

MAJOR PROGRAM POINTS

"MATERIAL SAFETY DATA SHEETS IN THE LABORATORY"

Part of the "LABORATORY SAFETY SERIES"

Quality Safety and Health Products, for Today... and Tomorrow

Outline of Major Points Covered in the "Material Safety Data Sheets in the Laboratory" Course

The following outline summarizes the major points of information presented in the course on "Material Safety Data Sheets in the Laboratory". 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.

- **Working with hazardous materials requires a great deal of caution.**
 - An accident or miscalculation can have serious consequences.
- **There are a number of "indicators" that can warn of danger, such as:**
 - Labels.
 - Storage area signs.
- **However, to get the full picture we must look at a substance's Material Safety Data Sheet (MSDS).**
 - OSHA's Hazard Communication Standard requires that MSDS's be supplied to users of hazardous substances.
 - They contain information designed to protect us.
 - They should be read before working with the chemical.
- **Material Safety Data Sheets cover a lot of information, including:**
 - Hazardous ingredients in the substance.
 - The personal protective equipment that should be worn when working with the substance.
 - Special emergency procedures to follow in case of an incident involving the substance.
- **Becoming familiar with MSDS's is the first step to working safely with hazardous chemicals.**

- **MSDS's must all contain the same basic information.**
 - The presentation can be different.
 - There is no "standard" format.
 - However , this can be confusing.

- **Information on the MSDS is divided into a number of sections:**
 - Product identification.
 - Ingredients.
 - Physical data.
 - Fire and explosion hazards.
 - Reactivity data.
 - Health hazards.
 - Spill/leak and disposal procedures.
 - Personal protection information.
 - Special precautions/other comments.

- **The first section lists three things, which must correspond to the manufacturer's label.**
 - The product name.
 - The manufacturer.
 - The date the MSDS was prepared.

- **Other information in the section includes:**
 - Other names (synonyms) for the product.
 - The substance's physical characteristics (such as molecular weight, CAS number, etc).
 - The manufacturer's name, address and telephone number.
 - An emergency telephone number that can be called 24 hours a day for information about the substance and what to do if it is involved in an incident.

- **Another section in the MSDS deals with "hazardous ingredients".**
 - This section contains health hazard information.

- **OSHA considers chemicals to be health hazards if they are:**
 - Carcinogenic.
 - Toxic.
 - Reproductive hazards.
 - Irritants.
 - Corrosives.
 - A sensitizer.
 - Able to damage the blood or circulatory system.
 - Are able to damage lungs, skin, eyes or mucous membranes.
- **The MSDS also contains information about any hazards associated with long-term exposure.**
 - In most cases it will provide "exposure limit" data.
 - Otherwise it will provide "raw toxicity" data.
- **Sometimes, this information can be difficult to interpret.**
 - See your supervisor with any questions.
 - Take additional precautions if you have a question regarding the degree of danger presented by the material.
- **Also discussed in this section are the product's ingredients.**
 - Manufacturers are only required to list hazardous ingredients.
 - They must make up more than 1% of the substance.
 - Carcinogens are an exception... they must only comprise 0.10% of the substance.
 - Both chemical and common names must be given.
- **An ingredient must also be listed if:**
 - There is evidence that it could be released from a mixture in concentrations exceeding established limits of exposure.
 - It presents explosion or other physical hazards.

- **The Material Safety Data Sheet also provides "physical data" that helps describe the substance. It:**
 - Indicates what the substance looks like and how it smells.
 - Lists boiling and melting points.

- **Other descriptive physical information may include:**
 - Specific gravity.
 - pH level.
 - Solubility.
 - Vapor density.
 - Odor threshold.

- **Fire and explosion hazard information is considered so important that it usually has its own section. It:**
 - Includes "flashpoint" information (the temperature at which a substance's vapors will ignite).
 - Will also show the substance's "upper and lower explosion limits".

- **Additional fire and explosion hazard information can include:**
 - Auto-ignition temperature.
 - Flammability class (NFPA).
 - Firefighting procedures.

- **The "Reactivity" section of the MSDS deals with conditions and other chemicals that can cause dangerous reactions. It:**
 - Describes how the chemical reacts under high temperatures or pressures.
 - Identifies chemical incompatibilities.
 - Addresses the chemical's "stability".

- **The "Reactivity" section also deals with the substance's:**
 - Potential for decomposition.
 - Possibility of hazardous polymerization.

- **The MSDS will also list the protective measures to take when working with the chemical, such as:**
 - Engineering controls (fume hoods or other ventilation, etc.)
 - Safe work practices.
 - Personal protective equipment that should be used.

- **Even with all the proper precautions, accidents can still happen, so:**
 - It is important to be prepared.
 - You need to anticipate problems the materials you work with can cause.

- **The MSDS also provides helpful information about precautions and spill cleanup.**
 - Review this information before beginning work.
 - It allows you to act quickly and efficiently in the event of an accident.

- **It is especially important to know what to do if chemicals come into contact with your body.**
 - Water is the first line of defense.

- **MSDSs list directions for first aid and emergency procedures for four routes of entry:**
 - Skin (contact absorption and injection).
 - Eyes.
 - Ingestion.
 - Inhalation.

- **Whenever you come into contact with a chemical you should:**
 - Alert your supervisor.
 - Seek medical attention at once.

- **The MSDS also provides important handling and storage information. It:**
 - Lists special storage requirements.
 - Helps you select the correct packing containers.
 - Includes DOT shipping information such as "hazard class" and UN number.

* * * **SUMMARY** * * *

- **The Material Safety Data Sheet is an important part of hazard communication.**
- **Know the location of MSDS's in your lab.**
- **Make sure the MSDS you have is current.**
- **Check the MSDS before you begin an experiment.**
- **Be especially cautious with a substance if the MSDS contains inadequate information.**
- **Remember, the company providing the MSDS has no idea what you are planning to do with their materials. It is up to you to apply the information on the MSDS so that you can work safely!**