



Environment, Health, & Safety
Training Program

EHS 0475 ~ Radiation Protection - X-ray Awareness

Course Syllabus

Subject Category: Radiation Protection

Course Length: Approximately 1-hour

Delivery Mode: Online

Course Prerequisite: EHS0470 (GERT), formerly EHS0405

Medical Approval: NO

Course Purpose: This course is designed to inform employees of the health and safety risks associated with the operation and use of intentional x-ray emitters, such as x-ray diffraction, x-ray fluorescence, and x-ray irradiator machines, and to enable them to work safely with these devices at Berkeley Lab. This introductory course is mandatory prior to commencing work with x-ray machines authorized by an X-ray Authorization (XA). Other radiation protection courses may also be required and will be specified in the XA covering the work.

Course Objectives: At the end of the course, the successful learner will be able to:

- Identify the health effects associated with acute and chronic over exposure to x rays
- Identify requirements for declared pregnant workers
- Identify four factors that determine the health effects from over exposure to x rays
- Identify the engineered controls that protect users from over exposure to x rays
- Describe the actions that affect the safe operations of x-ray machines
- Describe user responsibilities in maintaining safe operation of x-ray machines
- Describe the course of action to follow when x-ray equipment does not function as it should or an x-ray area monitor alarms
- Identify additional requirements that must be completed following this course that must be completed prior to working with an x-ray machine

Course Instructional Materials:

- Online training that utilizes text, audio, video, interactions and assessment.
- Online resources available within the course

Training Compliance Requirements: This course is designed to meet, in part, the requirements of 10CFR835 section 901 (a), which states that each individual shall complete radiation safety training on the topics established at § 835.901(c) commensurate with the hazards in the area and the required controls:

1. before being permitted unescorted access to controlled areas, and
2. before receiving occupational dose during access to controlled areas at a DOE site or facility.

Other training, such as EHS0471 and EHS0472 (formerly 400 and 432, respectively) may also be required depending on the work assignment.

Written Exam: Students must pass comprehensive multiple choice final test with a score of at least 100% to receive credit for the course.

Practical Exam: None

Retraining/Recertification: 2 years. Retraining is normally accomplished as part of the annual renewal of radiation work authorizations (RWA, SSA or RWP).

Challenge exam: A challenge exam may be taken, in lieu of the online training, by individuals with adequate prior training and experience in radiation protection. Contact the X-ray Safety Officer (x2278) for information on taking the challenge exam.

WEB Resource: EH&S Training Program web page @ <http://www.lbl.gov/ehs/html/training.htm>.