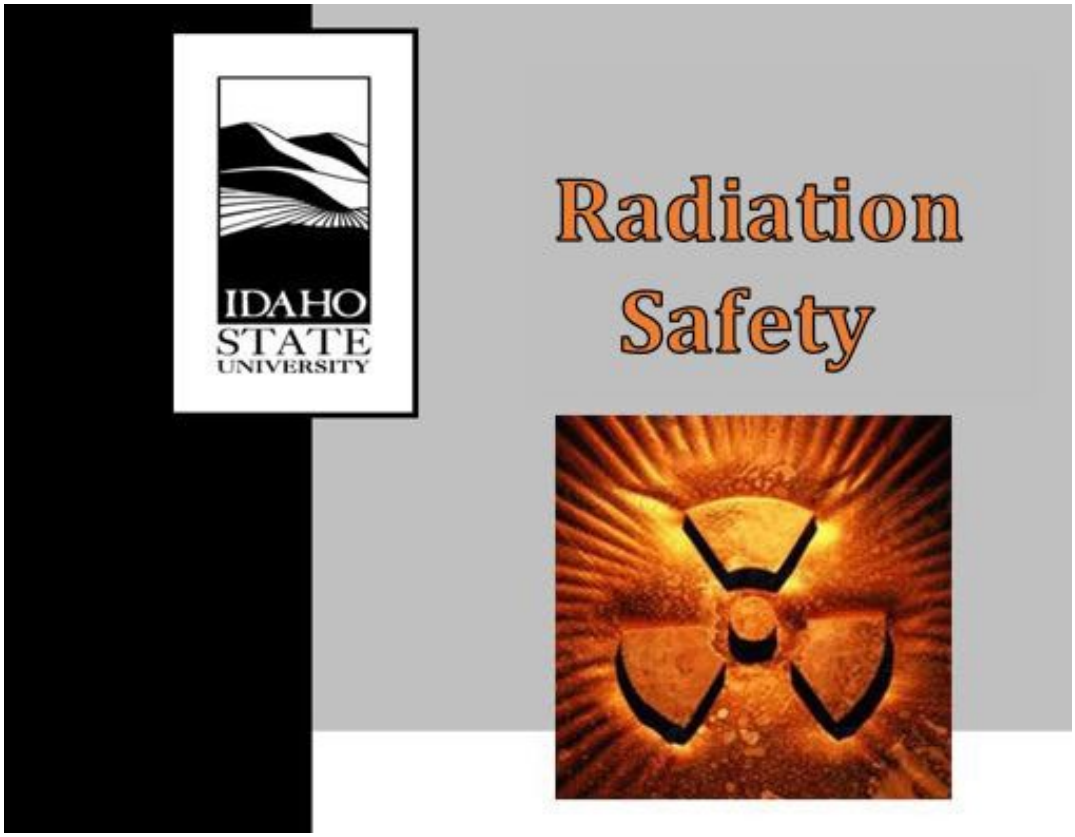

RADIATION PROCEDURES MANUAL

Procedure Cover Sheet

Procedure Title:	Decommissioning Survey
Procedure Number:	RS-17 Rev.0
Effective Date:	01/31/2020

Approved By: Radiation Safety Committee Date: 01/16/2020

Revision History

Revision Number	Author Name	Date	Approved by/date
RS 17.0	Mason Jaussi & John Longley	01/16/20	RSO-01/16/20
RS 17.0	Mason Jaussi	01/20/22	RSC-01/16/20
RS 17.0	Miranda Kriner	12/06/23	RSC-01/16/20

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1. INTRODUCTION

Idaho State University implements the guidance specified by the Nuclear Regulatory Commission in NUREG-1757, Consolidated Decommissioning Guidance, for decommissioning facilities and laboratories within the ISU system. Under a broad scope license, decommissioning plans and NRC notification are not required for decommissioning individual areas and laboratories (NUREG-1757, Section 15.5.3). As such, ISU will perform decommissioning surveys for individual laboratories in accordance with this procedure and maintain records for NRC inspection per 10 CFR 30.35(g).

ISU will decontaminate laboratories to meet the operational limits of the ISU Radiation Safety Manual (Chapter 11). If an entire facility is planned for decommissioning and residual radioactive material will remain, the RSO will develop a decommissioning plan and coordinate review with the NRC as necessary.

2. PURPOSE

The purpose of this procedure is to ensure that decommissioning of laboratories in Idaho State University licensed facilities is in compliance with the NRC decommissioning requirements. Decommissioning of a laboratory is performed upon request of the Authorized User and is only performed when all Radioactive Material (RAM) has been removed from the laboratory and the laboratory is to be released for unrestricted use.

3. SCOPE

This procedure outlines the steps necessary for the decommissioning of a facility or laboratory that is assigned to a permit holder under one of ISU's issued NRC licenses.

4. ROLES AND RESPONSIBILITIES

It is the responsibility of the Authorized User (AU) to request decommissioning of a laboratory assigned to their permit. It is also the responsibility of the AU to request the removal and/or transfer of RAM from the laboratory, prior to the decommissioning survey. It is the responsibility of the RSO to approve the decommissioning survey and authorize the removal of RAM and postings from the laboratory or facility. It is the responsibility of the radiation safety technician to perform the survey in accordance with this procedure.

If decontamination is necessary, the authorized user will perform decontamination with assistance as necessary by radiation safety personnel.

5. ACRONYMS/DEFINITIONS

AU:	Authorized User
ISU:	Idaho State University
GM:	Geiger–Müller
NRC:	Nuclear Regulatory Commission
OSL:	Optically stimulated luminescence
RAM:	Radioactive material
ReSC:	Reactor Safety Committee
ReSCC:	Reactor Safety Committee Chair
RS:	Radiation Safety
RSC:	Radiation Safety Committee
RSCC:	Radiation Safety Committee Chair
RSO:	Radiation Safety Officer

6. REQUIRED MATERIAL(S)

- Optically Stimulated Luminescence Dosimeter (OSL)
- Portable survey instruments
  - GM frisk instrument
  - NaI based μR meter
  - Neutron dose rate meter (if applicable)
- Dry filter paper swipes
- Large area wipes (Masslin) and mop
- Gloves
- Pen
- RPR 20 Form

7. REQUIRED TRAINING(S)

- ISU Radiation Safety Training

8. PROCEDURE

The surveys performed must be thorough and clearly documented so that others can understand them. Prior to performing the survey, the authorized user should be contacted and the following information should be obtained.

- The scope of work performed in the laboratory

- The concentrations, physical, & chemical form of the radionuclides used in the lab.
- Locations where RAM was used or stored
- Locations of any spills of radioactive material

This information is essential to selecting the appropriate survey equipment. Previous surveys should also be reviewed to assist in identifying areas most likely to have contamination present. The surveyor must use the appropriate instrument for the types of RAM used in the laboratory as specified in the user permit.

8.1. Survey

The RPR-20 form is used to record the decommissioning survey measurements. A map of the area being surveyed is drawn and should include enough detail to show what exactly was surveyed (shelf, drawer, cabinet, etc.). The survey should cover areas where RAM has been used, stored, or otherwise could be contaminated e.g., drawers, cupboards, door handles, and fume hoods. Pictures may be used in place of a map as long as the survey points are legible.

8.1.1. Total Contamination Survey

Measure the range of background count rate in an area known to be free of contamination and record on the RPR 20 form. Perform a direct frisk survey using a GM frisker. Areas where material was processed and stored such as fume hoods, work benches and cabinets shall be surveyed completely. While performing a direct frisk, the probe is to be kept ½" from the surface moving at a rate of 1-2" per second. The instrument should be on fast response with the audio ON. If the instrument shows a positive result (greater than twice the background reading), the surveyor should stop movement, switch to slow response, and survey the immediate area looking for the highest count rate. Upon finding the area with highest count rate, the instrument should be allowed to count for approximately 10 seconds before the result is recorded. In addition, perform 10 second static counts over the laboratory in conjunction with the swipe measurements performed below. Record these results on the RPR 20 form and the survey map. Note the areas completely frisked in the comments section of the RPR 20 form.

8.1.2. Removable Contamination Survey

Perform large area wipe surveys over all floor, counter spaces, and primary work areas. Scan the large area wipes with a GM frisker. If elevated activity is detected, perform more detailed surveys to localize the activity and decontaminate as necessary.

Sampling locations to take swipes should be determined after the direct surveys are recorded and after reviewing old survey maps. Focus on likely areas where contamination may be present, and also systematically take removable contamination surveys in order to cover the laboratory. Collect swipes in fume hoods, on door handles, and in other places likely to exhibit contamination.

Record each swipe sample location on the survey map. Each swipe should be screened by GM frisk instrument for excessive RAM contamination that may be on the swipe, placed in a bag, and transferred to a laboratory to be analyzed on the appropriate instrument. The results of the count are recorded on the RPR 20 form in disintegration per minute per 100 cm^2 (dpm/100 cm^2). Laboratory results are attached to the RPR 20 form.

8.1.3. Dose Rate Surveys

Measure the range of background exposure rate in a nearby area known to be free of radioactive material and record on the RPR 20 form. Exposure rate measurements should be performed at work areas, storage locations, and at locations around the laboratory to demonstrate there is no elevated residual radiation field. For areas that may have been activated such as at the Idaho Accelerator Center, specific plans will be developed to address survey of building materials.

Neutron dose rates measurements are only necessary if neutron emitting RAM such as Cf-252 has been used or stored in the laboratory. Follow the same procedure for neutron measurements and record the results on the RPR 20 form.

8.2. Final Condition

If contamination is identified in the survey, the AU will clean the area using either wet wipes, paper towels with scrubbing bubbles, or equivalent cleaning products. Transfer all decontamination materials to radioactive waste. Repeat the survey process above after decontamination and document on the RPR 20 form and map.

If the survey results demonstrate that the residual radiological conditions satisfy the predetermined criteria (action level) for release for unrestricted use, or use with restrictions, a memo will be written to release the site. The memo should include the following sections:

- A historical review of the location in which RAM was used or stored,
- A summary of the survey results
- A statement indicating release of site and restrictions if applicable
- A notation of any areas that were not surveyed but may contain residual radioactive material e.g. duct work associated with fume hoods

The RPR 20 form and memo must be reviewed and signed by the Radiation Safety Officer. The survey will be scanned and saved in the Box folder for Decommissioning (200). The RSO will add any locations with potential residual radioactive material to the spreadsheet for tracking these locations to support final facility decommissioning.

The RSO will also update the list of ISU laboratories handling radioactive material to reflect the decommissioning survey results. The postings in a decommissioned lab are only removed upon approval of the RSO.

9. LIST OF FORMS

RPR 20 - Decommissioning Survey Form

10. REFERENCES

Idaho State University Radiation Safety Manual, Rev 13: 5 December, 2019.

Multi-Agency Radiation Survey and Site Investigation Manual, Rev 1: August 2000, Section 4.4 and 6.7.2.1.

Idaho Department of Health and Welfare, Rules and Regulations, Idaho Radiation Control Regulations, Title 1, Chapter 9.

U. S. Nuclear Regulatory Commission, Consolidated Decommissioning Guidance: Decommissioning Process for Materials Licensees, NUREG-1757, Vol. 1, Rev. 2.

U. S. Nuclear Regulatory Commission, Standards for Protection Against Radiation, 10 CFR 20.

U.S. Nuclear Regulatory Commission, Rules of General Applicability to Domestic Licensing of Byproduct Material, 10 CFR 30.

11. CHANGE HISTORY

None.

12. APPENDICES

None.