

**From:** [Roberto Torres](#)  
**To:** [lodwick.jeffrey@dol.gov](mailto:lodwick.jeffrey@dol.gov)  
**Subject:** NRC request for additional information - License renewal application  
**Date:** Wednesday, August 21, 2024 10:27:00 AM  
**Attachments:** [Appendix C NUREG-1556, Volume 7, Revision 1.pdf](#)

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Jeffrey C. Lodwick, PhD, CHP  
Radiation Safety Officer

The NRC has received the renewal application for NRC license number 43-17059-01 and determined that the application was not submitted following the most recent NRC licensing guidance. Note that the NRC has issued Revision 1 to NUREG-1556, Volume 7 (see link <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/v7/index.html>). Please complete Appendix C of NUREG-1556, Volume 7, revision 1 (see attached), and submit by reply email with a signed and dated letter to initiate the review of the license renewal application. Also please revise NRC Form 313 to indicate the licensee's full legal name. The current license lists the full legal name as "U.S. Department of Labor, OSHA Salt Lake Technical Center" while NRC Form 313 submitted with the license renewal application states "OSHA Technical Center".

Thank you for your cooperation on this matter.

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## **APPENDIX C**

### **ELECTRON CAPTURE DETECTORS AND X-RAY FLUORESCENCE ANALYZER APPLICATIONS**

## Electron Capture Detectors and X-Ray Fluorescence Analyzer Applications

The U.S. Nuclear Regulatory Commission (NRC) has designed this Appendix to assist the applicant who needs to obtain a license only for a small source or device. Typical items include an electron capture detector (ECD), such as those used in a gas chromatograph (GC) or chemical agent detection or monitoring instrument, as well as small sealed sources used in an X-ray fluorescence analyzer (XRF). This appendix also may be used as guidance for completing a license application that may be for these sources or devices, as well as other requested radionuclides and proposed uses that have a similarly low radiation safety hazard level.

### Regulations

Licensees are subject to all applicable provisions of the regulations in Title 10 of the *Code of Federal Regulations* (10 CFR) 10 CFR Parts 20, 21, 30, 71, and 170, as they pertain to ECDs and XRFs.

This NUREG has already provided information for completing Items 1 through 4 of the application.

Additional information for Item 3 is requested below.

### Item 3: Address(es) Where Licensed Material Will Be Used or Possessed

Specify the street address, city, and State, or other descriptive address (e.g., on Highway 10, 5 miles east of the intersection of Highway 10 and State Route 234, Anytown, State) for each facility where licensed material will be used or stored. A post office box address is not acceptable. In addition, state whether ECD/XRFs will be used at temporary jobsites.

### Item 5: Radioactive Material

- (1) Provide the radionuclide(s) that each ECD/XRF will use.
- (2) Provide the manufacturer and model number of the detector cell, foil source, plated source, or sealed source that each ECD/XRF will use.
- (3) Specify the quantity (activity) of radioactive material that will be in each foil source, plated source, or other sealed source. Provide the number of sources of each foil source, plated source, or sealed source that will be possessed, if known. If the total number for each type of source is unknown, provide an anticipated total.

**Note:** ECDs that contain titanium tritide foils or scandium tritide foils require operating temperature control mechanisms and venting to the outside. Provide information on operating temperature controls and venting information with the application, if the application requests these types of foils.

### Item 6: Purpose(s) for Which Licensed Material Will Be Used

Specify the purpose for which each ECD/XRF will be used.

**Note:** For use of portable ECDs and XRFs, refer to NUREG–1556, Volume 1, for additional guidance on portable devices containing licensed material.

**Item 7: Individual(s) Responsible for Radiation Safety Program and Their Training and Experience**

Provide the name of the person(s) who will be responsible for the ECDs/XRFs. That person(s) will be specifically named on the license. If more than one person is named, designate a single person to be the Radiation Safety Officer (RSO).

If the applicant does not propose ECD or XRF repair or maintenance, then no specific training and experience in using and handling radioactive materials is necessary for individuals who will use the device(s) or supervise their use. No special training or experience is needed to perform leak tests using a leak test kit or to clean detector cells used in ECD devices, provided the source or foil is not removed from the detector cell.

**Item 8: Training for Individuals Working In or Frequenting Restricted Areas**

If the applicant proposes to perform any operations that involve removal of sources containing radioactive material from the device or maintenance and repair of a device that involves the source, then they must ensure a “responsible individual” performs these operations. The responsible individual will have received instruction and training in the principles and practices of radiation safety, the use of radiation detection instruments, and the performance of these operations. Such training may normally be accomplished in 1 or 2 days. In the application, provide the following information:

- Name of each responsible individual who will perform the operations.
- Outline of the instruction and training each responsible individual has received in the principles and practices of radiation safety, the use of radiation detection instruments, and the operations that will be performed, including actual practice in performing the operations. Specify the amount of time spent on each topic in the training.

Persons who will only use an ECD or XRF under the supervision of the responsible individual named in Item 7 need no special training, and their names do not need to be submitted. These supervised individuals should not be permitted to perform any maintenance or repair operations. Only responsible individuals specifically named in Item 7 may perform such operations.

**Item 9: Facilities and Equipment**

10 CFR 30.33(a)(2) states that an application will be approved if the applicant’s proposed equipment and facilities are adequate to protect health and to minimize danger to life or property. As stated in 10 CFR 20.1801 and 10 CFR 20.1802, licensed material stored in an unrestricted area must be secured from unauthorized removal, and licensed materials in an unrestricted area and not in storage must be under the constant surveillance and immediate control of the licensee. These requirements also apply when such devices are used at temporary job sites.

The room, laboratory, or storage area where the device is located should be (i) accessible only to persons authorized to use the device and (ii) locked when an authorized person is not physically present. The application should state that the laboratory or area will be locked or

secured when an authorized person is not present. The room, laboratory, or storage area cannot be considered a restricted area if it is accessible to unauthorized persons.

Describe the facilities where ECD/XRFs will be used and stored. State that the laboratory or area where devices are stored will be locked or secured when an authorized person is not present. Additional information on the use and storage of ECD/XRFs at a temporary jobsite also should be included in the response.

## **Item 10: Radiation Safety Program**

### **10.1 Audit Program**

Licensees must review the content and implementation of their radiation protection programs annually to ensure compliance with NRC regulations and with the terms and conditions of the license. Appendix H of this NUREG contains a suggested audit program that is acceptable to the NRC. All areas indicated in Appendix H of this NUREG may not be applicable to every licensee and may not need to be addressed during each audit.

The applicant is not required to, and should not, submit its audit program to the NRC for review during the licensing phase. However, the audit program may be reviewed during NRC inspections.

### **10.2 Radiation Monitoring Instruments**

A radiation survey instrument for routine uses of ECD/XRF is not required.
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If maintenance and repair operations are proposed as described in Item 7, and the operations involve the sealed source, provide information about the surveys to be performed, the type of radiation survey meter to be used for conducting surveys, the range of the survey instrument, and calibration information, including frequency of calibration. It is not necessary to specify the manufacturer and model number of the radiation survey meter. For more information on radiation survey meters, see "Radiation Safety Program—Instruments," in Section 8.10.2 and Appendix I of this NUREG.

### **10.3 Material Receipt and Accountability**

Licensees are required to maintain records of receipt, transfer, and disposal of licensed material. Loss, theft, or misplacement of licensed material can occur; therefore, control and accountability of ECDs or XRFs must be ensured. License conditions require licensees that use or possess sealed sources to perform inventories of sealed sources every 6 months. Some sealed sources may not be in use or rarely used and are placed into storage. In these cases, licensees should confirm at least every 6 months that these sealed sources have not been disturbed. If authorization is requested to use the devices at temporary jobsites, the licensee should develop procedures that address sign-out of devices for use in the field, control and security of the device in the field, and use of the device to ensure protection of members of the public.

## **10.4 Occupational Dose**

Personnel monitoring devices are not required for the following:

- routine use and normal operation of ECDs/XRFs
- maintenance and repair operations described in Item 7, if the radiation source in the ECD/XRF is in a gaseous form or is nickel-63 (Ni-63)

If proposed uses of ECDs/XRFs include maintenance and repair operations described in Item 7, and these operations involve sealed sources other than in gaseous form, tritium [H-3], or Ni-63, an evaluation for personnel monitoring devices is required for persons performing these operations.

The application should indicate that maintenance and repair personnel will be provided with appropriate personnel dosimeters for use while performing service operations or a dose evaluation indicating that personnel will not be required to wear monitoring devices.

## **10.5 Public Dose**

The applicant is not required to submit a response to the public dose section during the licensing phase. Public dose will be reviewed during inspections to determine compliance with NRC regulations.

## **10.6 Leak Tests**

The NRC requires testing to determine if there is any radioactive leakage from sealed or plated foil sources. Records of surveys and leak test results must be maintained.

When issued, a license will require leak tests of sealed and plated foil sources at intervals as approved by the NRC or an Agreement State and specified in the Sealed Source and Device (SSD) registration certificate. The measurement of the leak test sample is a quantitative analysis that requires instrumentation used to analyze that the sample is capable of detecting 185 becquerels [0.005 microcurie] of radioactivity.

The NRC or an Agreement State may authorize manufacturers, consultants, and other organizations to perform the entire leak test sequence for other licensees or to provide leak test kits to licensees. In the latter case, the licensee is expected to take the leak test sample, according to the sealed source or plated foil manufacturer's (distributor's) and the kit supplier's instructions and return the sample to the leak test service provider for evaluation and reporting results. Leak test samples should be collected at the most accessible area where contamination would accumulate if the sealed source were leaking. Licensees also may be authorized to conduct the entire leak test sequence. For more information about leak testing sealed and plated foil sources, see Section 8.10.7, "Surveys and Leak Tests," in the main body of this NUREG.

## **10.7 Maintenance**

If authorization has been requested to perform maintenance and repair operations as stated in Item 8, then state in the application that the written procedures that the device manufacturer provided will be followed for each operation requested. If a procedure other than that provided

by the device manufacturer will be followed, submit a proposed procedure for each operation requested.

### 10.8 Transportation

If the application requests authorization to use ECDs or XRFs at a temporary jobsite, the applicant must take into consideration U.S. Department of Transportation regulations, particularly blocking and bracing the device containing licensed material. The applicant is not required to submit transportation information with the application. However, transportation issues will be reviewed during inspections.

### Item 11: Waste Management

Because of the nature of the licensed material contained in ECD or XRF devices, the usual disposal option is to transfer the licensed material to an authorized recipient. State in the application that disposal will be by transfer of the radioactive material to a licensee specifically authorized to possess it, or provide information for an alternate method of disposal for NRC review.

Authorized recipients are the original supplier of the device, a commercial firm that the NRC or an Agreement State has licensed to accept radioactive waste from other persons, or another specific licensee authorized to possess the licensed material. No one else is authorized to receive licensed material.

Applicants should submit the NRC Form 313, which can be found in Appendix A of this NUREG. Provide the information requested in Items 1 through 4 directly on the form. Information for the remainder of the application should be attached.

### Suggested Format for Providing Information Requested in Items 5 through 11 of NRC Form 313.

#### C.5 ITEMS 5 & 6: RADIOACTIVE MATERIAL & PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED

Yes	No	Radionuclide	Manufacturer and Model No.	Quantity (activity per source, number of sources in device, and maximum number of sources)	Purpose of Use	Specify Other Uses Not Listed on SSD Certificate
X		EXAMPLE  Nickel 63	EXAMPLE:  Good Company Model A1	EXAMPLE:  15 mCi	EXAMPLE  Sample analysis	EXAMPLE  [x] Not applicable  [ ] Uses are:

Yes	No	Radionuclide	Manufacturer and Model No.	Quantity (activity per source, number of sources in device, and maximum number of sources)	Purpose of Use	Specify Other Uses Not Listed on SSD Certificate
		Hydrogen-3 <sup>1</sup>				<input type="checkbox"/> Not applicable <input type="checkbox"/> Uses are:
		Iron-55				<input type="checkbox"/> Not applicable <input type="checkbox"/> Uses are:
		Cobalt-57				<input type="checkbox"/> Not applicable <input type="checkbox"/> Uses are:
		Nickel-63				<input type="checkbox"/> Not applicable <input type="checkbox"/> Uses are:
		Americium-241				<input type="checkbox"/> Not applicable <input type="checkbox"/> Uses are:
		Other (specify)				

<sup>1</sup>If titanium tritide foils or scandium tritide foils are requested, provide operating temperature control and venting information. (See "Note" in Item 5 of this appendix.)

**C.6 ITEMS 7 THROUGH 11: INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE, TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS, FACILITIES AND EQUIPMENT, RADIATION SAFETY PROGRAM, AND WASTE MANAGEMENT**

Item No.	Title and Criteria	Yes	Description Attached
7.	<b>INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE</b>  RSO Name: _____  Name(s): _____ _____ _____ _____		

Item No.	Title and Criteria	Yes	Description Attached
8.	<p><b>TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS</b></p> <p>If persons will perform any operations that involve removal of sources containing radioactive material from the device or maintenance and repair of a device that involves the source, then</p> <ul style="list-style-type: none"> <li>• Provide the name of each responsible individual who will perform the operations.</li> <li>• Provide an outline of the instruction and training each responsible individual has received in the principles and practices of radiation safety, the use of radiation detection instruments, and the operations that will be performed, including actual practice in performing the operations. Specify the amount of time spent on each topic in the training.</li> </ul> <p>Individuals working under the supervision of a responsible person named in Item 7, above, are not required to have any specific radiation safety training before using an ECD/XRF.</p>		Submit description with application
9.	<p><b>FACILITIES AND EQUIPMENT</b></p> <p>Describe the facilities where ECD/XRFs will be used and stored. State that the laboratory or area where devices are stored will be locked or secured when an authorized person is not present. Additional information on the use and storage of ECD/XRFs at a temporary jobsite also should be included in the response.</p>		Submit description with application
10.	<p><b>RADIATION SAFETY PROGRAM</b></p> <p><b>Audit Program</b></p> <p>The applicant is not required to, and should not, submit its audit program to the NRC for review during the licensing phase. However, the audit program may be reviewed during NRC inspections.</p> <p><b>Radiation Monitoring Instruments</b></p> <p>A radiation survey instrument for routine uses of ECD/XRF is not required.</p> <p style="text-align: center;"><b>OR</b></p> <p>If the applicant proposes to perform maintenance and repair operations, provide information about the surveys to be performed, the type of radiation survey meter to be used for conducting surveys, the range of the survey instrument, and calibration information, including frequency of calibration.</p>		N/A
		[ ]	[ ]

Item No.	Title and Criteria	Yes	Description Attached
10.	<p><b>RADIATION SAFETY PROGRAM (Continued)</b></p> <p><b>Material Receipt and Accountability</b> Physical inventories will be conducted at intervals not to exceed 6 months, to account for all sealed sources and devices received and possessed under the license.</p> <p>If the devices will be used at temporary job sites, confirm that procedures will be developed and implemented to address sign-out of devices for use in the field, control and security of the device in the field, and use of the device to ensure protection of members of the public.</p> <p><b>Occupational Dose</b> Personnel monitoring devices are not required for the routine use and normal operation of ECDs/XRFs.</p> <p style="text-align: center;"><b>OR</b></p> <p>If the applicant proposes to perform maintenance and repair operations of a device that involves a source (other than in gaseous form, H-3 or Ni-63), state that: "We will maintain, for NRC inspection, documentation demonstrating that unmonitored individuals are not likely to receive a radiation dose in excess of 10 percent of the allowable limits in 10 CFR Part 20," or state "We will monitor individuals in accordance with the criteria in the section titled, 'Radiation Safety Program–Occupational Dose' in NUREG–1556, Volume 7, Revision 1, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Academic, Research and Development and Other Licenses of Limited Scope.'"</p>	<p>[ ]</p> <p>[ ]</p> <p>[ ]</p> <p>[ ]</p>	
	<p><b>Public Dose</b> The applicant is not required to submit a response to the public dose section during the licensing phase. Public dose will be reviewed during inspections to determine compliance with NRC regulations.</p>		N/A
	<p><b>Leak Tests</b> Leak tests will be performed at intervals specified in the SSD registration certificate. Leak tests will be performed by an organization that the NRC or an Agreement State has authorized to provide leak testing services for other licensees, or they will be performed using a leak test kit that an organization authorized by the NRC or an Agreement State has supplied to provide leak test kits to other licensees.</p>	[ ]	

Item No.	Title and Criteria	Yes	Description Attached
10.	<p><b>RADIATION SAFETY PROGRAM (Continued)</b></p> <p><b>Maintenance</b>            If authorization has been requested to perform the maintenance and repair operations described in Item 7, state in the application that the written procedures that the device manufacturer provided will be followed for each such operation requested.</p> <p style="text-align: center;"><b>OR</b></p> <p>If a procedure will be followed other than that the device manufacturer provided, submit a proposed procedure for each operation</p> <p><b>Transportation</b>            The applicant is not required to submit its response to transportation during the licensing process. However, transportation issues will be reviewed during inspections.</p>	<p>[ ]</p> <p>*</p>	<p>[ ]</p>
		N/A	
11.	<p><b>WASTE MANAGEMENT</b></p> <p><b>ECDs/XRFs Disposal and Transfer</b>            Disposal will be by transfer of the radioactive material to a licensee specifically authorized to possess it.</p> <p style="text-align: center;"><b>OR</b></p> <p>Provide information for an alternate method of disposal.</p>	<p>[ ]</p> <p>*</p>	<p>[ ]</p>