

Content Outline for the Technician HazMat Multimedia Training Based on NFPA 472 (1997 ed)

Introduction/Tutorial

Module 1 - General/Overview

Topic 0 - Objectives

Topic 1 - General Principles

- Definition
- Goals
- Introduce the 8 Step Process as the Foundation for a Technician Level Responder to Manage a HazMat Incident

Module 1 Challenge Review

Module 2 - Hazardous Materials Containers

Topic 0 - Objectives

Topic 1 - Non-bulk Packaging

- Carboys
- Cylinders
- Drums
- Bags

Topic 2 - Cargo Tanks

- Dry Bulk Cargo Tank
- MC306/DOT 406 Cargo Tanks
- MC307/DOT 407 Cargo Tanks
- MC312/DOT 412 Cargo Tanks
- MC331 Cargo Tanks
- MC338 Cargo Tanks
- High Pressure Tube Trailer

Topic 3 - Portable Tank Containers

- Non-pressure Intermodal Tanks
- Pressure Intermodal Tanks
- Specialized Intermodal Tanks

- Cryogenic intermodal
- Tube modules
- Intermediate Bulk Containers
- Ton Containers

Topic 4 - Railroad Tank Cars

- Cryogenic Liquid Tank Cars
- High-pressure Tube Cars
- Non-pressure Tank Cars
- Pneumatically Unloaded Hopper Car
- Pressure Tank Cars

Topic 5 - Facility Tanks

- Above Ground Tanks
- Under Ground Tanks
- Cryogenic Liquid Tanks

Topic 6 - Pipelines

- Pipeline Construction
- The Products Transported in Pipelines
- Pipeline Markers

Topic 7 - Radioactive Packaging

- Type A Package
- Type B Package
- Radioactive Materials (new)
 - Radioactive white I, yellow II & III
 - Fissile class I, II, & III

You'll learn more about radioactive health hazards in Module 3, Topic 2

Module 2 Challenge Review

Module 3 - Hazard and Risk Evaluation

Topic 0 - Objectives

Topic 1 - Chemical/Physical Terms & Their Significance

- General Terms
- Physical Properties
- Flammable Properties
- Reactive Hazards
- Corrosive Hazards
- Radioactive Hazards

Topic 2 - Health Hazards

- Signs and Symptoms (acute vs. chronic)
- Target Organ Effects
- Assessing the Health Hazards
 - Concentration and units
 - Toxicological terminology
 - Exposure values
 - Emergency Response Planning Guidelines
 - Radioactive materials terminology & predicting health hazards
 - a. Types
 - b. Measurement
 - c. Protection

Topic 3 - Collecting & Interpreting Hazard and Response Data

- Collect & Compare Data, be Safe & Conservative, Use at Least 3 Different Sources to Verify
- 6 Sources to Use
 - HazMat databases
 - Maps and diagrams
 - Monitoring equipment
 - Types of reference manuals
 - Technical information centers
 - Technical information specialists
- Id *at Least* 3 Resources for Effects of Mixing HazMat's

Topic 4 - Monitoring Basics

- Selection Criteria
- Types of Monitoring Equipment
- Correlating the Equipment with the Hazard
- Maintenance Related to the Specific Type of Equipment
- Types of Hazards to Monitor

Topic 5 - Use and Interpretation of Monitoring Equipment

- How to Use Monitoring Equipment
- Select Appropriate Monitoring Equipment & Demonstrate its General Use
- Monitoring for Known HazMats
- Monitoring for Unknown HazMats
 - Steps to identifying unknown HazMats
- Steps for Identifying Solids and Liquids
 - Steps for identifying gases and vapors
- Steps For Collecting Samples of:
 - A liquid
 - A solid

- A gas
- How to Interpret Monitoring Data

Topic 6 - Evaluating Risks

- Standard Terms to Describe the Condition of Containers
 - Undamaged, no product release
 - Damaged, no product release
 - Damaged, product release
 - Undamaged, product release
- Types of Damage to Containers
 - Cracks
 - Scores
 - Gouges
 - Dents
- How to Determine the Areas of Potential Harm w/the Endangered Area
 - Researching product hazard information
 - Monitoring the area and mapping results
 - Computer dispersion modeling
- Estimating outcomes Within a HazMat Incident
- Impact of Fire & Safety Features on a Container
 - Fire Protection Systems
 - Monitoring and detection systems
 - Product spillage and control
 - Tank spacing
 - Tank venting and flaring systems
 - Transfer operations

Module 3 Challenge Review

Module 4 - Planning the Response

Topic 0 - Objectives

Topic 1 - Response Objectives

- Basis of Response Objectives
- Principles when Making Response Objectives
- Purpose Behind the Selection of the Response Objectives
- Current Events at Hand
- Defensive, Offensive, or Non-intervention
- Safety

Topic 2 - Protective Clothing

- Four Levels of Chemical Protection (EPA/NIOSH)

- Level A
- Level B
- Level C
- Level D
- Chemical Protective Clothing Selection
 - Level of Chemical Protection
 - Types of chemical protective clothing (pros/cons)
 - ◆ Vapor-protective clothing
 - ◆ Chemical splash-protective clothing
 - Permeation, Penetration, and Degradation
 - Cooling devices (pros/cons)
 - ◆ Air cooled jacket & suits
 - ◆ Water cooled vests & suits
 - ◆ Ice cooled Vests
 - General CPC Selection Criteria
 - ◆ Product
 - ◆ Capabilities of the protective gear
 - ◆ Environment
 - ◆ Response Objectives
 - Don, work in, & doff CPC
 - Physical and Psychological Stress Regarding PPE
 - CPC Testing, Maintenance, & Repair
 - ◆ Using the manufacturer's tracking book
 - ◆ Preventative maintenance on chemical protective clothing according to the manufacturers' specifications

Topic 3 - Respiratory Protection

- Factors Involved in Selection
 - SCBA
 - ◆ Process of selection
 - Open Circuit SCBA
 - Closed Circuit SCBA
 - Air Line Respirators
 - ◆ Supplied Air Respirators
 - ◆ Supplied Air Breathing Apparatus
 - ◆ Process of Selection
 - ◆ Describe the Function of the Operational Components
 - ◆ Donning and Airline Respirator
 - Air Purifying Respirator (APR)
 - ◆ Process of selection
 - ◆ Describe the function of the operational components
 - ◆ Donning and APR
 - Don, work in, and doff respiratory protection

- Three scenarios about selection of PPE ensembles

Topic 4 - Plan of Action

- Identify Potential Action Options
- Components for a Typical Plan of Action
- Plan Safety Considerations
 - Identify the safety considerations that must be included in the plan of action
 - Safety considerations to include when developing a site safety plan
 - Prior entry safety briefing items
- Describe the Purpose of, Procedures for, Equipment Required, and Safety Precautions Used for Specialized Control Techniques
 - Plugging
 - Plugging
 - Plugging
 - Adsorption
 - Neutralization

Topic 5 - Product Removal/Transfer from Cargo Tanks

- Product Removal/Transfer Methods from Cargo Tanks
 - MC-306/DOT-406
 - MC-307/DOT-407
 - MC-312/DOT-412
 - MC-331
 - MC-338

Topic 6 - Decontamination Methods

- Physical Decontamination
 - Absorption
 - Brushing & Scraping
 - Dilution
 - Disposal
 - Evaporation
 - Washing
 - Vacuuming
- Chemical Decontamination
 - Adsorption
 - Chemical degradation
 - Neutralization
 - Solidification
 - Disinfection/Sterilization
- Sources of Information on Decontamination

Topic 7 - Hazardous Materials Incidents in Confined Spaces

- Regulatory Requirements
- Permit Required Confined Spaces
- Pre Entry Activities
- Utilizing Appropriate Resources
- Hazard Identification and Control
 - Atmospheric hazards
 - Physical hazards

Module 4 Challenge Review

Module 5 - Implementing the Planned Response

Topic 0 - Objectives

Topic 1 - The Technician Level Responder Role

- Emergency Response Plan Incorporates Standard Operating Procedures
- Refer to Local Guidelines
- Identify Duties and Responsibilities of the Different Sector Functions w/in the IMS Understand HazMat Branch
 - Backup
 - Decontamination
 - Entry
 - Hazardous Materials Branch Management Officer
 - Hazardous Materials Safety Officer
 - Information/research
 - Reconnaissance
 - Resources

Topic 2 - PPE Safety & Emergency Procedures

- Safety Procedures When Wearing Chemical Protective Clothing
 - Realizing impaired senses & mobility
 - Knowing back-up team responsibilities
 - Suit communication procedures
 - Medical monitoring of responders
 - Implementing a rehabilitation program
- Emergency Procedures when Wearing Chemical Protective Clothing
 - Loss of air supply
 - Loss of suit integrity
 - Loss of communication
 - Buddy down procedures

Topic 3 - Contamination Reduction Corridor

- Considerations for Selecting Area Layout
- Determine Appropriate Level of Decon
- Set up of the Decon Reduction Corridor

Topic 4 - Performing Decontamination (Procedure)

- Emphasize Decon Thoroughness & Not Speed
- Using the Control Zones in Decon
- 9-step Decon Procedure
 - Step 1: entry point
 - Step 2: primary decontamination (3 sub-steps)
 - Step 3: SCBA removal (4 sub-steps)
 - Step 4: removal and isolation of protective clothing (2 sub-steps)
 - Step 5: removal of personal clothing (4 sub-steps)
 - Step 6: decon the body (5 sub-steps)
 - Step 7: drying off & providing clean clothing (3 sub-steps)
 - Step 8: medical evaluation (5 sub-steps) (NFPA 473)
 - Step 9: transportation (3 sub-steps)

Module 5 Challenge Review

Module 6 - Controlling Releases

Topic 0 - Objectives

Topic 1 – Safety Considerations

- Bonding
- Grounding
- Elimination of Static Electricity that Could Act as an Ignition Source
- Evaluating Atmospheric Conditions in a Confined Space

Topic 2 – Non Bulk Liquid Container Releases

- Types of Leaks & Their Methods of Repair
 - Bung leaks
 - Chime leak
 - Forklift puncture
 - Nail puncture
- Overpack Methods
 - Rolling slide-in
 - Slide-in
 - Slip over
- Maintenance and Inspection

Topic 3 - Pressurized System Releases

- Controlling Leaks
- Isolation Methods
 - Closing upstream & downstream valves
 - Blocking & blanking a piping system
 - Lockout/tagout
- Factors to Consider when Selecting Tools
- Fittings on Pressure Containers
 - Closed open valves
 - Tighten loose plugs
 - Replace missing plugs
 - ◆ Apply appropriate size plugs into threaded ends
 - ◆ Glues & adhesives don't work well with material flowing under pressure
 - ◆ Isolate a leak, if possible
- Maintenance and Inspection

Topic 4 – Pressurized Container Releases

- Types of Nonbulk & Bulk Vessel/Container Leaks
 - Fusible metal of plug
 - Fusible plug threads
 - Side wall of cylinder
 - Valve blowout
 - Valve gland
 - Valve inlet threads
 - Valve seat
 - Valve stem assembly blowout
- General Methods of Identifying Leaks
- General Tools & Equipment Maintenance & Inspection Procedures
- Specs./Purpose & Contents for Chlorine “A” Kit
 - Using Kit “A” (procedures)
 - Kit “A” maintenance
 - Kit “A” limitations
- Specs./Purpose & Contents for Chlorine “B” Kit
 - Using Kit “B” (procedures)
 - Kit “B” maintenance
 - Kit “B” limitations
- Specs./Purpose & Contents for Chlorine “C” Kit
 - Using Kit “C” (procedures)
 - Kit “C” maintenance
 - Kit “C” limitations

Topic 5 - Cargo Tank Releases (Procedures)

- Adjust Clamp Length
- Ensure Tightness
- Tighten Center T-handle
- Aluminum Shell MC-306/DOT-406 Cargo Tanks on Fire
- Containing Leaks in MC-306/DOT-406, MC-307/DOT407, MC-312/DOT-412 Cargo Tanks
 - Dome cover leak
 - Irregular-shaped hole
 - Puncture
 - Split or tear
- Product Removal & Transfer Considerations for Overturned MC-306/DOT-306, MC-307/DOT407, MC-312/DOT-412, MC-331, & MC-338 Cargo Tanks
 - Inherent risks
 - Procedures & safety precautions
 - Equipment required
- Maintenance and Inspection

Module 6 Challenge Review

Module 7 - Evaluating Progress

Topic 0 - Objectives

Topic 1 - Status of Control Functions & Communication Methods

- Evaluation of Control Functions Identified in the Plan of Action
 - Rescue operations
 - Protective actions
 - Confinement
 - Containment
 - Fire/vapor control
 - Recovery
- Communication of the Incident Status to the Incident Commander
- Communication Methods
 - Hand Signals
 - Two-way Radios
 - Emergency Signals
 - Cellular Phones
 - Portable Computer

Topic 2 - Terminating the Incident

- The Debriefing
- The Post Incident Analysis
- The Critique

Module 7 Challenge Review**Module 8 - Terrorist and Criminal Activities Involving HazMats**Topic 0 - ObjectivesTopic 1 - Analyzing the Incident

- Types of Locations that Could Become Targets for Criminal/Terrorist Activity
- Potential Criminal or Terrorist Targets
- Indicators or Possible Criminal or Terrorist Activity
 - Examples of indicators or possible criminal or terrorist activity
 - ◆ Sensory clues
 - ◆ Victim's actions
 - ◆ Environmental signals
 - ◆ Unexplained situations
- Hazards Associated With Criminal or Terrorist Activity
 - Examples of hazards associated with criminal or terrorist activity
- Assistance when Dealing with Criminal or Terrorist Activities
 - Federal defense authorities
 - Procedures for contacting agencies
- Terms and Definitions Related to Warfare Agents
 - Biological agents & toxins
 - Irritants
 - Nerve agents
 - Vesicants
 - Blood agents
 - Choking agents
- DOT Hazard Classes/Divisions of Specific Warfare Agents
- Health Risks Associated with Various Types of Warfare Agents
 - Biological agents & toxins
 - Irritants
 - Nerve agents
 - Vesicants
 - Blood agents
 - Choking agents
- Methods to Identify (monitoring equipment):
 - Biological agents & toxins
 - Irritants
 - Nerve agents
 - Vesicants
 - Blood agents

- Choking agents
- Steps for Collecting Evidence

Topic 2 - Planning the Response

- Procedures in LERP or SOPs for Decontamination of Large Numbers of People
- Collecting Legal Evidence
 - Coordinating with other agencies
 - Procedures
 - Equipment
 - Safety precautions
- Limitations of Military Chemical/Biological Protective Clothing

Topic 3 - Implementing the Planned Response

- Specific Actions to Take
- Handling Safety Briefings
- Functions Assigned to Various Agencies
- Collecting and Preserving Evidence

Module 8 Challenge Review

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