HOW TO USE AN MSDS

A Material Safety Data Sheet (MSDS) is the major media for transmitting health and safety information on chemical products. It is included in the Cal-OSHA Hazard Communication Standard as the key document, along with the container label, to provide hazard information to employers and employees. Regulations require chemical manufacturers to prepare and distribute an MSDS for all hazardous chemicals and that each container of hazardous chemical in the workplace be labeled. The definition of "hazardous" has been expanded from the usual "flammable, corrosive, oxidizer, explosive, toxic or highly toxic agent, carcinogen, etc." to include combustibles as well as irritants.

All employees who will be using the material must be aware of its hazards, proper work procedures, and personal protective equipment requirements. The MSDS must also be consulted whenever a new material is introduced. A material safety data sheet for each hazardous substance in use in the department is included in your MSDS file. The Safety Office (EH&S) is the main repository for MSDS's of all products used at the UCSD Medical Centers.

The material safety data sheet contains several sections which contain specific categories of product information. Each MSDS includes the following sections usually in this standard order.

**Section 1 - Product Information**
Identifies the product by trade name or product number; the same one which will appear on the product container allowing you to match up the product label with the MSDS. Also included is the manufacturer's name and address and an emergency telephone number.

**Section 2 - Hazardous Ingredients**
Lists the major ingredients with CA numbers (Chemical Abstract Service number for that specific chemical) and respective exposure limit. As a general rule, substances with exposure limits of 100 parts per million (ppm) or less are considered extremely toxic. Those between 100 and 500 are considered moderately toxic and greater than 500 ppm are slightly toxic. Hazardous substances are identified if they are present in quantities greater than 1%, or in the case of carcinogens, greater than 0.1%.

**Section 3 - Physical and Chemical Properties**
Lists the physical and chemical characteristics - what the substances should look and smell like and how it will behave. Those substances with low boiling points and high vapor pressures, such as products with naphtha and toluene, will rapidly disperse in air when used.

**Section 4 - Fire and Explosion Information**
Important information in this section is the flash point and the lower and upper explosion limits (LEL and UEL). Vapors of flammable liquids only burn when the amount present in air is between the LEL and UEL and if the temperature is at or above the flash point. If the vapor present is below the LEL the mixture is too lean and above the UEL it is too rich. Other important information is the appropriate fire extinguisher to use if a fire does start, any special fire fighting procedures to use and any unusual hazards of the material which could contribute to a fire or explosion.
Section 5 - Reactivity Data
This section will tell you if there are any physical hazards particular to the material, that is whether or not it is stable or corrosive and with which material it is not compatible. It will also state whether the material can polymerize (react very suddenly with the generation of much heat). Epoxy resin coatings and adhesives are examples of materials which are designed to polymerize when mixed.

Section 6 - Health Effects and First Aid Information
This section is probably the most important part of the MSDS because it gives the health effects of the substances, the signs and symptoms of over exposure and if any prior conditions of a worker can be aggravated by exposure to the substance. If a chemical is carcinogenic it will be listed here as well as first aid to be administered in the event of an over-exposure. The routes of exposure of the substance are given. Inhalation into the respiratory system is the most common route. Some substances, such as lead and other metals, are toxic if ingested (swallowed). A number of liquids will penetrate the cornea and intact skin. If this is a potential, special protective clothing must be worn. Contact the Safety Office to recommend the proper personal protective equipment.

Section 7 - Spill and Disposal Information
This section provides information on how to handle and clean up spills and guidance for proper disposal should the product be considered a "waste" intended for disposal. This should always be double checked with the Safety Office for additional local restrictions.

Section 8 - Storage and Handling Information
This section gives information on any special handling and storage procedures (ie. flammable or acid storage locker.)

Section 9 - Personal Protective Equipment
Recommendations are provided to protect personnel handling spills, the type of ventilation needed, and the protective equipment (respirator, gloves, goggles, etc) that should be used. This is another very important MSDS section and should be well understood and put in practice by operating personnel.

Material safety data sheets contain the information necessary to work safely with a chemical substance. They should be reviewed periodically by supervisors and employees handling hazardous substances to ensure that employees do not become injured or sick by the chemicals with they work. Review this information at safety meetings so that everyone gets the "word" about the chemicals used in the department. Contact the Safety Office (ext. 96342) if you have any questions or need assistance in the proper use of any substance in use in your work area, with assistance with the interpretation of information contained in the MSDS or on the product label, or to order a material safety data sheet on a particular item.