



Pennsylvania State Fire Academy

1150 Riverside Drive
Lewistown, PA 17044-1979

Pennsylvania Emergency Management Agency

2605 Interstate Drive
Harrisburg, PA 17110

Minimum Standard for Accreditation (MSA)

Original program: 9/2009

Revised: 3/2014

Course Title: G-320 Fundamentals Course for Radiological Response (Radiological Officer Initial Course) (G-320)

Length of Course: 24 Hours

Lecture/Lab Breakdown: 16 hours / 8 hours

Target Audience: This course is intended for first response personnel and members of hazardous materials teams primarily at the local and tribal level of government. This course is also appropriate for first receivers and other first responders identified within the FEMA resource typing initiative. Resource typing is an important component of the National Incident Management System (NIMS).

Prerequisites: The Federal Emergency Management Agency's Independent Study Course, Radiological Emergency Management (IS-3) and Radiological Response Team Initial Course (RRTIC [16 Hr MERRTT course]).

Referenced Texts: FEMA Fundamentals Course for Radiological Response (FCRR) Student Manual. Instructor Guide and PowerPoint provided on CD by the Center for Domestic Preparedness (CDP). Latest edition of the Emergency Response Guidebook, Office of Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, (<http://hazmat.dot.gov/pubs/erg/gydebook.htm>). Transport of Radioactive Materials: Q&A about Incident Response, Federal Emergency Management Agency, Emergency Management Institute, FEMA Publication 358.

Course Goal: The purpose of this course is to provide the coursework to help qualify participants to serve as a Radiological Officer (RO). This course meets the Operations Level Competency for first responders and hazardous materials teams who may encounter or be called to manage radiological incidents. This course addresses Nuclear Power Plant, Transportation, Nuclear Weapons, WMD and Hazardous Material hazards. Participants will be able to support planning, emergency response, recovery activities, evaluation, NIMS/ICS applicability and exercising a radiological protection system (RPS) in preparation for a radiological incident. The course will include Pennsylvania specific information and requirements.

Description of Course: Provide participants with an understanding of the roles and responsibilities of the Radiological Officer including administrative, equipment, team and advisory responsibilities. Describe the framework within which the radiological response team functions. Provide fundamental knowledge of radiation and its affects, building on participants' previous training and experience and include the proper response and pre-recovery procedures for a radiological incident.

Description of Methodology to be used: (Brief): Lecture, demonstration, PowerPoint presentations, small group activities, and group discussion. Maximum class size is 30 students.

Student Equipment/Supplies Needs: (Provided by student) Note taking materials (Pen/Pencil, paper); Dosimeters and radiation survey instruments (personal or agency provided).

Equipment/Audiovisual/Supply requirements: (Provided by ETA and or sponsoring agency) Classroom setting with chairs and tables; computer with capabilities to play DVDs, LCD projector screen; additional tables for practical exercises; gamma emitting and exempt sources; dosimeters and chargers; radiation survey meters (such as Ludlum Model 3 and Eberline RO-20 Ion Chamber) or others instruments used by attendee; additional handouts to include Pennsylvania specific radiological response requirements, and other handouts per instructor choice.

Special Notes & Conditions: Minimum of students 10, Maximum of 30 students in class. Two (2) Instructors are required for this course.

COURSE OUTLINE DAY ONE

<u>Time</u>	<u>Content</u>
0:30	Registration
2:00	Module 1: Course Introduction (includes breaks)
1:30	Module 2: Radiation Basics (includes breaks)
1:30	Module 3: Radiological Units (includes breaks)
1:30	Module 4: Biological Effects (includes breaks)
1:00	Module 5: Pathways of Radionuclide Transport
8.0	

COURSE OUTLINE DAY TWO

<u>Time</u>	<u>Content</u>
2:00	Module 6: Basic Principles of Exposure Limits and Guidelines (includes breaks)
1:30	Module 7: Hazard Recognition (includes breaks)
0:30	Module 8: Sources of Radiation and Radioactive Material Shipments
1:00	Module 9: Incident Command System and Radiological Response
2:00	Module 10: Exposure and Contamination Control
7.0	

COURSE OUTLINE DAY THREE

<u>Time</u>	<u>Content</u>
3:00	Module 11: Instrumentation (includes breaks)
1:30	Module 12: Patient Treatment and Pre-Hospital Response (includes breaks)
3:00	Module 13: Field and Tabletop Exercises (includes breaks)
1:00	Module 14: Pennsylvania Specific Information, Guidelines, Requirements and Course Conclusion
0:30	Course Exam and Course Evaluation
9.0	

Competency Evaluation Mechanism (Brief description-attach copy): Attendance at all training sessions, periodic questioning by instructor throughout presentation, 75% accuracy on instrumentation exercise, proficiency checklists and a minimum score of 75% on the post course exam.

Course Objectives (specific): At the completion of the course the participant will be able to:

1. Explain the characteristics of ionizing radiation.
2. List the units used to measure both radiation and radioactivity.
3. Specify the factors that will affect biological response to radiation and describe the risk in various types of radiation incidents.
4. Identify environmental pathways of radionuclide transport.
5. Describe the basic principles of exposure limits and guidelines, including the guidelines established by the Code of Federal Regulations (CFR), Regulatory Guides, and EPA Protective Actions Guides (PAGs).
6. Identify common sources of radiation and review the shipment of radioactive material.
7. Identify hazards for radioactive material using fixed facility postings, package labels, placards, shipping papers, and the Emergency Response Guidebook (ERG).
8. Analyze the guidance provided by the Emergency Response Guidebook and locate the response guides for radioactive material within the ERG.
9. Explain the features of the National Incident Management System (NIMS) and the Incident Command System (ICS) and its functions. Define the radiological response roles and responsibilities of responders within the framework of both the ICS and the radiological field response plan.
10. Identify the differences between survey and contamination meters. Use, care for, and accurately read instruments and dosimeters.
11. Use the table, Response of Radiation Monitoring Instruments to Normalized Risk Quantities of Radionuclides, and knowledge of radiological instruments to select and use radiological instruments for assessment of hypothetical radiation incidents.
12. Describe the difference between radiation exposure and contamination and the control methods applicable to each.
13. List basic protective actions or measures used to limit and prevent the spread of contamination.

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14. Given descriptions of radiation hazards, develop strategies for exposure control, contamination control, and decontamination actions in hypothetical radiation incidents.
15. Describe the proper methods to properly handle, treat, and transport a potentially contaminated patient.
16. Explain measures that can be taken to minimize ambulance contamination when transporting a potentially contaminated patient.
17. Demonstrate proficiency in the application of skills learned through practical exercise/simulation and tabletop exercises.
18. Cite examples of the types of radiological emergencies likely to occur in the student's community.
19. Describe the radiological response system for the student's community, organization or entity; the role of the RO in that system.
20. Cite Pennsylvania Specific radiological guidelines and requirements and how it may differ from Federal guidelines.

Questions/Comments: Contact the Assistant State Fire Academy Administrator