HazMat Compliance / Essentials Series
Operations Course Outline

CD-ROM #1

TUTORIAL

1. Introduction (video)
   a. Target audience
   b. What certification at the Operations Level means
   c. Methods of instruction used in this course
2. Screen elements
   a. Status bar
   b. Action buttons
   c. Menu buttons
3. Course overview
   a. Five modules
   b. Topics within each module
   c. Checks
4. Record keeping
   a. Bookmark feature
   b. Status screens
5. Sequence of instruction

I. OVERVIEW / GENERAL PRINCIPLES

A. Objectives

1. First Responder responsibilities (video)
2. Objective: Identify the general principles and goals of a First Responder at the Operations Level.

B. General Principles

1. Requirements for certification at the Operations Level
2. First Responder responsibilities and tasks
   a. Awareness Level responsibilities
   b. Operations Level responsibilities
      Knowledge Check
   c. Operations Level tasks
3. Operations Level goals (video)
   a. Analyzing the incident
   b. Planning the response
      Knowledge Check
   c. Implementing the planned response
   d. Evaluating progress
      Knowledge Check
4. Summary

C. Challenge Review (4 questions)

II. ANALYZING THE INCIDENT

A. Overview and Objectives

1. Introduction
    a. LPG fire in Kingman, Arizona (video)
    b. NTSB report regarding Kingman, Arizona incident
2. Objectives
    a. Survey a hazmat incident to determine the containers and materials involved, whether hazardous materials have been released, and the surrounding conditions.
    b. Collect hazard and response information using MSDS, CHEMTREC/ CANUTEC, and contacts with the shipper or manufacturer.
    c. Predict the likely behavior of a material and its container at various facility and transportation hazmat incidents.
    d. Identify potential harm within the endangered area of a hazmat incident.

B. Bulk and Non-Bulk Containers

1. Introduction
2. Nonbulk and bulk capacity definitions
3. Types of nonbulk containers and descriptions
    a. Bags
    b. Bottles
    c. Boxes
    d. Multi-cell packaging
    e. Carboys
    f. Cylinders
    g. Drums
    h. Jerricans
    i. Wooden barrels
        Knowledge Check
4. Types of bulk capacity containers and descriptions
    a. Bulk bags
    b. Bulk boxes
    c. Ton containers
    d. Portable tanks and bins
    e. Palletized non-bulk packages
    f. Casks
    g. Protective overpacks
        Knowledge Check
5. Vessels and facility containers and descriptions
6. Summary

C. Facility and Transportation Containers

1. Introduction
2. Tank cars by rail
    a. Safety features
    b. Types of rail tank cars
        Knowledge Check
3. Intermodal tank containers
    a. Definition
    b. Types of intermodal tank containers
        Knowledge Check

4. Cargo tanks
    a. Types of cargo materials
    b. Types of cargo tanks
        3 Knowledge Checks
5. Fixed facility tanks
    a. Definition
    b. Types of facility tanks
        Knowledge Check
6. Summary

D. Hazmat Container Markings

1. Gathering information
2. Types of markings
    a. Fixed facility markings (NFPA 704)
    b. Vehicle and container markings (DOT placards and labels)
    c. Other labeling
3. Transport vehicle identification
    a. Rail cars (box cars, hopper cars, flat cars, tank cars)
    b. Intermodal equipment
    c. Highway transport vehicles
4. Facility containers
5. Specific situations
    a. Pipeline identification
    b. Pesticides
        2 Knowledge Checks
6. Surrounding conditions
    a. Land
    b. Other conditions
    c. Present and future conditions
    d. Building factors
        Knowledge Check
7. Verifying information

E. Challenge Review – Part 1 (20 questions)

F. Hazmat Classes and Divisions

1. Introduction
    a. DOT classification system
    b. Overview of hazard classes and placards
2. Class 1: Explosives
    a. Explosives definition (video)
    b. Explosives divisions
    c. Tips about explosives placards
        Knowledge Check
3. Class 2: Gases
    a. Major hazards
    b. Compressed gas divisions
        Knowledge Check
4. Class 3: Flammable and combustible liquids
    a. Characteristics
    b. Flammable liquids

c. Combustible liquids
Knowledge Check

5. Class 4: Flammable solids
   a. Major hazard
   b. Flammable solids divisions
   Knowledge Check
6. Class 5: Oxidizers
   a. Characteristics
   b. Oxidizers divisions
7. Class 6: Poisons
   a. Characteristics and major hazard
   b. Poisons divisions
   Knowledge Check
8. Class 7: Radioactive materials
   a. Characteristics and major hazards
   b. Fissile classes
9. Class 8: Corrosives
10. Class 9: Miscellaneous hazardous materials
    Knowledge Check
11. Other hazardous materials
    a. Warfare agents
    Knowledge Check
    b. ORMs
    c. Forbidden materials
12. Placards and labels
    a. Comparison of placards and labels
    b. Multiple labels on nonbulk materials
13. Requirements at Operations Level regarding DOT hazard classes

G. Collecting Hazard and Response Information

1. Material Safety Data Sheets
   a. Introduction to MSDS (video)
   b. Uses of MSDS (video)
   c. Locating MSDS
   Knowledge Check
   d. Information included in MSDS
   e. Closer look at MSDS
   Knowledge Check
2. CHEMTREC, CANUTEC, and SETIQ
   a. Area served by each organization and emergency phone numbers
   b. Calling CHEMTREC and CANUTEC
   Knowledge Check
   c. Additional CHEMTREC resources
3. Contacting the shipper or manufacturer
4. Incidents involving criminal or terrorist activity
   a. Hazards of criminal/terrorist incidents
   b. Federal defense authorities
   Knowledge Check
5. Summary

H. Predicting the Behavior of a Hazardous Material and Its Container

1. Introduction
    a. Predicting hazardous material behavior at an incident (video)
    b. Gathering and interpreting information
2. Properties that affect the behavior of a container and its contents
    a. Boiling point
    b. Chemical reactivity
    c. Corrosivity
    d. Flammable range
    e. Flash point
    f. Ignition temperature
    g. Physical state
    h. Specific gravity
    i. Toxic products of combustion
    j. Vapor density
    k. Vapor pressure
    l. Water solubility
        2 Knowledge Checks
3. Exposure and hazards
    a. Exposure and quantity of material
    b. Exposure and contamination
        Knowledge Check
4. Container behavior
    a. Container stress
    b. Breaches
    c. Ways containers release materials
5. Dispersion of released materials
    a. Factors affecting pattern of dispersion
    b. Patterns of dispersion
        Knowledge Check
6. Exposure and length of time
    a. Factors influencing length of exposure
    b. Terminology
7. Summary

I. Potential Harm of Hazardous Materials

1. Estimating potential harm
    a. Definition of harm (video)
    b. Factors to consider in analyzing potential harm (video)
    c. Types of hazards that cause harm (CEM TRAP)
    d. Types of health hazards
        2 Knowledge Checks
    e. Summary of estimating potential harm
2. Gathering information
    a. Size of endangered area
        Knowledge Check
    b. Number and type of exposures within endangered area
    c. Surrounding conditions
    d. Other factors influencing the situation

e. Concentration level
Knowledge Check
f. Search and rescue missions
Knowledge Check
g. Questions to ask when gathering information
h. Requirements at the Operations Level regarding gathering information

J. Challenge Review – Part 2 (20 questions)

III. PLANNING THE RESPONSE

A. Objectives

1. Importance of planning the response (video)
2. Objectives
   a. Describe a First Responder's response objectives.
   b. Identify the defensive options for each response objective.
   c. Determine whether available personal protective equipment is appropriate for implementing a defensive option.
   d. Identify emergency decontamination procedures.

B. Response Objectives

1. Introduction
2. Exposures and response objectives
   a. Determining number of exposures
   b. Factors affecting total number of exposures that can be saved
   c. Procedure for planning response objectives
   Knowledge Check
3. Basis of defensive response objectives
   a. Stage of the incident or event
   b. Goals for stopping the event
   c. Keeping future events from occurring
4. Areas of focus in planning response and determining response objectives
   a. Changing the actions of the stressors
   b. The containment system
   c. The hazardous material
   Knowledge Check
5. Summary

C. Defensive Options

1. Introduction
2. Response options available
   a. Confinement
   b. Containment
   Knowledge Check
3. Confinement techniques
   a. Absorption (video)
   b. Dikes, dams, diversions, and retention (video)
   c. Dilution (video)
   d. Vapor dispersion (video)
   e. Vapor suppression (video)

f. Remote shutoff (video)
2 Knowledge Checks

4. Summary

CD-ROM #2

D. Appropriate Personal Protective Equipment

1. Overview of personal protective equipment
   a. Determining which PPE is best
   b. Level of PPE available as a factor in selection
   c. Evaluating whether PPE is adequate for a defensive option
   d. Types of protective clothing used at Operations Level
2. Respiratory protection
   a. Minimum requirement for respiratory protection
   Knowledge Check
   b. Advantages and limitations of different types of respiratory protection
   2 Knowledge Checks
3. Protective clothing
   a. Determining type of PPE needed
   b. Skin contact hazards
   Knowledge Check
   c. Categories of protective clothing
   Knowledge Check
   d. EPA classifications of chemical protective clothing (Levels A, B, C, D)
   Knowledge Check
4. Summary

E. Emergency Decontamination Procedures

1. Importance of proper decontamination procedures
2. How contamination occurs
   a. By direct contact
   b. By cross-contamination (secondary contamination)
   c. During decontamination process
   d. From contaminants left on PPE
   Knowledge Check
3. Emergency decontamination procedures
   a. When to use
   b. Limitations
   c. Need for emergency decontamination procedures to be in place (animation)
   Knowledge Check
   d. Checking with CHEMTREC/CANUTEC and/or manufacturer regarding decontamination

F. Challenge Review (20 questions)

IV. IMPLEMENTING THE PLANNED RESPONSE

A. Overview and Objectives

1. Introduction
   a. Example of responding to a hazmat release (video)
   b. Identifying three errors in the video sequence

2. Objectives
    a. List the components of the incident management system (IMS) specified in the Local Emergency Response Plan and the organization's Standard Operating Procedures.
    b. Establish and enforce scene control, including control zones, emergency decontamination, and communications.
    c. Demonstrate the ability to don, work in, and doff personal protective equipment, within a specified amount of time and with all evaluation elements identified correctly.
    d. Identify the procedure for performing defensive control actions set out in the plan.
    e. Demonstrate proper vapor dispersion techniques during a simulated LPG tank fire, within a specified amount of time and with all evaluation elements identified correctly.
    f. Perform basic defensive control activities for various simulated hazardous materials releases, within a specified amount of time and with all evaluation elements identified correctly.
    g. Perform emergency decontamination quickly and accurately.

B. Scene Control

1. Control zones
    a. Establishing control zones
        Knowledge Check
    b. Maintaining control of zones
        Knowledge Check
2. Protective actions
    a. Evacuation
    b. In-place protection
        2 Knowledge Checks
3. Emergency decontamination
    a. Purpose of emergency decontamination
    b. General principles for selecting emergency decontamination areas
    c. Other factors to consider in selecting and managing a decontamination site (WW AA SSS PLC)
        Knowledge Check
4. Safety briefing
    a. Requirements
    b. Components (video)
        Knowledge Check
5. Summary of scene control

C. Incident Management System

1. Introduction
    a. Definition and importance of an IMS
    b. Background of incident management systems
    c. References to use when initiating an IMS
2. Benefits of an IMS
    a. Common terminology
    b. Modular organization
    c. Integrated communications
    d. Unified command structure
    e. Consolidated action plan
    f. Manageable span of control
3. Implementing an IMS
    a. Guidelines for developing an IMS

b. Elements of Local Emergency Response Plans and SOPs
Knowledge Check
c. Classification of incidents by Level
Knowledge Check
d. Roles of Operations Level responders
Knowledge Check
e. Command posts (video)
Knowledge Check
f. Safety officer
Knowledge Check
4. Summary

D. Emergency Decontamination Steps

1. Decontamination vs. emergency decontamination
2. Emergency decontamination
   a. Definition and use
   b. Steps (video)
   5 Knowledge Checks
   c. Review (video)

E. Working in Personal Protective Equipment

1. Introduction
2. Working in PPE
   a. Buddy system
   b. Back-up personnel
   c. Questions to ask about protective equipment (video)
   d. How to approach an incident
   e. Questions to ask while working at an incident
   2 Knowledge Checks
3. Heat and cold stress
   a. Recognizing symptoms
   b. Heat stress
   2 Knowledge Checks
   c. Cold stress
   3 Knowledge Checks
4. Stress related to working in PPE
5. Summary

F. Using a Self-Contained Breathing Apparatus

1. Introduction
2. SCBA equipment
   a. Designs
   b. Components
   Knowledge Check
3. SCBA maintenance
   a. Need for maintenance
   b. Daily inspection (video)
   Knowledge Check
   c. Cleaning and sanitizing the unit
   Knowledge Check
   d. Disinfecting the face mask
   e. Recharging the air cylinder

f. Other maintenance
Knowledge Check

4. Summary

CD-ROM #3

G. Donning and Doffing Personal Protective Equipment

1. Introduction
   a. Importance of proficiency
   b. Steps required during skills test
   c. Evaluation of skills
2. Donning personal protective clothing
3. Donning SCBA
   a. Regular coat method (video)
   2 Knowledge Checks
   b. Crossed-arms coat method (video)
   Knowledge Check
   c. Over-the-head method (video)
   Knowledge Check
   d. Donning from seat, rear, or compartment mount (video)
   Knowledge Check
   e. Donning face piece (video)
   Knowledge Check
4. Working in SCBA
5. Doffing PPE
   Knowledge Check
6. Procedures to follow after using PPE

H. Application of Vapor Suppressing Agents

1. Introduction
2. How foams work
3. Types of foams
   a. Protein foams
   b. Fluoroprotein foams
   c. Special purpose foams
   d. Aqueous film-forming foam (AFFF)
   e. High expansion foam
   Knowledge Check
4. Methods of applying foams
   a. Hose and eductor (video)
   b. Vehicle system (video)
   c. Sub-injection system
   d. Portable system
   Knowledge Check
5. Procedures for applying foam to a fuel truck fire
   a. Use defensive actions at Operations Level (video)
   b. Start with site safety briefing (video)
   c. Choose appropriate agent (video)
   d. Use two AFFF attack lines and one back-up line to cool containers; extinguish ground fires; extinguish pressure fires (video)
   e. Extinguish tank fires; cool containers while beginning retreat (video)
   Knowledge Check
   f. Continue to cool containers during retreat; have post-incident briefing

Knowledge Check

g. Review of steps

Knowledge Check

6. Summary

I. Emergency Valves and Vapor Dispersion

1. Introduction
2. Emergency shutoff valves
   a. Types
   b. Location of emergency shutoffs on trucks

      Knowledge Check
3. Vapor dispersion techniques
   a. Principles of defensive control at an LPG tank fire
   b. Attacking an LPG tank fire (video)

      4 Knowledge Checks
4. Summary

J. Defensive Control Scenarios

1. Review of components of defensive control
2. Defensive control methods
   a. Absorption (video)
   b. Spill control
   c. Dilution (video)
   d. Vapor dispersion (video)
   e. Vapor suppression (video)

      2 Knowledge Checks
3. Defensive control checklist
   a. Determine what was spilled
   b. Evaluate effects on the environment
   c. Consider chemical and physical properties
   d. Determine spill location and direction of flow
   e. Determine spill size
   f. Select proper tools for defensive control
   g. Take defensive action and avoid contact with the material

      3 Knowledge Checks
4. Summary

K. Challenge Review (25 questions)

V. EVALUATING PROGRESS

A. Objectives

1. Introduction (video)
2. Objectives
   a. Identify the status of the defensive actions taken when accomplishing the response objectives.
   b. Identify the proper methods of communicating the incident status to the incident commander.

B. Status of Defensive Actions and Communication Methods

1. Introduction
2. Evaluating defensive actions
   a. Questions to ask to determine if defensive options are being accomplished
   b. Situations in which to consider withdrawing

Knowledge Check

3. Communicating incident status
    a. Normal chain of command
    b. Exceptions to following the chain of command
    c. Procedures to list in Local Emergency Response Plans and SOPs

Knowledge Check

4. Summary

C. Challenge Review (4 questions)

VI. HAZMANIA