THE MSDS (now called the SDS)

A Manufacturer's Safety Data Sheet, or MSDS, (now called the SDS, Safety Data Sheet) is a federally required hazard communication to employees or users of a hazardous chemical that must be supplied by the chemical manufacturer, importer, or employer providing that hazardous chemical. MSDS's are generally provided with any chemical purchased from a chemical manufacturer or importer and are kept on file by an employer.

MSDS's and other relevant safety information is required, by law, to be placed in a location where users or employees can have access to the information.

The information that must be contained on an MSDS is:

1. The **identity** of the product as used on the label.

   The chemical and common names if it is a single substance

   If it is a mixture, the chemical and common names of all the ingredients that contribute to any health hazards that constitute 1% or more of the composition

   Generally, to identify a compound of components of a mixture, the manufacturer or distributor may include such information as:

   The **CAS No.** An identification of the chemical assigned by the Chemical Abstract Service of the American Chemical Society. This is an internationally recognized identification number.
   The **molecular weight** of the chemical compound.
   The **chemical formula** of the compound. The manufacturer may list the formulas of the major components of a mixture.
   Product codes. Product numbers or catalog numbers used by the company in identifying and selling the product.

2. The **physical and chemical properties** of the hazardous chemical such as vapor pressure, flash point, autoignition temperature, explosion mixture with air, etc.

3. The **physical hazards** of the hazardous chemical including the potential for fire, explosion, and reactivity. Some companies will use the NFPA Signal System numbering in this section, but will not include the NFPA diamond.

4. The **health hazards** of the hazardous chemical, including signs and symptoms of exposure, and any medical conditions that are recognized as being aggravated by exposure to the chemical. The company may list an emergency overview of the health hazards followed by a more detailed listing.

   There are two classifications of health hazards, **acute** and **chronic**:

   Acute health hazards are those that are immediate or occur within a short time of exposure. Examples of this would be "exposure may cause irritation to the mucous membranes of the upper respiratory tract" or "this material is corrosive, causing severe burns to the skin".

   Chronic health hazards are those from prolonged exposure and may not be immediate. Examples of this would be "prolonged exposure may cause drying and cracking of skin" or "may affect liver, blood, and reproductive system."

5. The **primary route(s) of entry** into the body. This includes inhalation, ingestion, skin contact, and eye contact.

6. The OSHA (Occupational Safety and Health Administration) **permissible exposure limit** (PEL), the ACGIH Threshold Limit Value (TLV) and any other exposure limit used or recommended by the chemical manufacturer,

importer, or employer. Depending on the material, exposure limits can be expressed in ppt (parts per thousand), ppm (parts per million), or ppb (parts per billion).

7. Whether the hazardous chemical is listed in the National Toxicology Program (NTP) *Annual Report on Carcinogens* or has been found to be a **potential carcinogen** in the International Agency for the Research on Cancer (IARC) *Monographs* or by OSHA. A **carcinogen** is a substance that is known to produce cancer in humans or laboratory animals.

   Toxicological information should also include substances that are **mutagens** and/or **teratogens**. **Mutagens** are substances that can cause genetic changes that may be abrupt and heritable. **Teratogens** are substances that can induce a genetic malformation in a developing embryo or fetus.

8. Any generally applicable **precautions for safe handling** and use of the chemical known to the chemical manufacturer, importer, or employer including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks. This may include fire fighting measures.

9. Any generally applicable **control measures** which are known to the chemical manufacturer, importer, or employer such as appropriate engineering controls, work practices, or personal protective equipment such as wearing of gloves or other skin protection, eye protection, and breathing apparatus such as respirators.

10. **Emergency and first aid procedures**. This may contain separate listings for inhalation, ingestion, skin contact, and eye contact.

11. The **date of preparation** of the MSDS or the last change to it.

12. The **name, address, and telephone number** of the chemical manufacturer, importer, or employer or other party preparing or distributing the MSDS, who can provide additional information on the hazardous chemical and appropriate emergency procedures.

A manufacturer or distributor may add a disclaimer to the MSDS stating that the information supplied was what was know and accurate at the time the MSDS was written. This is intended to protect the manufacturer or distributor should someone file a lawsuit over the misuse or hazards of the product.

MSDS sheets vary from manufacturer to manufacturer in the detail provided. They can be as short as a single side of a sheet of paper to several pages in length. An extensive sample MSDS appears on the following pages.

Where to find an MSDS:
Any company or organization using hazardous materials must maintain MSDS's of those materials for all workers or users to see. The MSDS sheets may be kept in a binder in a central location or office or may be accessible by computer at the work site. There are databases, on CD-ROM, of MSDS's for a large collection of laboratory or industrial chemicals and, often, many household materials.

MSDS information can also be accessed through the Internet. Using a search engine, enter the name of the chemical or household material and MSDS. Generally a number of variations of the MSDS will be found. For a household product, only the hazardous components of the product will be listed on the MSDS as exact formulations used in a product are trade secrets.

Reference:

29 CFR (code of federal regulations) 1910.1200, U.S. Government Printing Office.