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

- OSHA - employee safety - hazard communication - 29 CFR 1910.1200
- EPA - environmental safety
- DOT - transportation safety - shipping & receiving requirements - 49 CFR

HAZARD COMMUNICATION

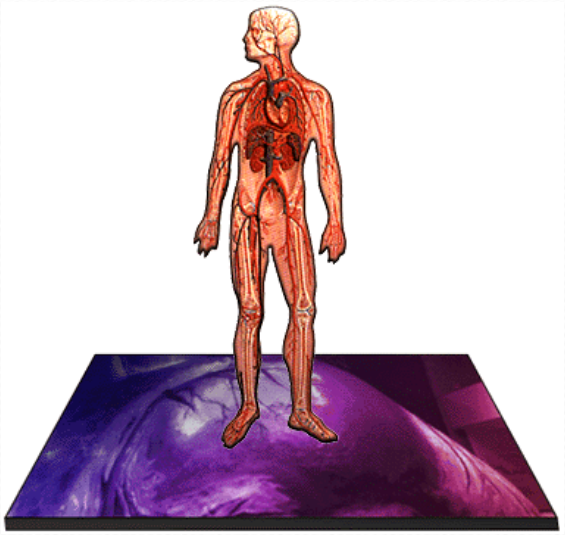
- The purpose of this standard is to communicate information about hazardous chemicals to employees so they can work safely
- A hazardous chemical means any chemical which is a physical hazard (flammable, reactive, explosive, etc.) or a health hazard (exposure results in acute or chronic health effects
- 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

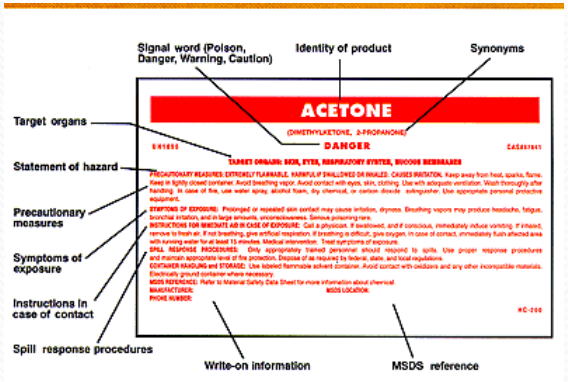
HAZARD COMMUNICATION:
Routes of Exposure

- INHALATION
- ABSORPTION
- INGESTION
- INJECTION



HAZARD COMMUNICATION: Hazard Identification

- MSDS's
- LABELS



HAZARD COMMUNICATION: MSDS's

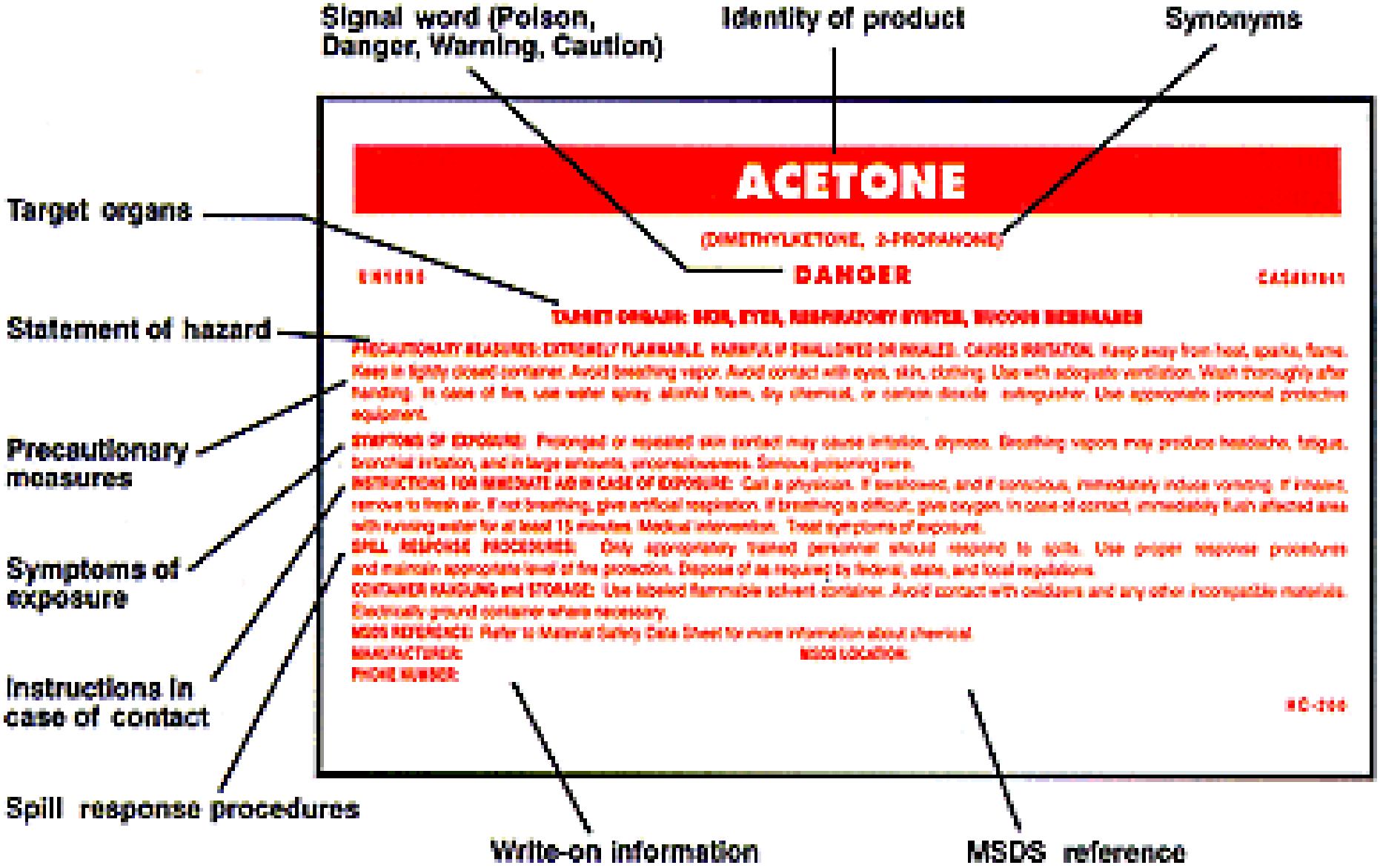
- Chemical information sheets that include chemical ID, physical characteristics, hazardous ingredients, health hazards, handling precautions, first aid, reactivity data and control procedures
- Must have a sheet for every hazardous chemical on site and must be accessible to every employee

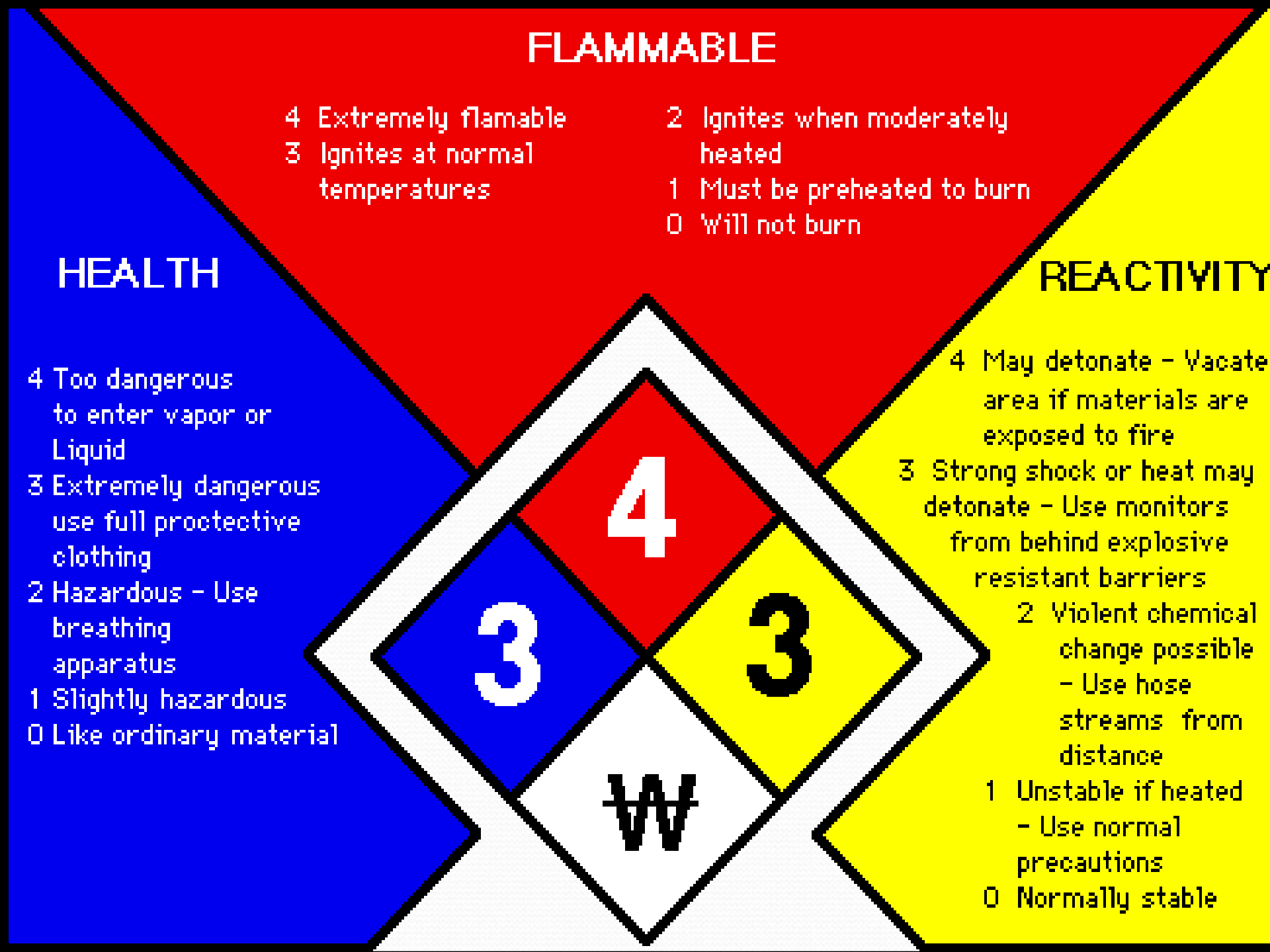
HAZARD COMMUNICATION: LABELS

- 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

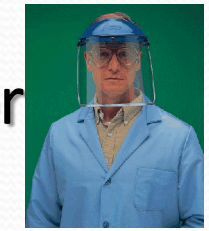
- Appropriate hazard warnings include DOT hazard classes, NFPA Hazard Diamond, or a descriptive statement of the hazards
- Whichever method is employed, it must be used consistently throughout the labs and all workers must be familiar with the method


Signal word (Poison, Danger, Warning, Caution)
Identity of product
Synonyms
ACETONE
(DIMETHYLKETONE, 2-PROPANONE)
DANGER
Target organs
Statement of hazard
Precautionary measures
Symptoms of exposure
Instructions in case of contact
Spill response procedures
Write-on information
MSDS reference


FLAMMABLE
4 Extremely flamable
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 proctective 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
4
3
3
W

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

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

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

§172.101 HAZARDOUS MATERIALS TABLE

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Accelerene, see p-Nitrosodimethylaniline.	.....			.....		.....	.....	.....	.....	.....		
	Accumulators, electric, see Batteries, wet etc.	.....			.....		.....	.....	.....	.....	.....		
D	Accumulators, pressurized, pneumatic or hydraulic *(containing non-flammable gas).*	2.2	NA1956		2.1		306	306	None ..	No limit	No limit	A	
	Acetal	3	UN1088	II	3	T7	150	202	242	5 L	60 L	E	
	Acetaldehyde	3	UN1089	I	3	A3, B16, T20, T26, T29	None ..	201	243	Forbidden	30 L	E	
A	Acetaldehyde ammonia	9	UN1841	III	9		155	204	240	200 kg	200 kg	A	34
	Acetaldehyde oxime	3	UN2332	III	3	B1, T8	150	203	242	60 L	220 L	A	
	Acetic acid, glacial *or* Acetic acid solution, *with more than 80 percent acid, by mass.*	8	UN2789	II	8, 3 ...	A3, A6, A7, A10 B2, T8	154	202	243	1 L	30 L	A	

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

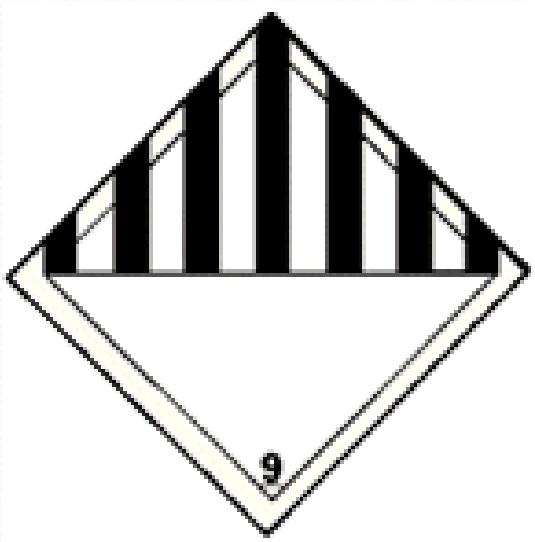
Material Classification:
Class 7 - Radioactive Materials

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:

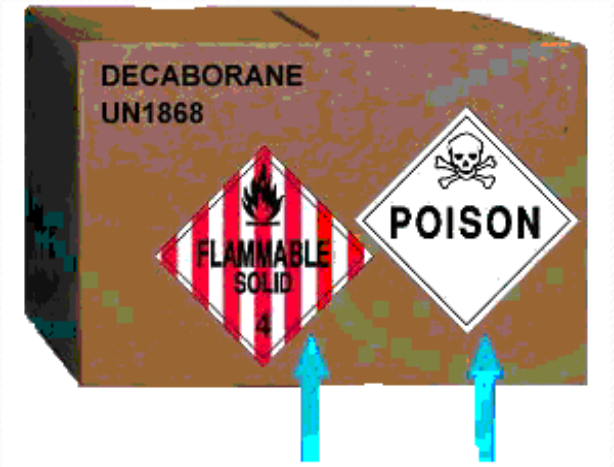
- Meet DOT requirements
- Marked with the proper shipping name & ID number
- Tested & approved prior to use
- Include manufacturer's marking

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

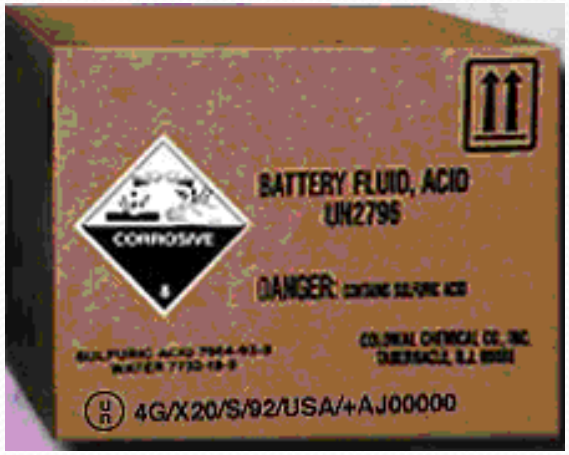


Markings:

- 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

§172.802

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

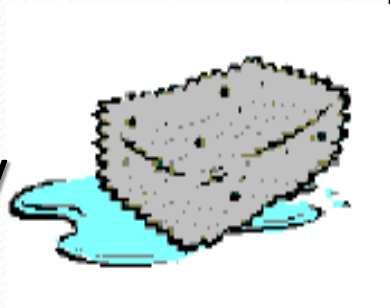
- Identify preferred routes and alternatives
- Minimize stops
- If hazmat must be stored during transportation, ensure storage facility is secure
- Keep doors locked
- Do not leave vehicle unsecured if cargo is still inside
- Be aware of your surroundings
- Report suspicious activities to local law enforcement

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 damag 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