

International Brotherhood of Teamsters - NIEHS Worker Training Grants

Course Description

Course Title	Radiological Worker II Course
Student Contact Hours	24 Hours
Course Description	This course is designed to satisfy the U.S. Department of Energy training requirements for workers who enter and work in radiologically controlled areas at DOE facilities.
Intended Audience	Workers who work at, or have the potential to work at, DOE facilities and, will, enter and work in radiologically controlled areas, including radiation areas, high radiation areas, very high radiation areas, contamination areas, high contamination areas or airborne radioactivity areas. This training is required for many workers involved in DOE environmental remediation.
Applicable Standards	<ul style="list-style-type: none">• 10 CFR §835.901: <i>Radiation Safety Training</i>.• DOE G-441.1-12: DOE Radiation Safety Training Guide.
Teaching Methods	This course uses the DOE Systematic Approach to Training and includes: <ul style="list-style-type: none">• Instructor lecture with student questions and discussion.• Small group student activities.• Demonstration of equipment and procedures.• Dress-out in anti-contamination clothing and air purifying respirators.• Hands-on use of frisking and monitoring equipment.• Practice remediation or inspection activities in a simulated radiation/contamination area.
Curriculum Materials	<ul style="list-style-type: none">• 161-page student manual: <i>Teamsters Radiological Worker Training</i>, that includes 9 modules based on the DOE Radiological Worker II training manual.• One or more brief videos on atomic theory, DOE site conditions, and/or contamination reduction practices.
Other Requirements	<ul style="list-style-type: none">• Two instructors teach this course.• A student/instructor ratio of no more than 5:1 will be maintained during dress-out activities.
Instructor Qualifications	<ul style="list-style-type: none">• Taken this course as a student; holds a current DOE Rad Worker II card.• Completed a train-the-trainer course for this course.• Completed the Basic Instructor Training Course (BIT).• Taught this course under the supervision of an experienced instructor.• Evaluated by the Program's Industrial Hygienist.
Testing and Performance Evaluation	<ul style="list-style-type: none">• Student Performance Demonstration (Practical Examination) based on facility-specific needs and procedures.• 50-Question multiple-choice Challenge Examination (Post-Test). 40 correct (80%) required to pass.
Modules and Learning Objectives	This course covers the learning objectives in the student manual, which are based on the DOE Radiological Worker II Core Learning Objectives. The learning objective topics are listed on the following page.

Introduction (1 hours)

Student and instructor introductions. Paperwork. Course overview.

Radiological Fundamentals (3 hours)

Parts of the atom. Ionization, ionizing radiation, radioactive material, radioactive contamination, radioactivity and radioactive half-life. Ionizing radiation vs. non-ionizing radiation. Physical characteristics, biological hazards, range, shielding and sources. Measurement units.

Biological Effects of Radiation Exposure (3 Hours)

Average annual doses. Sources of natural background and man-made radiation. Damage to cells. Effects of radiation on cells. Acute dose, chronic dose, somatic effect, heritable effect, prenatal radiation dose. Relative risks of occupational and background exposures.

Radiation Limits (2 Hours)

Facility administrative control levels. DOE limits, DOE administrative control level and Facility administrative control levels. Prenatal radiation exposure. Worker responsibility.

ALARA Programs (1 Hour)

ALARA. DOE/Site management policy for ALARA. Responsibilities of management, Radiological Control Organization and the radiological worker for ALARA. Protective measures of time, distance and shielding. Reducing external radiation dose and internal radiation dose. Pathways by which radioactive material can enter the body. Minimizing radioactive waste.

Personnel Monitoring (2 Hours)

Personnel dosimeters. Internal monitoring. Worker responsibilities. Obtaining radiation dose records. Reporting doses from other sites and from medical applications.

Radiological Postings and Controls (1 Hour)

Radiological Work Permits (RWPs). Colors and symbol. Buffer areas. Underground radioactive material areas. Radiation areas. Soil contamination areas. Radioactive material areas. Fixed contamination areas. Personnel contamination monitors. Worker responsibilities.

High and Very High Radiation Areas (1 Hours)

High radiation area and very high radiation areas. Signs and postings. Site-specific sources and locations. Entry, work and exit requirements. Administrative and physical controls. Emergency response, DOE and site administration guidelines for control of emergency exposure.

Radiological Emergencies (1 Hour)

Purpose and types of emergency alarms. Responses to emergencies and/or alarms. DOE and site administrative occupational emergency radiation dose guidelines.

Radioactive Contamination Controls (1 Hour)

Fixed, removable and airborne contamination. Sources. Control. Protective clothing. Monitors. Decontamination. Contamination, areas. Entry, work and exit requirements.

Simulated Radiological Site Work and Student Performance Demonstration (4 hours)

Read, discuss and sign the simulated Radiological Work Permit. Dress-out in anti-C clothing and APR. Monitoring, inspection, or other simulated activities. Remove PPE, self-frisk.

Review (2 Hours)

Review course. Emphasis on “problem topics” of atomic theory and biological effects.

Challenge Examination (Post-test) and Evaluation (2 Hours)

50-question post-pest. 40 correct (80%) required to pass. Student evaluation forms.