



# Radiation Safety



## RADIATION PROCEDURES MANUAL PROCEDURE COVER SHEET

Procedure Title: Radiation Safety Technician Qualifications

Procedure Number: RS-21 rev1

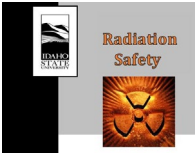
Effective Date: May 17, 2021

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Date: May 17, 2021

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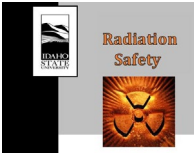


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## 1. INTRODUCTION

It is essential for the Radiation Safety Department to have technicians that are qualified to perform the essential roles and functions that ensure the safe use of radioactive materials and radiation generating devices.

## 2. PURPOSE

The purpose of this procedure is to define the qualifications required of radiation safety technicians to successfully perform essential radiation safety functions.

## 3. SCOPE

This procedure applies to the radiation safety department technicians and is limited to the broad operational functions that fall under the responsibility of the Radiation Safety Department. Additionally, qualification requirements for radiation safety technicians to perform more specialized functions will be at the discretion of the Radiation Safety Officer. Professional radiation safety staff are qualified to perform their roles through education and experience.

## 4. ROLES AND RESPONSIBILITIES

The Radiation Safety Officer has the responsibility to ensure the radiation safety staff and technicians are qualified to successfully perform their radiation safety roles.

The radiation safety staff have the responsibility of training and qualifying the radiation safety technicians to perform their roles independently.

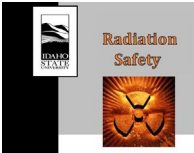
The radiation safety technicians have the responsibility to follow the steps in this procedure to become qualified to perform essential radiation safety tasks.

## 5. REQUIRED MATERIAL(S)

Various.

## 6. PROCEDURE

The following sections describe the necessary steps to qualify radiation safety technicians to independently perform essential radiation safety functions. Qualifications for RS technicians will be documented in the RS Qualifications Workbook.



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### 6.1. Radiation Safety Surveys

Radiation safety department surveys will be performed in accordance with RS-03, Radionuclide Laboratory Surveys, and RS-17, Decommissioning Survey. Successful completion of the following steps will qualify the trainee to independently perform radiation safety surveys.

- 6.1.1. The trainee will read and acknowledge an understanding of the procedure(s).
- 6.1.2. The trainee will shadow a senior RS staff member while performing the survey.
- 6.1.3. The trainee will then perform a survey while shadowed by a senior RS staff member.
- 6.1.4. The trainee must also demonstrate a fundamental knowledge of proper survey techniques, selection of appropriate survey instruments, sample analysis using laboratory instruments, and measurement data interpretation.

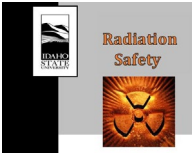
### 6.2. Radioactive Material Package Receipt Surveys

Radioactive material package receipt surveys will be performed in accordance with RS-07, Receipt of Radioactive Material Package, and applicable sections of RS-08, Transport of Radioactive Material. Successful completion of the following steps will qualify the trainee to independently perform receipt surveys.

- 6.2.1. The trainee will read and acknowledge an understanding of the procedure(s).
- 6.2.2. The trainee will shadow a senior RS staff member while performing the survey.
- 6.2.3. The trainee will then perform a survey while shadowed by a senior RS staff member.
- 6.2.4. The trainee must also demonstrate a fundamental knowledge of proper survey techniques, selection of appropriate survey instruments, sample analysis using laboratory instruments, and measurement data interpretation.

### 6.3. Leak Tests

Leak tests will be performed on qualifying sealed sources in accordance with RS-04, Sealed Source Leak Tests and the Americium Beryllium Source Access Procedure for the Idaho State University Reactor, as applicable. Successful completion of the following steps will qualify the trainee to independently perform leak test surveys.



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- 6.3.1. The trainee will read and acknowledge an understanding of the RS-04 procedure and the Americium Beryllium Source Access Procedure for the Idaho State University Reactor.
- 6.3.2. The trainee will shadow a senior RS staff member while performing the survey.
- 6.3.3. The trainee will then perform a survey while shadowed by a senior RS staff member.
- 6.3.4. The trainee must also demonstrate a fundamental knowledge of proper survey techniques, selection of appropriate survey instruments, sample analysis using laboratory instruments, and measurement data interpretation

#### **6.4. Use of the Shepherd Irradiator and Instrument Calibrations**

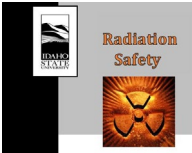
Instrument calibrations are performed in accordance with RS-12, Calibrations, and RS-15, Operational Procedure for Shepherd Sources. A trainee must first become qualified to independently operate the Shepherd irradiators. This qualification process is as follows

##### **6.4.1. Operation of the Shepherd Irradiators**

- 6.4.1.1. The trainee will read and acknowledge an understanding of the RS-15 procedure.
- 6.4.1.2. The trainee will be shown how to operate the Shepherd irradiators by a senior RS staff member.
- 6.4.1.3. The trainee will be verbally quizzed on aspects of relating to the safe use of the irradiators during the demonstration.
- 6.4.1.4. The trainee will take a written exam and must score at least 80% to demonstrate a clear understanding of the procedure.

##### **6.4.2. Instrument Calibrations**

Instrument calibrations will be performed in accordance with RS-12, Calibrations and the instrument manufacturer's calibration instructions. Successful completion of the following steps will qualify the trainee to independently perform calibrations of ISU radiation detection instruments.



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- 6.4.2.1. The trainee must demonstrate a knowledge of the various radiation detection instrument types in use at ISU. A successful understanding will be at the discretion of the senior RS staff member and supplemental instrument specific training will be presented when necessary.
- 6.4.2.2. The trainee will read and acknowledge an understanding of RS-12, Calibrations.
- 6.4.2.3. The trainee will observe a senior RS staff member perform calibrations of each of the instrument type.
- 6.4.2.4. The trainee will perform a calibration for each instrument type under the supervision of a senior RS staff member.

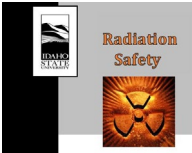
## 6.5. Instrument Response Checks

Instrument response checks will be performed in accordance with RS-24, Instrument Response Checks. Successful completion of the following steps will qualify the trainee to independently perform instrument response checks of ISU radiation detection instruments.

- 6.5.1. The trainee will read and acknowledge an understanding of RS-24, Instrument Response Checks.
- 6.5.2. The trainee will observe a senior RS staff member perform response check of each of the instrument type.
- 6.5.3. The trainee will perform a response check for each instrument type under the supervision of a senior RS staff member
- 6.5.4. The trainee must also demonstrate a fundamental knowledge of source selection and positioning, and measurement data interpretation.

## 6.6. Dosimetry

The issuance, collection, and recordkeeping of dosimetry will be performed in accordance with RS-02, Dosimetry. Successful completion of the following steps will qualify the trainee to perform dosimetry related tasks. Such tasks include: issuing, collecting, shipping, and deactivating dosimeters, managing and recording personnel data, and dose history requests.



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- 6.6.1. The trainee will read and acknowledge an understanding of the RS-02, Dosimetry procedure.
- 6.6.2. The trainee will observe a senior RS staff member perform a dosimetry related task.
- 6.6.3. The trainee will then perform the same task while supervised by a senior RS staff member.

### **6.7. Laboratory Evaluations**

The inspection of radiation laboratories will be performed in accordance with RS-06, Radiation Laboratory Evaluations. Successful completion of the following steps will qualify the trainee to independently perform radiation laboratory evaluations.

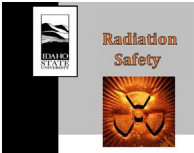
- 6.7.1. The trainee will read and acknowledge an understanding of the RS-06, Radiation Laboratory Evaluations procedure.
- 6.7.2. The trainee will observe a senior RS staff member perform a laboratory evaluation.
- 6.7.3. The trainee will then perform a laboratory evaluation while supervised by a senior RS staff member.

### **6.8. Radioactive Waste Management**

- 6.8.1. The trainee will read and acknowledge an understanding of the RS-19, Radioactive Waste Management procedure. Successful completion of the following steps will qualify the trainee to independently perform radioactive waste management related tasks. Such tasks include: picking up, sewer discharge, and performing characterization measurements.
- 6.8.2. The trainee will observe a senior RS staff member perform a tasks related to radioactive waste management.
- 6.8.3. The trainee will then perform the same task while supervised by a senior RS staff member.

### **6.9. Radioactive Material Sign Out**

- 6.9.1. The trainee will read and acknowledge an understanding of the RS-23, Radioactive Material Sign Out procedure. Successful completion of the following steps will



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qualify the trainee to independently sign out radioactive materials in accordance with the requirements set in RS-23.

- 6.9.2. The trainee will observe a senior RS staff member perform a tasks related to radioactive waste management.
- 6.9.3. The trainee will then perform the same task while supervised by a senior RS staff member.

## 7. FORMS

RS Qualifications Workbook

## 8. Revision Tracker

Revision 1 – addition of the requirement under Section 6.3 Leak Tests, to train RS technicians to the Americium Beryllium Source Access Procedure for the Idaho State University Reactor as applicable.