

**HAZARDOUS MATERIALS
OPERATIONS
FOR FIRST RESPONDERS**

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Course Description

This course involves training to meet Federal Occupational Safety and Health Administration (OSHA), local occupational health and safety regulations and, U.S. Environmental protection (EPA) requirements.

Prerequisites: FRS 1014, 1046 or consent

Corequisite: None

Task List

1.	Given examples of various hazardous materials containers, identify the general shapes of containers for liquids, gases, and solids.
2.	Given examples of the following tank cars, identify each tank car by type: a. Non-pressure tank cars with and without expansion domes; b. Pressure tank cars; and c. Cryogenic liquid tank cars.
3.	Given examples of the following intermodal tank containers, identify each intermodal tank container by type: a. Non-pressure intermodal tank containers; and b. Pressure intermodal tank containers.
4.	Given examples of the following cargo tanks, identify each cargo tank by type: a. MC-306/DOT 406 cargo tanks; b. MC-307/DOT-407 cargo tanks; c. MC-312/DOT-412 cargo tanks; d. MC-331 cargo tanks; e. MC-338 cargo tanks; and f. Dry bulk cargo tanks.
5.	Given examples of the following facility tanks, identify each fixed facility tank by type: a. Non-pressure facility tanks; and b. Pressure facility tanks.
6.	Given examples of facility and transportation containers, identify the markings that differentiate one container from another.
7.	Given examples of the following transport vehicles and their corresponding shipping papers, identify the vehicle or tank identification marking in all applicable locations: a. Rail transport vehicles, including tank cars; b. Intermodal equipment including tank containers; and c. Highway transport vehicles, including cargo tanks.
8.	Given examples of facility containers, identify the markings indicating container size, product contained, and/or site identification numbers.
9.	Given examples of facility and transportation situations involving hazardous materials, identify the name(s) of the hazardous material(s) in each situation.
10.	Identify the following information on a pipeline marker: a. Product; b. Owner; and c. Emergency telephone number.

11.	Given a pesticide label, identify each of the following pieces of information; then match the piece of information to its significance in surveying the hazardous materials incident: a. Name of 11 pesticide; b. Signal word; c. Pest control product (PCP) number (in Canada); d. Precautionary statement; e. Hazard statement; and f. Active ingredient.
12.	Identify and list the surrounding conditions that should be noted when surveying hazardous materials incidents.
13.	Give examples of ways to verify information obtained from the survey of a hazardous materials incident.
14.	Match the definitions associated with the DOT hazard classes and divisions of hazardous materials, including refrigerated liquefied gases and cryogenic liquids, with the class or division.
15.	Identify two ways to obtain a material safety data sheet (MSDS) in an emergency.
16.	Using a material safety data sheet (MSDS) for a specified material, identify the following hazard and response information: a. Physical and chemical characteristics; b. Physical hazards of the material; c. Health hazards of the material; d. Signs and symptoms of exposure; e. Route of entry; f. Permissible exposure limits; g. Responsible party contact; h. Precautions for safe handling (including hygiene practices, protective measures, procedures for cleanup of spills or leaks); i. Applicable control measures including personal protective equipment; and j. Emergency and first aid procedures.
17.	Identify the following: a. The type of assistance provided by CHEMTREC/CANUTEC; b. How to contact CHEMTREC/CANUTEC; and c. The information to be furnished to CHEMTREC/CANUTEC.
18.	Identify two methods of contacting the manufacturer or shipper to obtain hazard and response information.
19.	Given situations involving known hazardous materials, interpret the hazard and response information obtained for the current edition of the Emergency response Guidebook, material safety data sheets (MSDS), CHEMTREC/CANUTEC, and shipper/manufacturer contacts.
20.	Match the following chemical and physical properties with their significance and impact on the behavior of the container and/or its contents: a. Corrosivity (pH); b. Flammable (explosive) range; c. Flash point; d. Form (solid, liquid, gas); e. Ignition (auto ignition) temperature; f. Reactivity; g. Specific gravity; h. Toxic products of combustion; i. Vapor density; and j. Water solubility.
21.	Identify the differences among the following terms: a. Exposure and hazard; b. Exposure and contamination; and c. Contamination and secondary contamination.
22.	Identify three types of stress that could cause a container system to release its contents.
23.	Identify five ways in which containers can breach.
24.	Identify four ways in which containers can release their contents.

25.	Identify at least four dispersion patterns that can be created upon release of a hazardous material.
26.	Identify the three general time frames for predicting the length of time that exposures may be in contact with hazardous materials in an endangered area.
27.	Identify the health and physical hazards that could cause harm.
28.	Identify the health hazards associated with the following terms: a. Asphyxiant; b. Irritant/corrosive; c. Sensitizer/allergen; d. Convulsant; and e. Chronic health hazard.
29.	Identify a resource for determining the size of an endangered area of a hazardous materials incident.
30.	Given the dimensions of the endangered area and the surrounding conditions at a hazardous materials incident, estimate the number and type of exposures within that endangered area.
31.	Identify resources available for determining the concentrations of a released hazardous material within an endangered area.
32.	Identify the factors for determining the extent of physical, health, and safety hazards within the endangered area of a hazardous materials incident given the concentrations of the released material.
33.	Identify the steps for determining the number of exposures that could be saved by the first responder with the resources provided by the authority having jurisdiction and operating in a defensive fashion, given an analysis of a hazardous materials problem and the exposures already lost.
34.	Describe the steps for determining defensive response objectives given an analysis of a hazardous material incident.
35.	Identify the defensive options to accomplish a given response objective.
36.	Identify the purpose for, and the procedures, equipment, and safety precautions used with each of the following control techniques: a. Absorption; b. Dike, dam, diversion, retention; c. Dilution; d. Vapor dispersion; and e. Vapor suppression.
37.	Identify the appropriate respiratory protection required for a given defensive option.
38.	Identify the three types of respiratory protection and the advantages and limitations presented by the use of each at hazardous materials incidents.
39.	Identify the required physical capabilities and limitations of personnel working in positive pressure self-contained breathing apparatus.
40.	Identify the appropriate personal protective equipment required for a given defensive option.
41.	Identify skin contact hazards encountered at hazardous materials incidents.
42.	Identify the purpose, advantages and limitations of the following levels of protective clothing at hazardous materials incidents: a. Structural firefighting clothing; b. High temperature-protective clothing; and c. Chemical-protective clothing. 1. Liquid splash-protective clothing; and 2. Vapor-protective clothing.
43.	Identify ways that personnel, personal protective equipment, apparatus, too and equipment become contaminated.

44.	Describe how the potential for secondary contamination determines the need for emergency decontamination procedures.
45.	Identify the purpose of emergency decontamination procedures at hazardous materials incidents.
46.	Identify the advantages and limitations of emergency decontamination procedures.
47.	Identify the procedures for establishing scene control through control zones.
48.	Identify the criteria for determining the locations of the control zones at hazardous materials incidents.
49.	Identify the basic techniques for the following protective actions at hazardous materials incidents: a. Evacuation, and b. In-place protection.
50.	Identify the considerations associated with locating emergency decontamination areas.
51.	Demonstrate the ability to perform emergency decontamination.
52.	Identify the items to be considered in a safety briefing prior to allowing personnel to work on a hazardous materials incident.
53.	Identify the role of the first responder at the operations level during hazardous materials incidents as specified in the local emergency response plan and the organizations standard operating procedures.
54.	Identify the levels of hazardous materials incidents as defined in the local emergency response plan.
55.	Identify the purpose, need, benefits and elements of an incident management system (IMS) at hazardous materials incidents.
56.	Identify the considerations for determining the location of the command post for a hazardous materials incident.
57.	Identify the procedures for requesting additional resources at a hazardous materials incident.
58.	Identify the responsibilities of the safety officer.
59.	Identify the importance of the buddy system in implementing the planned defensive options.
60.	Identify the importance of the back-up personnel in implementing the planned defensive options.
61.	Identify the safety precautions to be observed when approaching and working at hazardous materials incidents.
62.	Identify the symptoms of heat and cold stress.
63.	Identify the physical capabilities required for and the limitations of personnel working in the personal protective equipment as provided by the authority having jurisdiction.
64.	Match the function of the operational components of the positive pressure self-contained breathing apparatus provided the hazardous materials responder to the name of the component.
65.	Describe the appropriate tools and equipment, and describe how to perform the following defensive control activities: a. Absorption; b. Dike, dam, diversion and retention; c. Dilution; d. Vapor dispersion; and e. Vapor suppression.
66.	Identify the location and use of the mechanical, hydraulic and air emergency remote shutoff devices as found on MC-306/DOT 406 and MC-331 cargo tanks.
67.	Describe the objectives and dangers or search and rescue missions at hazardous materials incidents.
68.	Identify the considerations for evaluating whether defensive options are effective in accomplishing the objectives.
69.	Describe the circumstances under which it would be prudent to pull back from a hazardous materials incident.
70.	Identify the methods for communicating the status of the planned response to the incident commander through the normal chain of command.
71.	Identify the methods for immediate notification of the incident commander and other response personnel about critical emergency conditions at the incident.

Instructor Equipment List

Projector screen
Chalkboard or marker board
Overhead projector
Slide projector

TV/VCR
DOT Guidebooks
Sample placards

Old FRT Number: 240 / FRT 125