Hazard Communication & Hazardous Materials Safety Awareness Training

Presented by the Office of Environmental Health and Safety
TRAINING OUTLINE

• Introduction
• Hazard Communication
• DOT HAZMAT Awareness
• Elements of a Security Plan
• Emergency Response
• Quiz
INTRODUCTION:

Key Points

- **Purpose of Training** – Awareness and ability to recognize hazardous materials
- **Direct delivery to departments**
- **Inspect all packages of hazardous materials and do not accept if damaged**
- **Shipping** – other requirements/training
- **Exceptions**
INTRODUCTION:
Key Points

- Hazardous materials are potentially dangerous if not handled properly
- Know what you are handling
- Know the hazards associated with the material
- Know the measures you can take to protect yourself and others
- Handle all packages with care even though properly contained
INTRODUCTION:
Regulatory Requirements

- EPA - environmental safety
- DOT - transportation safety - shipping & receiving requirements - 49 CFR
HAZARD COMMUNICATION

- The purpose of this standard is to communicate information about hazardous chemicals to employees so they can work safely.
- A hazardous chemical means any chemical which is a physical hazard (flammable, reactive, explosive, etc.) or a health hazard (exposure results in acute or chronic health effects).
- Training must be provided upon initial employment and when new hazards are introduced into the workplace.
Hazard Communication: Effects of Exposure

- **ACUTE** - direct threat that shows up almost immediately after exposure such as burns from contact with a corrosive chemical.

- **CHRONIC** - usually result from repeated exposure that occurs over months or years and includes cancer and some allergic reactions.
HAZARD COMMUNICATION:
Routes of Exposure

- INHALATION
- ABSORPTION
- INGESTION
- INJECTION
HAZARD COMMUNICATION: Hazard Identification

- MSDS’s
- LABELS
HAZARD COMMUNICATION: MSDS’s

- Chemical information sheets that include chemical ID, physical characteristics, hazardous ingredients, health hazards, handling precautions, first aid, reactivity data and control procedures
- Must have a sheet for every hazardous chemical on site and must be accessible to every employee
HAZARD COMMUNICATION: LABELS

- All containers must be properly labeled
- Labels on original containers must include the identity of the material, appropriate hazard warnings and manufacturer information
- Labels on secondary containers must include identity and appropriate hazard warning
HAZARD COMMUNICATION: LABELS

- Appropriate hazard warnings include DOT hazard classes, NFPA Hazard Diamond, or a descriptive statement of the hazards.
- Whichever method is employed, it must be used consistently throughout the labs and all workers must be familiar with the method.
ACETONE
(DIMETHYLKETONE, 2-PROPRANONE)

DANGER

TARGET ORGANS: SKIN, EYES, RESPIRATORY SYSTEM, MUCOUS MEMBRANES

WARNING

PRECAUTIONARY MEASURES: EXTREMELY FLAMMABLE. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION. Keep away from heat, sparks, flames. Keep in tightly closed container. Avoid breathing vapor. Avoid contact with eyes, skin, clothing. Use with adequate ventilation. Wash thoroughly after handling. In case of fire, use water spray, alcohol foam, dry chemical, or carbon dioxide extinguisher. Use appropriate personal protective equipment.

SYMPTOMS OF EXPOSURE: Prolonged or repeated skin contact may cause irritation, dryness. Breathing vapors may produce headache, fatigue, bronchial irritation, and in large amounts, unconsciousness. Serious poisoning rare.

INSTRUCTIONS FOR IMMEDIATE ASSIST IN CASE OF EXPOSURE: Call a physician. If swallowed, and if conscious, immediately induce vomiting. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If contact with eyes, flush with large amounts of water for at least 15 minutes. Medical intervention. Treat symptoms of exposure.

SPILL RESPONSE PROCEDURE: Only appropriately trained personnel should respond to spills. Use proper response procedures and maintain appropriate levels of fire protection. Disposal as required by federal, state, and local regulations.

CONTAINER HANDLING and STORAGE: Use labeled flammable solvent container. Avoid contact with oxidizers and any other incompatible materials. Electrically ground container where necessary.

MSDS REFERENCE: Refer to Material Safety Data Sheet for more information about chemical.

MANUFACTURER:
PHONE NUMBER:
**FLAMMABLE**

- 4 Extremely flammable
- 3 Ignites at normal temperatures
- 2 Ignites when moderately heated
- 1 Must be preheated to burn
- 0 Will not burn

**HEALTH**

- 4 Too dangerous to enter vapor or Liquid
- 3 Extremely dangerous use full protective clothing
- 2 Hazardous - Use breathing apparatus
- 1 Slightly hazardous
- 0 Like ordinary material

**REACTIVITY**

- 4 May detonate - Vacate area if materials are exposed to fire
- 3 Strong shock or heat may detonate - Use monitors from behind explosive resistant barriers
- 2 Violent chemical change possible - Use hose streams from distance
- 1 Unstable if heated - Use normal precautions
- 0 Normally stable
HAZARD COMMUNICATION: Personal Protective Equipment

- Personal Protective Equipment (PPE) must be provided when necessary by reason of hazards encountered that are capable of causing injury or impairment.
- PPE is not a substitute for engineering, work practice, and/or administrative controls.
- Use of PPE does not eliminate the hazard so if the equipment fails then exposure occurs.
- Must be worn to provide protection.
HAZARD COMMUNICATION: Chemical Storage

- Containers should be inspected periodically and at least annually to assure container and label integrity.
- Secondary containment can prevent serious spills and subsequent reactions.
- All hazardous materials must be stored according to compatibility so that accidental mixing does not occur (applies to gas cylinders as well).
HAZARDOUS MATERIALS: Shipping & Receiving Requirements

- All hazardous materials must be prepared in accordance with the appropriate federal Hazardous Materials Regulations found in 49 CFR.
- Regardless of exceptions to some of the regulations, the same hazards are still present and appropriate precautions must still be taken.
HAZARDOUS MATERIALS: Shipping & Receiving Requirements

- A “hazardous material” is a substance or material that has been determined to be capable of posing an unreasonable risk to health, safety and property when transported in commerce.
- A “hazmat employee” is anyone who directly affects hazardous materials transportation safety.
HAZARDOUS MATERIALS:
Shipping & Receiving Requirements

- Hazardous material must be properly classed, described, packaged, marked, labeled, and in condition for shipment
- Ensure that the material offered for shipment is neither “forbidden” nor “prohibited” from transportation
- Know exactly what you are shipping and receiving - If in doubt STOP
HAZARDOUS MATERIALS: Training Requirements

- All hazmat employees must receive initial training and periodically retrained at least every 3 years
- Initial training must be within 90 days of employment
- Employees must be tested and training certification must be documented
Application of applicable regulations begins with classification of the material.

Hazardous Materials are grouped into 9 primary hazard classes.

Some of these hazard classes have subdivisions.

Properly describing a hazardous material not only communicates the presence of a hazardous material, but also establishes the specific emergency actions to take in an emergency.
CLASSIFICATION AND DESCRIPTION OF MATERIALS

- View Emergency Response Guide Video
- Emergency Response Guide
CLASSIFICATION AND DESCRIPTION OF MATERIALS

- Hazardous Materials Table
- Hazard Classes
- Packaging
- Marking, Labeling and Placarding
- Shipping Papers
- DOT Awareness CD and Handouts
Material Classification:
The Hazardous Materials Table

The shipping description must appear on the Shipping Paper in the exact proper sequence as shown in the Hazardous Materials Table.
Material Classification: HAZARD CLASSES

Class 1: Explosives
Class 2: Gases
Class 3: Flammable Liquids
Class 4: Flammable Solids
Class 5: Oxidizing Substances
Class 6: Poisons
Class 7: Radioactive Materials
Class 8: Corrosive Materials
Class 9: Miscellaneous Hazardous Materials
Material Classification:
Class 1 - Explosive Hazards

- Explosions are very fast chemical reactions which release large quantities of gas.
- Explosives include:
  - sporting ammunition
  - blasting charges and detonators
  - fireworks
Material Classification:
Class 2 - Compressed Gases

- A compressed gas has a physical hazard due to the increased pressure under which the chemical is maintained.
- Compressed gases include:
  - oxygen
  - nitrogen
  - compressed air
  - acetylene
Material Classification:
Class 3 - Flammable Liquids

- Flammable liquids, as the name implies, are liquids which burn.
- Flammable liquids include:
  - gasoline
  - alcohols
  - solvents such as benzene
Material Classification:
Class 4 - Other Flammable Hazards

- Other flammable hazards include:
  - flammable solids
  - self-reactive substances
  - substances which, in contact with water, emit flammable gases
Material Classification:
Class 5 - Oxidizers/Organic Peroxides

- These are chemicals which will accelerate combustion.
- Examples include:
  - sodium chlorate
  - hydrogen peroxide
  - methyl ethyl ketone
Material Classification:
Class 6 - Toxic & Infectious Agents

- Health hazards include those products and materials which have an adverse effect on humans and animals.
- Examples include:
  - pesticides
  - tissue/blood samples
Material Classification:
Class 7 - Radioactive Materials
Material Classification:
Class 8 - Corrosives

- Corrosive materials will react chemically with steel, aluminum or skin.
- Examples include:
  - acids such as hydrochloric
  - alkaline materials such as sodium hydroxide
  - gases such as chlorine and ammonia
Material Classification:
Class 9 - Miscellaneous Hazards

- Don’t readily fall into the other categories.
- Examples include:
  - substances with noxious odor
  - substances which are magnetic
  - dry ice
SPECIAL HAZARDS

- Compressed Gases
PACKAGING REQUIREMENTS:

- Packaging must be sufficient to ensure containment of the material throughout transportation.
- In most cases, hazardous materials must be packaged in “performance packaging” consisting of inner receptacles; cushioning and absorbent materials; and an outer packaging that has been designed, manufactured, and certified for containment of specific hazardous material classes and packing groups.
All Packaging:

- Meet DOT requirements
- Marked with the proper shipping name & ID number
- Tested & approved prior to use
- Include manufacturer’s marking
ALL LABELS:

- Durable
- Weather-resistant
- Contrasting background or border
- Displayed next to each other if more than one required
- Unobscured
- On two sides excluding bottom
Labeling:

- Hazard warning notices that include the hazard class and division of hazard.
- Labels identify the primary and subsidiary hazards of materials and are applied to the outside of packages of hazardous materials.
- Class number is covered on subsidiary hazard.
Markings:

- Markings must include at least the following information:
  - Proper shipping name and ID number
  - Technical name, if required by 172.301
  - Name and address
  - Orientation markings for liquids
ALL MARKINGS:

- Durable
- In English
- Unobscured
- Sharp Contrasting Background
- Away from other Markings
DO NOT ACCEPT IF NOT PROPERLY MARKED AND LABELED!
CLASSIFICATION AND DESCRIPTION OF MATERIALS

- Application of applicable regulations begins with classification of the material
- Hazardous Materials are grouped into 9 primary hazard classes
- Some of these hazard classes have subdivisions
- Properly describing a hazardous material not only communicates the presence of a hazardous material, but also establishes the specific emergency actions to take in an emergency
SHIPPING & RECEIVING REQUIREMENTS:

- When in doubt about requirements, contact your shipping agency for assistance to assure compliance
- Contact them prior to shipment
- If using UPS, trained hazardous materials specialists are available at 1-800-554-9964 to help meet package preparation and documentation requirements
Hazardous Materials
Transportation
Security Requirements
Required Elements of a Security Plan:

- Personnel Security
- Unauthorized Access
- En Route Security
Personnel Security:

- Verify information provided on employment applications
- Ensure employees are familiar with security plans
- Encourage employees to report suspicious incidents or events
- Implement routine security inspections
- Meet regularly to discuss security measures and improve awareness
- Provide information on security issues
- Provide awareness and in-depth security training
Unauthorized Access

- Security review of facility
- Restrict access to facility
- Improve security procedures for pick-up and deliveries
- Lock vehicles and secure containers
- Inventory on-site hazmat periodically
En Route Security

- Identify preferred routes and alternatives
- Minimize stops
- If hazmat must be stored during transportation, ensure storage facility is secure
- Keep doors locked
- Do not leave vehicle unsecured if cargo is still inside
- Be aware of your surroundings
- Report suspicious activities to local law enforcement
Emergency Procedures: Prevention of Spills & Leaks

- Read labels and material safety data sheets so you know what you are dealing with and how to protect yourself before there is an emergency.
- Use proper containers.
- Inspect containers regularly to make sure they are in good condition.
- Secondary containment and spill kits for damaged packages.
Emergency Procedures:

- Identify material by using labels, markings, shipping papers, MSDS’s or Emergency Response Guidebook and contact EH&S at 328-6166
- If properly trained, contain spill by using absorbent materials or secondary containment, avoiding contact with skin, eyes and clothing
- Shut doors of the room or area and prohibit entry
- If necessary sound the fire alarm and evacuate
- Do not clean up spill – contact EH&S
Emergency Procedures...

- **Emergency Numbers:** 911 from Campus Phones
  - ECU Police on Main Campus – 328-6150
  - School of Medicine Police - 744-2246
  - Environmental Health & Safety - 328-6166
  - Radiation & Biological Safety - 744-2070
When calling emergency personnel, the following information should be given:

- Name and department
- Location of emergency
- Substance name
- Size of spill
- Approximate rate of flow
- Actions taken to control spill
Click the link to complete the QUIZ