery, AL 36130-3017  PH (334)206-5391 FX (334)206-5387 INET: <a href="mailto:kwhatley@adph.state.al.us">kwhatley@adph.state.al.us</a>
<b>Alaska</b>		
Agreement State	Non-Agreement State	State Liaison Officer
	Clyde E. Pearce, Chief Radiological Health Program Section of Laboratories State of Alaska/DH&SS 4500 Boniface Parkway Anchorage, AK 99507-1270  PH (907)334-2107 FX (907)334-2163 INET: <a href="mailto:clyde_pearce@health.STATE.AK.US">clyde_pearce@health.STATE.AK.US</a>	Michael Conway, Director Division of Statewide Public Service Department of Environmental Conversation 410 Willoughby Avenue, Suite 303 Juneau, Alaska 99801  PH (907)465-5337 INET: <a href="mailto:mike_conway@dec.state.ak.us">mike_conway@dec.state.ak.us</a>
<b>Arizona</b>		
Agreement State	Non-Agreement State	State Liaison Officer
Aubrey V. Godwin, Director Arizona Radiation Regulatory Agency 4814 South 40th Street Phoenix, AZ 85040  PH (602)255-4845 ext. 222 FX (602)437-0705 INET: <a href="mailto:agodwin@arra.state.az.us">agodwin@arra.state.az.us</a>		Aubrey V. Godwin, Director Arizona Radiation Regulatory Agency 4814 South 40th Street Phoenix, AZ 85040  PH (602)255-4845 ext. 222 FX (602)437-0705 INET: <a href="mailto:agodwin@arra.state.az.us">agodwin@arra.state.az.us</a>
<b>Arkansas</b>		
Agreement State	Non-Agreement State	State Liaison Officer
Jared W. Thompson, Health Physicist Supervisor Division of Radiation Control & Emergency Mgmt Radioactive Materials Program, Department of Health 4815 West Markham Street, Slot #30 Little Rock, AR 72205-3867  PH (501)661-2173 FX (501)661-2849 INET: <a href="mailto:jwthompson@healtharkansas.com">jwthompson@healtharkansas.com</a>		Bernard Beville, Division of Radiation Control & Emergency Mgmt Department of Health 4815 West Markham, Mail Slot #30 Little Rock, AR 72205-3867  PH (501)661-2301 FX (501)661-2236 INET: <a href="mailto:brbevill@healtharkansas.com">brbevill@healtharkansas.com</a>

<b>California</b>		
Agreement State	Non-Agreement State	State Liaison Officer
Edgar D. Bailey, C.H.P., Chief Radiologic Health Branch Division of Food, Drugs, and Radiation Safety California Department of Health Services P.O. Box 942732 Sacramento, CA 94234-7320  PH (916)322-3482 FX (916)324-3610 INET: <a href="mailto:ebailey@dhs.ca.gov">ebailey@dhs.ca.gov</a>		James D. Boyd, Commissioner California Energy Commission 1516 Ninth Street Sacramento, California 95814  PH (916)654-3787 FX (916)653-1279 INET: <a href="mailto:jboyd@energy.state.ca.us">jboyd@energy.state.ca.us</a>
<b>Colorado</b>		
Agreement State	Non-Agreement State	State Liaison Officer
Eugene W. Potter, CHP, Manager Radiation Management Program, HMWMD-B2 Hazardous Materials & Waste Management Division Department of Public Health & Environment 4300 Cherry Creek Drive South Denver, CO 80246-1530  PH (303)692-3428 FX (303)759-5355 INET: <a href="mailto:Eugene.Potter@state.co.us">Eugene.Potter@state.co.us</a>		Eugene W. Potter, CHP, Manager Radiation Management Program, HMWMD-B2 Hazardous Materials & Waste Management Division Department of Public Health & Environment 4300 Cherry Creek Drive South Denver, CO 80246-1530  PH (303)692-3428 FX (303)759-5355 INET: <a href="mailto:Eugene.Potter@state.co.us">Eugene.Potter@state.co.us</a>
<b>Connecticut</b>		
Agreement State	Non-Agreement State	State Liaison Officer
	Edward L. Wilds, Ph.D., Director Division of Radiation Department of Environmental Protection 79 Elm Street Hartford, CT 06106-5127  PH (860)424-3029 FX (860)424-4065 INET: <a href="mailto:edward.wilds@po.STATE.CT.US">edward.wilds@po.STATE.CT.US</a>	Edward L. Wilds, Ph.D., Director Division of Radiation Department of Environmental Protection 79 Elm Street Hartford, CT 06106-5127 PH (860)424-3029 FX (860)424-4065 INET: <a href="mailto:edward.wilds@po.STATE.CT.US">edward.wilds@po.STATE.CT.US</a>
<b>Delaware</b>		
Agreement State	Non-Agreement State	State Liaison Officer
	Frieda Fisher-Tyler, Administrator Office of Radiation Control Division of Public Health P.O. Box 637 Dover, DE 19903  PH (302)744-4944 FX (302)739-3839 INET: <a href="mailto:frieda.Fisher-Tyler@state.de.us">frieda.Fisher-Tyler@state.de.us</a>	Harry W. Otto, Ph.D., FAIC Division of Water Resources Department of Natural Resources & Environmental Control P.O. Box 1401, 89 Kings Highway Dover, Delaware 19901  PH (302)739-5726 FX: (302)739-7864 INET: <a href="mailto:harry.otto@state.de.us">harry.otto@state.de.us</a>

<b>District of Columbia</b>		
Agreement State	Non-Agreement State	State Liaison Officer
	Harold Monroe, Bureau Chief Department of Health Environmental Health Administration Bureau of Food, Drug, and Radiation Protection 51 N Street NE, Room 6025 Washington, DC 20002  PH:(202)535-2188 FX: (202)535-1359 INET: <a href="mailto:hmonroe@dchealth.com">hmonroe@dchealth.com</a>	
<b>Florida</b>		
Agreement State	Non-Agreement State	State Liaison Officer
William A. Passetti, Chief Bureau of Radiation Control Florida Department of Health 4052 Bald Cypress Way, SE, Bin C21 Tallahassee, FL 32399-1741  PH (850)245-4266 FX (850)487-0435 INET: <a href="mailto:bill_passetti@doh.state.fl.us">bill_passetti@doh.state.fl.us</a>		William A. Passetti, Chief Bureau of Radiation Control Florida Department of Health 4052 Bald Cypress Way, SE, Bin C21 Tallahassee, FL 32399-1741  PH (850)245-4266 FX (850)487-0435 INET: <a href="mailto:bill_passetti@doh.state.fl.us">bill_passetti@doh.state.fl.us</a>
<b>Georgia</b>		
Agreement State	Non-Agreement State	State Liaison Officer
Thomas E. Hill, Manager Radioactive Materials Program Department of Natural Resources 4244 International Parkway, Suite 114 Atlanta, GA 30354  PH (404)362-2675 FX (404)362-2653 INET: <a href="mailto:thill@dnr.state.ga.us">thill@dnr.state.ga.us</a>		James Setser, Chief Program Coordination Branch Environmental Protection Division Department of Natural Resources 205 Butler Street, Suite 1152 East Tower Atlanta, Georgia 30334  PH (404)656-4713 Fax: (404)651-5778 INET: <a href="mailto:jim_setser@dnr.state.ga.us">jim_setser@dnr.state.ga.us</a>
<b>Hawaii</b>		
Agreement State	Non-Agreement State	State Liaison Officer
	Russell S. Takata, Program Manager, Noise, Radiation & IAQ Branch Department of Health 591 Ala Moana Boulevard Honolulu, HI 96813-4921  PH (808)586-4700 FX (808)586-5838 INET: <a href="mailto:rtakata@ehsdmail.health.state.hi.us">rtakata@ehsdmail.health.state.hi.us</a>	Jerry Y. Haruno, Administrator Environmental Health Services Division State Department of Health 591 Ala Moana Boulevard Honolulu, Hawaii 96813  PH: (808)586-4576 FX (808)586-1522 INET: <a href="mailto:jharuno@ehsdmail.health.state.hi.us">jharuno@ehsdmail.health.state.hi.us</a>

<b>Idaho</b>		
Agreement State	Non-Agreement State	State Liaison Officer
	Doug Walker, Senior Health Physicist Development of Environmental Quality 900 N. Skyline, Suite C Idaho Falls, ID 83402  PH (208)528-2617 FX (208)528-2605 INET: <a href="mailto:dwalker@deg.state.id.us">dwalker@deg.state.id.us</a>	Doug Walker, Senior Health Physicist Development of Environmental Quality 900 N. Skyline, Suite C Idaho Falls, ID 83402  PH (208)528-2617 FX (208)528-2605 INET: <a href="mailto:dwalker@deg.state.id.us">dwalker@deg.state.id.us</a>
<b>Illinois</b>		
Agreement State	Non-Agreement State	State Liaison Officer
Gary N. Wright, Director Division of Nuclear Safety Illinois Emergency Management Agency 1035 Outer Park Drive Springfield, IL 62704  PH (217)785-9868 FX (217)524-4724 INET: <a href="mailto:wright@iema.state.il.us">wright@iema.state.il.us</a>		Gary N. Wright, Director Division of Nuclear Safety Illinois Emergency Management Agency 1035 Outer Park Drive Springfield, IL 62704  PH (217)785-9868 FX (217)524-4724 INET: <a href="mailto:wright@iema.state.il.us">wright@iema.state.il.us</a>
<b>Indiana</b>		
Agreement State	Non-Agreement State	State Liaison Officer
	John H. Ruyack, Director Indoor & Radiologic Health Division State Department of Health 2 N. Meridian Street, 5F Indianapolis, IN 46204-3003  PH (317)233-7146 FX (317)233-7154 INET: <a href="mailto:JRUYACK@ISDH.STATE.IN.US">JRUYACK@ISDH.STATE.IN.US</a>	Howard W. Cundiff, P.E., Director Consumer Protection Indiana State Department of Health 2 North Meridian Street, 5D Indianapolis, Indiana 46204  PH (317)233-7182 FX (317)233-7334 INET: <a href="mailto:hcundiff@ISDH.STATE.IN.US">hcundiff@ISDH.STATE.IN.US</a>
<b>Iowa</b>		
Agreement State	Non-Agreement State	State Liaison Officer
Donald A. Flater, Chief Bureau of Radiological Health Iowa Department of Public Health 401 SW 7th Street, Suite D Des Moines, IA 50309  PH (515)281-3478 FX (515)725-0318 INET: <a href="mailto:dflater@idph.state.ia.us">dflater@idph.state.ia.us</a>		Daniel K. McGhee Bureau of Radiological Health Iowa Department of Public Health 401 SW 7th Street, Suite D Des Moines, Iowa 50309  PH (515)725-0305 FX (515)725-0318 INET: <a href="mailto:dmcghee@idph.state.ia.us">dmcghee@idph.state.ia.us</a>

<b>Kansas</b>		
Agreement State	Non-Agreement State	State Liaison Officer
<p>Thomas A. Conley, CHP, Chief Radiation and Asbestos Control Section Bureau of Air &amp; Radiation Kansas Department of Health &amp; Environment 1000 SW Jackson, Suite 310 Topeka, KS 66612-1366</p> <p>PH (785)296-1565 FX (785)296-0984 INET: <a href="mailto:tconley@kdhe.state.ks.us">tconley@kdhe.state.ks.us</a></p>		<p>Victor L. Cooper, Section Chief Air Operating Permit &amp; Compliance Section Bureau of Air &amp; Radiation Division of Environment Kansas Department of Health &amp; Environment 1000 SW Jackson, Suite 310 Topeka, KS 66612-1366</p> <p>PH (785)296-1561 FX (785)291-3953 INET: <a href="mailto:vcooper@kdhe.state.ks.us">vcooper@kdhe.state.ks.us</a></p>
<b>Kentucky</b>		
Agreement State	Non-Agreement State	State Liaison Officer
<p>Robert L. Johnson, Manager Radiation Health &amp; Toxic Agents Branch Cabinet for Health Services 275 East Main Street Mail Stop HS 2E-D Frankfort, KY 40621-0001</p> <p>PH (502)564-7818 EXT 3697 FX (502)564-1492 INET: <a href="mailto:robertL.johnson@mail.state.ky.us">robertL.johnson@mail.state.ky.us</a></p>		<p>Janice H. Jasper, Radioactive Material Specialist Radiation Health &amp; Toxic Agents Branch Cabinet for Health Services 275 East Main Street Frankfort, KY 40621-0001</p> <p>PH (502)564-3700 ext 3698 FX (502)564-1492 INET: <a href="mailto:Jan.Jasper@mail.state.ky.us">Jan.Jasper@mail.state.ky.us</a></p>
<b>Louisiana</b>		
Agreement State	Non-Agreement State	State Liaison Officer
<p>Michael E. Henry, Senior Environmental Scientist, Permit Div Office of Environmental Services P.O. Box 4313 Baton Rouge, LA 70821-4313</p> <p>PH (225)219-3005 FX (225)219-3156 INET: <a href="mailto:m_henry@ldeq.org">m_henry@ldeq.org</a></p>		<p>Michael E. Henry, Senior Environmental Scientist, Permit Div Office of Environmental Services P.O. Box 4313 Baton Rouge, LA 70821-4313</p> <p>PH (225)219-3005 FX (225)219-3156 INET: <a href="mailto:m_henry@ldeq.org">m_henry@ldeq.org</a></p>
<b>Maine</b>		
Agreement State	Non-Agreement State	State Liaison Officer
<p>Jay Hyland, Program Manager Radiation Control Program Division of Health Engineering 11 State House Station Augusta, ME 04333</p> <p>PH (207)287-5677 FX (207)287-3059 INET: <a href="mailto:jay.hyland@Maine.gov">jay.hyland@Maine.gov</a></p>		<p>W. Clough Toppan, P.E. Director Division of Health Engineering Department of Human Services 10 State House Station Augusta, Maine 04333</p> <p>PH (207)287-5686 FX (207)287-3165 INET: <a href="mailto:clough.toppan@Maine.gov">clough.toppan@Maine.gov</a></p>



<b>Maryland</b>		
Agreement State	Non-Agreement State	State Liaison Officer
Roland G. Fletcher Environmental Program Manager III Radiological Health Program Air and Radiation Management Administration Maryland Department of the Environment 1800 Washington Blvd Suite 750 Baltimore, MD 21230-1724  PH (410)537-3300 FX (410)537-3198 INET: <a href="mailto:rfletcher@mde.state.md.us">rfletcher@mde.state.md.us</a>		Angelo Bianca, Acting Director Air and Radiation Management Administration Maryland Department of the Environment 1800 Washington Blvd Suite 705 Baltimore, MD 21230  PH (410)537-3255 FX (410)537-3391 INET: <a href="mailto:abianca@mde.state.md.us">abianca@mde.state.md.us</a>
<b>Massachusetts</b>		
Agreement State	Non-Agreement State	State Liaison Officer
Robert Walker, Director Radiation Control Program Department of Public Health 90 Washington Street Dorchester, MA 02121  PH (617)427-2944 FX (617)427-2925 INET: <a href="mailto:Bob.walker@state.ma.us">Bob.walker@state.ma.us</a>		Stephen McGrail, Director Massachusetts Emergency Management Agency 400 Worcester Road P.O. Box 1496 Framingham, Massachusetts 01701  PH (508)820-2010 FX (508)820-2030 INET: <a href="mailto:steve.mcgrail@state.ma.us">steve.mcgrail@state.ma.us</a>
<b>Michigan</b>		
Agreement State	Non-Agreement State	State Liaison Officer
	Liane Shekter Smith , Chief Hazardous Waste and Radiological Protection Section Waste and Hazardous Materials Division Michigan Department of Environmental Quality 525 West Allegan Street PO Box 30241 Lansing, MI 48909-7741  PH (517)373-0530 FX (517)373-4797 INET: <a href="mailto:shekterl@michigan.gov">shekterl@michigan.gov</a>	Liane Shekter Smith , Chief Hazardous Waste and Radiological Protection Section Waste and Hazardous Materials Division Michigan Department of Environmental Quality 525 West Allegan Street PO Box 30241 Lansing, MI 48909-7741  PH (517)373-0530 FX (517)373-4797 INET: <a href="mailto:shekterl@michigan.gov">shekterl@michigan.gov</a>

<b>Minnesota</b>		
Agreement State	Non-Agreement State	State Liaison Officer
Linda Bruemmer, Manager Section of Asbestos, Indoor Air, Lead and Radiation Division of Environmental Health Department of Health 121 E. Seventh Place, Suite 360 P.O. Box 64975 St. Paul, MN 55164-0975  PH (651)215-0945 FX (651)215-0975 INET: <a href="mailto:linda.bruemmer@state.mn.us">linda.bruemmer@state.mn.us</a>		Dianne Mandernach, Commissioner Minnesota Department of Health 85 E. 7th Place, Suite 400 Post Office Box 64882 St. Paul, Minnesota 55164-0882  PH (651)215-5813 FX (651)215-5801 INET: <a href="mailto:dianne.mandernach@state.mn.us">dianne.mandernach@state.mn.us</a>
<b>Mississippi</b>		
Agreement State	Non-Agreement State	State Liaison Officer
Robert W. Goff, Director Division of Radiological Health State Department of Health 3150 Lawson Street, P.O. Box 1700 Jackson, MS 39215-1700  PH (601)987-6893 FX (601)987-6887 INET: <a href="mailto:rgoff@msdh.state.ms.us">rgoff@msdh.state.ms.us</a>		Robert W. Goff, Director Division of Radiological Health State Department of Health 3150 Lawson Street, P.O. Box 1700 Jackson, MS 39215-1700  PH (601)987-6893 FX (601)987-6887 INET: <a href="mailto:rgoff@msdh.state.ms.us">rgoff@msdh.state.ms.us</a>
<b>Missouri</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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<b>Montana</b>		
Agreement State	Non-Agreement State	State Liaison Officer
	Juan Stevens, Coordinator Radiological Health Program Department of Public Health & Human Services Licensure Bureau 2401 Colonial Drive P.O. Box 202953 Helena, MT 59620-2953  PH (406)444-1510 FX (406)444-3456 INET: <a href="mailto:justevens@state.mt.us">justevens@state.mt.us</a>	Roy Kemp, Chief Licensure Bureau Quality Assurance Division Department of Public Health & Human Services 2401 Colonial Drive P.O. Box 202953 Helena, MT 59602  PH (406)444-2868 FX (406)444-1742 INET: <a href="mailto:rkemp@state.mt.us">rkemp@state.mt.us</a>

**Nebraska**

Agreement State	Non-Agreement State	State Liaison Officer
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**Nevada**

Agreement State	Non-Agreement State	State Liaison Officer
Stanley R. Marshall, Supervisor Radiological Health Section Bureau of Health Protection Services Nevada State Health Division 1179 Fairview Drive, Suite 102 Carson City, NV 89701-5405  PH (775)687-5394 ext. 276 FX (775)687-5751 INET: <a href="mailto:smarshall@nvhd.state.nv.us">smarshall@nvhd.state.nv.us</a>		Robert R. Loux, Executive Director Agency for Nuclear Projects 1802 N. Carson St., Suite 252 Carson City, Nevada 89701  PH (775)687-3744 FX (775) 687-5277 INET: <a href="mailto:bloux@govmail.state.nv.us">bloux@govmail.state.nv.us</a>

**New Hampshire**

Agreement State	Non-Agreement State	State Liaison Officer
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**New Jersey**

Agreement State	Non-Agreement State	State Liaison Officer
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<b>New Mexico</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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<b>New York</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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<b>North Carolina</b>		
Agreement State	Non-Agreement State	State Liaison Officer
<p>Beverly O. Hall, Chief Division of Radiation Protection Department of Environment &amp; Natural Resources 3825 Barrett Drive Raleigh, NC 27609-7221</p> <p>PH (919)571-4141 ext. 201 FX (919)571-4148 INET: <a href="mailto:beverly.hall@ncmail.net">beverly.hall@ncmail.net</a></p>		<p>Beverly O. Hall, Chief Radioactive Materials Section Division of Radiation Protection Department of Environment &amp; Natural Resources 3825 Barrett Drive Raleigh, NC 27609-7221</p> <p>PH (919)571-4141 FX (919)571-4148 INET: <a href="mailto:beverly.hall@ncmail.net">beverly.hall@ncmail.net</a></p>
<b>North Dakota</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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<b>Ohio</b>		
Agreement State	Non-Agreement State	State Liaison Officer
<p>Robert Owen, Acting Chief Bureau of Radiation Protection Ohio Department of Health P.O. Box 118 Columbus, OH 43266-0118</p> <p>PH (614)644-2727 FX (614)466-0381 INET: <a href="mailto:rowen@gw.odh.state.oh.us">rowen@gw.odh.state.oh.us</a></p>		<p>Carol O'Claire, Supervisor Radiological Branch Ohio Emergency Management Agency 2855 West Dublin-Granville Road Columbus, Ohio 43235-2206</p> <p>PH (614)799-3915 FX (614)889-7183 INET: <a href="mailto:coclaire@dps.state.oh.us">coclaire@dps.state.oh.us</a></p>
<b>Oklahoma</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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**Oregon**

Agreement State	Non-Agreement State	State Liaison Officer
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**Pennsylvania**

Agreement State	Non-Agreement State	State Liaison Officer
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**Puerto Rico**

Agreement State	Non-Agreement State	State Liaison Officer
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**Rhode Island**

Agreement State	Non-Agreement State	State Liaison Officer
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<b>South Carolina</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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<b>South Dakota</b>		
Agreement State	Non-Agreement State	State Liaison Officer
	<p>John Robertson, Medical Facilities Engineer Office of Health Care Facility Licensure &amp; Certification Systems Development and Regulations 615 East 4th Street Pierre, SD 57501-1700</p> <p>PH (605)773-3356 FX (605)773-6667 INET: <a href="mailto:john.robertson@state.sd.us">john.robertson@state.sd.us</a></p>	<p>Bob McDonald, Environmental Project Scientist Department of Environment and Natural Resources Ground Water Quality Program 523 East Capital Avenue Pierre, SD 57501</p> <p>PH (605)773-3296 FX (605)773-4068 INET: <a href="mailto:bobm@denr.STATE.SD.US">bobm@denr.STATE.SD.US</a></p>
<b>Tennessee</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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<b>Texas</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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<b>Utah</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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<b>Virginia</b>		
Agreement State	Non-Agreement State	State Liaison Officer
	<p>Leslie P. Foldesi, CHP, Director Bureau of Radiological Health Division of Health Hazards Control Department of Health Main Street Station 1500 East Main, Room 240 Richmond, VA 23219</p> <p>PH (804)786-5932 FX (804)786-6979 INET: <a href="mailto:LFOLDESI@VDH.STATE.VA.US">LFOLDESI@VDH.STATE.VA.US</a></p>	<p>Arthur S. Warren, Chief Radiological Planning Virginia Department of Emergency Services 10501 Trade Court Richmond, VA 23236-3713</p> <p>PH (804)897-6500 ext 6587 FX (804)897-6526 INET: <a href="mailto:awarren.des@STATE.VA.US">awarren.des@STATE.VA.US</a></p>

<b>Vermont</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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<b>Washington</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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<b>West Virginia</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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<b>Wisconsin</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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<b>Wyoming</b>		
Agreement State	Non-Agreement State	State Liaison Officer
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