Radiological Control - Overview

Brief

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BRIEF

Policy Summary

This policy describes Berkeley Lab's approach to ensuring that all types of radiological work activities are conducted safely and in accordance with applicable regulations and DOE requirements.

Who Should Read This Policy

- All persons who plan to work in or near an area controlled for radiological protection or who plan to work with or support work with radiation-generating devices or radiological materials

To Read the Full Policy, Go To:

The POLICY tab on this wiki page

To Read the ES&H Program Details, Go To:


Contact Information

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Policy

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POLICY

A. Purpose

This policy describes Lawrence Berkeley National Laboratory's (Berkeley Lab's) approach to ensuring that all types of radiological work activities are conducted safely and in accordance with applicable regulations and DOE requirements.

B. Persons Affected

All persons who plan to work in or near an area controlled for radiological protection or who plan to work with or support work with radiation-generating devices or radiological materials

C. Exclusions
This policy and the related radiological control policies, programs, and procedures implemented at Berkeley Lab do not apply to:

1. Background radiation, including naturally occurring radioactive material (NORM) or material and equipment that are not distinguishable from background as described in the DOE-approved Berkeley Lab Radiation Protection Program.
2. Consumer products containing nominal amounts of radioactive material or producing nominal amounts of radiation. Note: If there is ambiguity or uncertainty about whether or not an item falls under the definition of "commercially available," the Radiological Control Manager (RCM) must make the determination.
3. Medical and dental exposures including:
   a. Radiation doses received by a patient for the purposes of medical diagnosis or therapy
   b. Radiation doses received from participation as a subject in medical research programs
4. Activities regulated by other federal agencies including:
5. Activities regulated by the U.S. Nuclear Regulatory Commission (NRC) or other federal agencies (subject to RCM approval)
6. Radioactive material transportation performed under the authority of the Department of Transportation (generally, all off-site transportation)
7. Radioactive material transportation not performed by DOE or a DOE contractor

D. Policy Statement

D.1 General

All types of radiological work activities at Berkeley Lab must be conducted safely and in accordance with applicable regulations and U.S. Department of Energy (DOE) requirements. DOE's basic standards for occupational radiation protection are described in the Code of Federal Regulations, Title 10, Part 835, Occupational Radiation Protection, hereafter referred to as "the Rule." The Rule requires Berkeley Lab to have a DOE-approved Radiation Protection Program (RPP) document that describes the Laboratory's implementation methodology. Berkeley Lab is committed to maintaining full compliance with all parts of 10 CFR 835. The following apply:

- The DOE-approved RPP is legally binding between Berkeley Lab and DOE, and prevails in case of ambiguity with other Berkeley Lab documents.
- The Rule applies to Berkeley Lab management, supervisors, and individuals, including subcontractors, who handle radioactive materials, operate radiation-producing machines, or may be exposed to ionizing radiation because of their work.
- Berkeley Lab radiological work must comply with the requirements of the RPP, whether conducted on- or off-site, as long as Berkeley Lab has overall responsibility for the work.
- No one may act (or cause others to act) in a manner inconsistent with the Rule or any program, plan, schedule, or other process established by the Rule; however, nothing in the Rule shall be construed as limiting actions that may be necessary to protect health and safety.
- Failure to comply with RPP requirements could necessitate reporting to DOE under the provisions of DOE Order 231.1B, Environment, Safety and Health Reporting; 10 CFR 830 Subpart A, Quality Assurance Requirements; or the Price-Anderson Amendments Act (PAAA).

Berkeley Lab is required to accurately and completely characterize each Berkeley Lab facility containing radioactive and/or fissionable materials per 10 CFR 830, Nuclear Safety Management. This Nuclear Safety Program is planned, conducted, and documented in accordance with DOE Standard DOE-STD-1027-92 (Change Notice No. 1 [CN1], Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports. These management and inventory controls are implemented by the Radiation Protection Group (RPG) with management oversight by the Radiological Control Manager (RCM) and institutional oversight by the Radiation Safety Committee (RSC) and the Office of Contractor Assurance.

D.2 The As Low As Reasonably Achievable (ALARA) Program

Title 10 CFR 835 requires DOE activities to develop and implement plans and measures to maintain occupational radiation exposures as low as reasonably achievable (ALARA).

ALARA is integrated into all radiological work at Berkeley Lab. The extent and rigor of application of each ALARA Program element is driven by the potential worker exposure in each case.

Key components to the Berkeley Lab ALARA Program are the following:

- Commitment of all levels of management and the workforce at Berkeley Lab to the ALARA Program principles and processes
- Training, including testing of application and comprehension ALARA elements, for all personnel involved in radiological operations
- Integrating methods of maintaining ALARA occupational exposures into the plans, designs, and operations for new radiological facilities, new or revised work processes, or facility modifications
- Periodically conducting and reporting on comprehensive RPP compliance audits to senior management and
- Retention of ALARA documents and records to demonstrate compliance

Oversight of the ALARA Program is provided by formal scheduled RSC reviews, regular RCM monitoring, and periodic internal audits.

D.3 Facility Modifications and Radiological Design Considerations

Radiological control performance is affected by human performance and engineered design features. General design criteria for new Berkeley Lab facilities and major modifications to existing facilities are provided in 10 CFR 835, and specific design criteria are provided in the Conduct of
Radiological Work policy.

E. Roles and Responsibilities

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<th>Responsibility</th>
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| Laboratory Director                            | • Is responsible for Berkeley Lab's compliance with 10 CFR 835 by ensuring complete and comprehensive implementation of the RPP  
• Appoints the Laboratory's Radiological Control Manager (RCM)  
• Charters the Laboratory’s Radiation Safety Committee                                                                                                                                                                                                                               |
| Radiological Control Manager (RCM)             | • Provides the technical expertise and management authority necessary for effective implementation of all program elements  
• Ensures that RPP activities comply with applicable 10 CFR 835 regulations  
• Maintains the RPP and ensures its effective promulgation and implementation                                                                                                                                                                                                       |
| Radiation Safety Committee (RSC)               | • Advises and guides Laboratory managers and the RCM on all RPP-related matters  
• Reviews and recommends approval of radiation safety policies  
• Guides EHS Division and radiation user divisions in carrying out radiation safety programs  
• Provides a forum to ensure that important radiation safety issues receive appropriate, balanced, and expert review before being acted upon                                                                                                                                                                           |
| Radiation Protection Group (RPG)               | • Communicates to line management the radiological work requirements applicable to individual facilities and projects through work authorizations, training, and support service programs described in this document  
• Supports radiological workers by performing appropriate hazard evaluations, developing applicable radiation safety authorization documents, and providing all necessary field support services, including assisting and guiding workers in the radiological aspects of the job  
• Has the responsibility and authority to stop work or mitigate the effect of a deleterious activity  
• Manages and monitors Berkeley Lab radiological inventories  
• Manages the characterization of Berkeley Lab facilities containing radioactive and/or fissionable materials                                                                                                                                                                                      |
| Line managers                                  | • Are accountable for implementation and compliance with radiation safety requirements as they apply to their facilities and work  
• Are responsible for training or arranging for training of radiological workers at least to the level that the worker can recognize questionable or deteriorating radiological conditions and seek advice from RPG staff  
• Has the responsibility and authority to stop work or mitigate the effect of a deleterious activity                                                                                                                                                                                                 |
| Radiological workers (including all categories of workers, such as subcontractors, employees, affiliates, etc.) | • Are responsible for adhering to all policies and program procedures related to Berkeley Lab’s RPP  
• Have sufficient training to recognize questionable or deteriorating radiological conditions and seek advice from RPG staff  
• Have the responsibility and authority to stop work or mitigate the effect of a deleterious activity. The actions or presence of RPG personnel does not absolve the workers of their responsibility for properly conducting radiological control aspects of the job.                                                                 |

F. Definitions/Acronyms

<table>
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<th>Term</th>
<th>Definition</th>
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| Background radiation                | 1. Naturally occurring radioactive materials (NORM) that have not been technologically enhanced  
2. Cosmic sources  
3. Global fallout as it exists in the environment (such as from the testing of nuclear explosive devices)  
4. Radon and its progeny in concentrations or levels existing in buildings or the environment which have not been elevated as a result of current or prior activities and  
5. Consumer products containing nominal amounts of radioactive material or producing nominal amounts of radiation. |

G. Recordkeeping Requirements
The care, maintenance, and disposition of RPG records will be done in accordance with Berkeley Lab records management policies and procedures, as listed in the Requirements and Policies Manual (PUB-201).

### H. Implementing Documents

<table>
<thead>
<tr>
<th>Document number</th>
<th>Title</th>
<th>Type</th>
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<tr>
<td>07.08.001.001</td>
<td>Radiation Protection Program</td>
<td>Program</td>
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### I. Contact Information

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### J. Revision History

<table>
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<tr>
<th>Date</th>
<th>Revision</th>
<th>By whom</th>
<th>Revision Description</th>
<th>Section(s) affected</th>
<th>Change Type</th>
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<tr>
<td>1/2/2012</td>
<td>0</td>
<td>D. Kestell</td>
<td>Rewrite for wiki (brief)</td>
<td>All</td>
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<tr>
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<td>1</td>
<td>Q. Le</td>
<td>Rewrite for wiki (policy)</td>
<td>All</td>
<td>Major</td>
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<td>1.1</td>
<td>Q. Le</td>
<td>Minor changes</td>
<td>Section C.1 exclusions, Source Requirements</td>
<td>Minor</td>
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### Document Information

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<tbody>
<tr>
<td>Document number: 07.08.001.000</td>
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<tr>
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<td>RPM Section (cross-reference): none</td>
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<td>Functional Division: EHS</td>
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<td>Prior reference information (optional): PUB-3000, Ch. 21</td>
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### Source Requirements Documents

- 10 CFR 835, *Occupational Radiation Protection*  
- 10 CFR 830, *Nuclear Safety*  
- DOE Order 460.1C, *Packaging and Transportation Safety*  
- DOE Order 420.2C, *Safety of Accelerator Facilities*  
- DOE Order 231.1B, *Environment, Safety and Health Reporting*  
- DOE Order 474.2, *Nuclear Material Control and Accountability*  
- 49 CFR Subtitle B, U.S. Department of Transportation (DOT) Rule, Other Regulations Relating to Transportation, Chapter 1  
- International Air Transportation Association (IATA) Dangerous Goods Regulations

### Related Berkeley Lab Policies

- 07.08.002.000 Radiological Control Standards  
- 07.08.003.000 Conduct of Radiological Work  
- 07.08.004.000 Radioactive Materials
Implementing Documents

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