

HAZMAT LABELING

COURSE OUTLINE

- **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 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 degrees 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 easy to learn and an 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!**