

# **MAJOR PROGRAM POINTS**

## **"HAZMAT LABELING"**

**Training for the  
OSHA HAZARDOUS WASTE OPERATIONS  
and EMERGENCY RESPONSE (HAZWOPER) REGULATION**

# Outline of Major Points Covered in the "HAZMAT Labeling" Course

The following outline summarizes the major points of information presented in the course on HAZMAT Labeling. The outline can be used to survey the course before taking it on a computer, as well as to review the course when a computer is not available.

- **The date was March 6th, 1990. On that day, the Occupational Safety and Health Administration (OSHA) put a new regulation into effect.**
  - They wanted to prevent accidents involving hazardous materials from injuring even one more worker.
  
- **The Regulation applied to:**
  - Hazardous waste sites.
  - Treatment, storage and disposal facilities.
  - Emergency response operations.
  
- **The range of topics covered by the regulation includes:**
  - Accidental release measures.
  - Monitoring equipment.
  - Exposure controls.
  - Respiratory protection.
  - Decontamination procedures.
  - Medical surveillance.
  
- **It was the most comprehensive standard of its kind ever written.**
  
- **OSHA named the regulation "Hazardous Waste Operations and Emergency Response."**
  - Most of us simply call it HAZWOPER.
  
- **HAZWOPER covers all kinds of hazardous materials, including:**
  - Pesticides.
  - Radioactives.
  - Shock-sensitive waste.

- **But knowing how to handle these substances won't help you... if you can't tell what you're working with!**
- **Throughout the day we encounter a variety of chemicals. But to work with them safely we need to be able to identify them.**
  - That's where labels come in.
- **Labels can tell us:**
  - The name of a substance.
  - Who made it.
  - Its hazards.
  - How to protect ourselves when we handle them.
- **To insure that we have this critical information, OSHA's Hazard Communication Standard mandates that chemical manufacturers, importers and distributors label containers of hazardous substances, including:**
  - Drums.
  - Barrels.
  - Boxes.
  - Bottles.
  - Cylinders.
  - Storage containers.
  - Process vats.
  - Tanks.
  - Trucks and rail cars.
- **OSHA's requirements are fairly flexible.**
  - The labels must be legible, prominently displayed and include three types of information.
- **First, the identity of the substance must be marked on the label.**
  - Usually a chemical is identified by a proper name, such as "Ammonia."
  - But a substance may also be referred to by a common name, such as "bleach."

- **In addition to the chemical's name, appropriate hazard warnings must be clearly displayed on the label.**
  - These warnings can be in the form of words or symbols.
  - They should plainly show that the contents of the container are hazardous.
- **The final pieces of information that must appear on a container are the name and address of the chemical's manufacturer, distributor, or importer.**
  - This allows you to contact the material's originators if you need more information.
- **Many labels also include other warnings that are not required by law, such as:**
  - Precautionary statements like "Do Not Use Near an Open Flame."
  - Recommendations regarding the type of Personal Protective Equipment (PPE) that must be worn when handling the materials.
- **Because OSHA's labeling requirements are so flexible, you will see several different types of labels being used to identify hazardous chemicals, such as:**
  - Simple warnings, like labels that say "Do Not Stack" or "Caution."
  - Complete labeling systems that require some significant training in order to fully understand them.

- **There are four labeling systems that are used most often with hazardous substances.**
  - The Department of Transportation (DOT) "Hazard Class Labels" identify hazardous materials that are being transported.
  - Hazard Communication Labels, such as "Hazardous Materials Identification System" (HMIS) labels and "Target Organ Information" labels, inform workers of hazardous materials in their workplaces.
  - "National Fire Prevention Association" (NFPA) labels are designed to quickly provide information to first responders during emergencies.
  - "Hazardous Waste" labels identify waste that is harmful to human health or the environment.
  
- **Let's look at DOT labels first. There are strict guidelines regulating the size, shape and color of Department of Transportation Labels.**
  - DOT's Hazard Class Labels are designed to attract attention.
  - They are diamond shaped.
  - Labels must measure at least 3.9 inches (100mm) on each side.
  
- **These labels can be found on:**
  - Boxes.
  - Barrels.
  - Cylinders.
  - Other shipping containers.
  
- **You will also see placards with DOT symbols on:**
  - Railcars.
  - Trucks.
  - Other vehicles.
  
- **Placards are diamond shaped, just like Hazard Class labels.**
  - But because they are most often viewed from a distance and while in motion, they are bigger, measuring at least 10.75" (273 millimeters) on each side.

- **Placards can be made of various materials.**
  - The ones that you see being inserted into placard holders on many vehicles are often made of "tag board."
  - Other placards have an adhesive backing, and can be attached directly to containers and vehicles themselves.
- **For vehicles that are used to carry various hazardous materials, special "multi-paneled" placarding systems are available.**
  - These are designed so that the panels can easily be changed to display a number of different hazard warnings.
- **To make it easier for people to relate to their labels, the Department of Transportation has "grouped" materials according to the type of substance they are and the dangers they present.**
  - These "Hazard Classes" are identified by "Hazard Class Symbols and Numbers."
- **A Hazard Class Symbol must appear in the top corner of the diamond on all labels and placards.**
  - The Hazard Class Number can be found at the bottom.
  - In addition to symbols and numbers, labels and placards may also have the "Hazard Class Name" on them.
- **Each label and placard must be the color and design specified by the Department of Transportation.**
  - This helps to identify materials from each Hazard Class.

- **The DOT has categorized hazardous materials into classes.**
  - Class One: Explosives.
  - Class Two: Gases (flammable, non-flammable, and those that are toxic by inhalation).
  - Class Three: Flammable Liquids.
  - Class Four: Flammable Solids (includes spontaneously-combustible and water-reactive materials).
  - Class Five: Oxidizers and Organic Peroxides (these can cause normally inert materials to react).
  - Class Six: Poisons (materials that are toxic, harmful, infectious or pose an inhalation hazard).
  - Class Seven: Radioactive Materials.
  - Class Eight: Corrosives.
  - Class Nine: "Miscellaneous" hazardous materials (includes hazardous wastes that are composed of mixed substances).
  
- **To help keep all of this information straight, the DOT regulations review each Hazard Class in detail.**
  
- **The regulations also contain the "Hazardous Materials Table", which provides detailed information about the labels that are required for various materials.**
  - This table is located in section 172.101 of the regulations.
  - Information regarding labels that should be used with particular substances can be found in Column Six.
  
- **In addition to Hazard Class Labels, there are other indicators that help identify hazardous materials, including the material's:**
  - Proper Shipping Name.
  - UN Identification Number.
  
- **UN Numbers are an international identification system developed by the United Nations.**
  - Each four-digit number represents a different substance.
  - Gasoline, for example, is marked with the UN Number "1203."

- **While DOT labels and placards provide a good way to identify hazardous materials, "Hazard Communication" labels often go one step further, showing people how to protect themselves when they are handling the materials.**
  - There are several of these labeling systems.
  - One of the most popular is the Hazardous Materials Identification System (HMIS).
  
- **HMIS labels group hazards into three color-coded categories:**
  - Blue for "Health Hazards."
  - Red for "Flammability Hazards."
  - Yellow for "Reactivity Hazards."
  
- **These three categories are then broken down into different levels of "severity," ranging from Level Zero to Level Four:**
  - Level Zero indicates that minimal hazards exist.
  - Level One calls attention to a slight hazard.
  - Level Two cautions of a moderate hazard.
  - Level Three warns of a serious hazard.
  - Level Four indicates that a severe hazard exists.
  
- **An asterisk in the Health Hazard column indicates a potentially chronic health hazard.**
  - This means that repeated exposure to this substance is likely to cause health problems.
  
- **For example, an HMIS label marking a container of gasoline would show a Level Three in the Flammability section, a Level One in the Health column and a Level Zero in the Reactivity.**
  - This indicates that gasoline is flammable, only moderately hazardous to your health and that it is highly stable.

- **In addition to the numbering system, at the bottom of each HMIS label the PPE that should be worn when handling the substance is often indicated.**
  - The capital letters "A" through "K" are used for this purpose.
  - By consulting charts and wallet cards that show what each letter stands for, it is easy for workers to see what level of protection is needed.
  - For instance, the capital letter "C" shows that workers should wear safety glasses, gloves and a synthetic apron.
  - If the PPE column is marked by an "X," special handling is required.
  - If you encounter one of these labels, ask your supervisor for instructions.
  
- **Other hazard communication labels have "icons" representing the recommended PPE right on the label.**
  - With both labels the important thing is to wear the PPE that is recommended.
  
- **"Target Organ Information" labels are often used to supplement HMIS-type labels in many workplaces.**
  - These labels show which body organs are most often affected by a substance.
  - One target organ system uses a human figure, surrounded by check boxes representing various organs.
  - If the substance can cause harm to the eyes, there is a checkmark in the "Eyes" box.
  - Likewise, a checkmark in the "Nervous System" box indicates that a chemical is toxic to the nervous system.
  - Other systems use pictures of the organs themselves to indicate where the chemical might have dangerous effects.

- **Target Organ Information and HMIS labels can help prevent workers from having accidents.**
  - But in a spill or fire situation, first responders need a system that is designed to immediately let them know what hazards exist, and what they can do to control them.
  
- **To help emergency personnel, the National Fire Prevention Association (NFPA) has created its own labeling system.**
  - NFPA labels use a diamond shape that is divided into four sections.
  - The degree to which a substance is a fire hazard is indicated in the red area at the top.
  - The stability of the substance is indicated in the yellow section on the right.
  - The likelihood that a substance can cause health problems is indicated in the blue area to the left.
  - And if a substance has a "special hazard," such as being radioactive, it is indicated in the white section on the bottom.
  
- **In the Red, Yellow and Blue sections the numerals "0" to "4" indicate the severity of the hazards, as well as specific information about the hazards themselves.**
  - For instance, a "4" in the Red area doesn't simply mean that a "severe" fire hazard exists.
  - It also indicates that the substance has a flashpoint below 100 Fahrenheit and a boiling point above 73 degrees Fahrenheit (22.8 degrees Celsius).
  - Similarly, a "4" in the Yellow section shows that a substance is very unstable, and that any movement might cause it to detonate.
  - In the Blue area, a "4" indicates that a substance is deadly.

- **The White diamond area at the bottom of the labels uses icons to indicate "specific hazards," such as materials that are radioactive, water reactive or oxidizers.**
  - Radioactive materials are marked by the international symbol for radioactivity.
  - Water reactive materials are identified by the capital letter "W" with a line drawn through it.
  - Oxidizers are indicated by the capital letters "OX."
  
- **While the NFPA system may seem a little complicated, it is actually an easy to learn and effective way to quickly recognize potential chemical hazards.**
  
- **The labeling systems that we have talked about so far all identify hazards associated with substances that are "in transport" or are found in the workplace.**
  - But when a hazardous substance is to be disposed of, it needs to be marked with a special label that identifies it as waste.
  - By law, Hazardous Waste Labels must be attached to all containers holding waste that is harmful to human health or the environment.
  
- **The jurisdiction in which the waste is regulated determines if it must be marked by a federal or a state hazardous waste label.**
  - Most states use a federal label.
  - But in states like California and New Jersey, you must use that state's Hazardous Waste Labels on the containers.
  
- **Another thing that must be considered is the type of waste being disposed of.**
  - If it is composed of material from many different sources, like solvents that have been drained from a number of workplace areas, then a "Workplace Accumulation Label" must be attached.
  - There are also labels specifically for containers of PCBs.

- **But knowing which Hazardous Waste Label to use on a container is only half the battle, and the last half at that.**
  - First you have to determine whether a container has hazardous or non-hazardous materials in it.
  - If the substance inside a container is not known, then it must be considered hazardous (and handled accordingly), until it can be proven that it is safe.
  
- **To make a final determination, a sample of the substance needs to be taken to identify it.**
  - If the material is hazardous, then the appropriate label must be filled out and attached to the container.
  
- **The label must include both general and specific information, such as:**
  - Your company's name, address and phone number.
  - Specific information about the waste.
  - The EPA Waste Identification Number.
  - The DOT proper shipping name.
  - The UN number.
  
- **Before attaching a Hazardous Waste Label, all other labels must be removed from the container.**
  - This will prevent anyone from being confused about what is really inside.
  
- **Containers that are leaking or in danger of rupturing often need to be placed into "overpack drums."**
  - In these cases a hazardous waste label must be placed on the overpack drum, as well.
  
- **Before the waste is transported, a shipping manifest must be filled out to match the information on the labels.**
  - At the same time the manifest number must also be noted on the label.

- **In addition to the labeling systems that we have talked about, you may occasionally see other labels identifying potentially hazardous materials. These include:**
  - Labels from other countries, which often use international symbols or icons to show hazards.
  - "Custom" labels, that individual companies have created for their own labeling purposes.
  - "Empty" labels, which identify the residue left in containers that have been drained.
- **If you see a label that you don't recognize, see your supervisor.**
  - Never deal with a substance unless you are sure of what it is.
- **Although there are many different kinds of labels that are used with hazardous materials, they all have the same purpose... to inform people about the harm that a chemical can inflict if it isn't handled properly.**

**\* \* \*SUMMARY\* \* \***

- **Always be on the lookout for labels on any container you encounter.**
- **Read all labels carefully, and pay attention to their warnings.**
- **When a label recommends wearing Personal Protective Equipment... do it!**
- **If you are not sure what a label means, ask your supervisor... or consult reference materials like books, wall charts and wallet cards.**
- **When dealing with a container that has not been labeled, treat it as if the contents are hazardous.**
- **Make sure you fill out all the information correctly if you are responsible for labeling containers.**

- **Labels are often the only way to identify hazardous materials. So, take their warnings seriously! They are there for your protection!**