



Radiation Safety



RADIATION PROCEDURES MANUAL PROCEDURE COVER SHEET

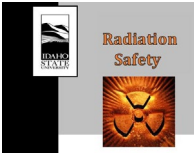
Procedure Title: Accountability of Activated Materials
Procedure Number: IAC-RP-101 Rev 0
Effective Date: 01-AUG-2021

Reviewed By: John Longley
Radiation Safety Officer

Date: 02-JUL-2021

Approved By: Jan Stone
IAC Director

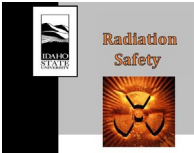
Date: 7/2/21



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1. INTRODUCTION

The requirements of 10 CFR 20.1801, and 1802 specify the licensee secure licensed materials from unauthorized removal or access and maintain constant surveillance of licensed materials when not in storage. These regulations also apply to accelerator produced radioactive material, regulated as by-product material. The Idaho State University Radiation Safety Manual (RSM) requires that each Authorized User (AU), maintain complete records of all acquisitions, uses, transfers and disposals of radioactive material.

2. PURPOSE

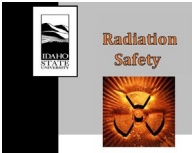
This procedure details the process for the tracking of by-product material from production to final disposition.

3. SCOPE

The procedure applies to the Idaho Accelerator Center (IAC) safety and operational staff, primary investigators, researchers, experimentalists, and research assistants involved in preparing targets for irradiations where the goal is to produce by-product material.

4. ROLES AND RESPONSIBILITIES

- The Authorized User (AU) is responsible for the tracking and management of all radioactive material possessed, stored, acquired, or produced under his or her radiation safety program or license at the IAC.
- The Radiation Safety Officer is responsible for maintaining compliance with the limits established for the Radiation Safety Programs and Idaho State University's NRC licenses.
- The Radiation Safety Staff (RSS) and the Accelerator Operations Staff will assist the AU by performing tasks related to activated material accountability in accordance with this procedure.
- Researchers and Experimentalists must complete the General Activation Form and follow the instructions specified in this procedure.



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5. REQUIRED MATERIAL(S)

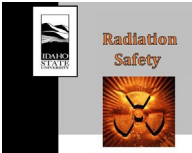
- General Activation Form (Procedure IAC-RP-102)
- Dosimetry

6. PROCEDURE

The following sections outline the steps taken by the experimentalists, radiation safety staff, and the accelerator engineers and operators to ensure safe and compliant accountability of activated materials.

6.1. Experimenter

- 6.1.1. Complete the General Activation Form as specified in IAC-RP-102, Section 6.4.
- 6.1.2. Obtain a target number from the RSS and enter on the form.
- 6.1.3. Complete a description of the target on the General Activation Form.
- 6.1.4. Describe all materials including witness foils (e.g. nickel) and pure chemicals. If pure chemicals or RCRA metals (As, Ba, Cd, Cr, Pb, Hg, Se, Ag) are present, contact the AU or RSS to evaluate for possible mixed waste issues. Add discussion of sub parts (witness foils etc). Subparts will be tracked as target number -001, -002, etc. Use additional pages as necessary to fully describe the target.
- 6.1.5. Enter the expected radionuclides that will be produced and expected activity of each. This should include the nuclides expected for research and impurity nuclides if possible.
- 6.1.6. Enter the irradiation date, start time, stop time, and elapsed irradiation time on the form.
- 6.1.7. Enter the beam parameters on the form.
- 6.1.8. Enter your name and the name of the accelerator operator on the form.
- 6.1.9. Accelerator operator will perform the irradiation in accordance with procedure IAC-RP-102.
- 6.1.10. After irradiation is complete, experimenter will obtain dose rate information from the accelerator operator and enter on the form.
- 6.1.11. Transfer the form to the RSS.
- 6.1.12. The RSS will enter the target information in the activated target log.
- 6.1.13. The experimenter will perform gamma spec measurements on the source and report measured activity to the RSS.



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- 6.1.14. The RSS will update the activation log with the measured activity.
- 6.1.15. The IAC will store the target for 30 days to allow the experimenter to perform necessary measurements.
- 6.1.16. At 30 days the experimenter will accept possession of the target and ship it to themselves or the RSS will transfer the target to radioactive waste. If transferred to radioactive waste, the waste tag number will be entered for storage location in the activated target log.
- 6.1.17. The RSS will maintain waste tags by calendar year. One waste tag will include items that are pure NARM (Ra-226 and accelerator produced). Separate waste tags will be created for other radioactive materials (U, Th, Np, etc.). Waste addition logs will be maintained for the NARM waste tags and will include all target numbers placed in the waste tag.

7. FORMS

General Activation Form (Procedure IAC-RP-102)