ERNEST ORLANDO LAWRENCE
BERKELEY NATIONAL LABORATORY

Environment, Health, & Safety
Training Program

EHS 432 ~ Radiation Protection -Lab Safety
Course Syllabus

Subject Category: Radiation Protection
Course Length: 4.5 hour
Delivery Mode: Classroom

Course Prerequisite: EHS 400
Medical Approval: None

Course Purpose: This course is designed to provide new employees with the radiation control measures employed at LBNL, including the various programs used to authorize radiological work, to enable them to work safely with radiation sources and radioactive materials at Berkeley Lab. The advanced concepts presented in this course include, ALARA, contamination control, radiation monitoring and documentation, proper use of personnel protective equipment, spill response, and proper posting and labeling. This course is mandatory prior to commencing work with unsealed radioactive material or sealed radioactive sources. Other radiation protection courses may also be required and will be specified in the relevant radiological authorization (RWA, SSA, RWP etc) covering the work.

Course Objectives: EH&S 432 covers the following topics:
- Review of radiological authorization programs at LBNL
- Likely sources of radioactive contamination.
- Methods used to control radioactive contamination.
- Purpose of articles of personal protective clothing.
- Good practices to prevent radioactive contamination.
- Normal methods of decontamination.
- Performance check of a portable survey meter.
- The following terms:
  - Sealed Radioactive Source
  - Accountable Sealed Source
  - Exempt Sealed Source
  - Sealed Source Custodian
  - Sealed Source User
  - Source Integrity Test (Leak Test)
- Responsibilities of a sealed Source Custodian.
- Actions required to transfer a sealed source outside LBNL.
- Proper unsealed radioactive material and sealed radioactive source labeling and storage practices at LBNL.
- Criteria used for removal of a source from inventory based on removable activity.
- Preferred action to take when a source is discovered to be "missing".
- ALARA principles
- LBNL policy on procurement, storage, and use of radioactive materials, including sealed radioactive sources.
- Demonstrate proper use of a Ludlum model 3 with a pancake GM probe.

Instructors:
Jeffrey Bramble (x6242)
Brian Fairchild (x6212)
David Kestell (x7157)

Course Instructional Materials:
- LCD Projector
- VCR for video "Working Safely with Radiation"
- Paper flip chart and white board
- Geiger Counter Beta-Gamma Survey Meter
- Training mats containing sealed sources
- Radiation safety postings and signs

Training Compliance Requirements: This course is designed to meet, in part, the requirements of 10CFR835 section 901 (b),

which states that each individual shall demonstrate knowledge of radiation safety topics:

1. before being permitted unescorted access to radiological areas, and
2. before performing unescorted assignments as a radiological worker.

Other radiation protection courses may be required and will be specified in the relevant radiological authorization (RWA, SSA, RWP etc) covering the work.

Course Handouts:

- Student Manual
- Copy of Power Point Presentation
- User Survey Map

Participant Evaluation: Written evaluations regarding the effectiveness of the trainer, the training, and the visual aids.

Written Exam: Yes. Students must score at least 80% on a multiple choice exam to pass the course.

Practical Exam: Yes. Students must demonstrate proper survey techniques and survey documentation.

Retraining/Recertification: Every two years. Documented as EH&S 401.

WEB Resource: EH&S Training Program website: www.lbl.gov/ehs/training/index.shtml
LBNL Pub. 3000. Chapter 21: www.lbl.gov/ehs/pub3000/CH21.html