

A. Hazard Communication Program

1. Responsibilities

- a. Deans, Directors, Department Chairs, Principal Investigators, Managers and Supervisors shall:
 - i. Comply with the specific requirements of the program.
 - ii. Maintain a current list of chemicals in the work place. Provide a list of chemicals to EHS. Update the list on an ongoing basis via the Internet.
 - iii. Ensure that minimum amounts of chemicals are maintained in the workplace.
 - iv. Ensure that Safety Data Sheets (SDSs) are readily available to employees.
 - v. Ensure that necessary physical or toxic warning signs are posted in those areas where special notices are required.
 - vi. Ensure that each work area requiring specific personal protective equipment is posted with appropriate warning signs. Department Heads/Supervisors shall make appropriate personal protective equipment available as needed.
 - vii. Inform any contractor working on campus in writing of chemicals used in their work areas, and contractors must notify campus personnel of chemicals used in their work. SDS information shall be exchanged.
 - viii. Train their employees regarding the chemicals in the workplace, the location and operation of controls, procedures used to protect themselves and other workers, emergency plans and location of SDS or information related to chemicals in the workplace. (Note: Much of the above can be handled in safety meetings.)
- b. The Occupational and Environmental Safety Office is responsible for:
 - i. Assisting with periodic audits of the program.
 - ii. Establishment of an SDS library/access system via the Internet.
 - iii. Assisting with employee training through the Safety and Environmental Training Officer.
 - iv. Reviewing chemical inventories provided by LSU departments and assisting with SDS access via the Internet. The Safety and Health Officer will coordinate this activity.
- c. University Stores shall:
 - i. Ensure employees are properly trained in spill response.
 - ii. Ensure received SDSs are properly distributed.
- d. Employees shall:

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- i. Learn about the chemical and physical hazards of chemicals in their workplace and how to protect themselves.
 - ii. Comply with the chemical safety requirements of LSU's hazard communication program and the SDS sheet for specific substances.
 - iii. Immediately report spills or suspected spills of chemicals.
 - iv. Report any problems with storage or use of chemicals.
 - v. Use only those chemicals for which they have received training.
 - vi. Use chemicals only for the tasks designated and covered in and other employees from these hazards.
 - vii. Inform their supervisors of changes in operations that could affect the safety and health of the job site or work area.
 - viii. Use personal protective equipment as specified by SDS.
- e. Contractors shall:
- i. Comply with all aspects of LSU's Hazard Communication Program and the applicable OSHA standard (29CFR1910.1200 or 29CFR1926.59).
 - ii. Ensure Contractor employees are properly trained.
 - iii. Monitor and ensure proper storage and use of chemicals by Contractor employees.
 - iv. Arrange for proper disposal of Chemicals following project completion (chemicals shall not be left on campus).
- B. Note: See Appendix for contractor notification form.

2. General Program Information

This written Hazard Communication Plan (HAZCOM) has been developed based on OSHA Hazard Communication Standard and consists of the following elements:

- a. Identification of Hazardous Materials
- b. Product Warning Labels
- c. Safety Data Sheets (SDS)
- d. Written Hazard Communication Program
- e. Effective Employee Training

3. Hazardous Chemical Inventory

a. Overview

The hazard communication standard requires manufacturers of chemicals to identify all of the hazards associated with the use of their chemical products. Those employers using manufacturer's products must compile a list of chemicals known to be present in the workplace.

b. Inventory Basics

The first objective in the development of a chemical inventory is the completion of a list that includes every hazardous chemical in the workplace. The person in charge of the operation/task must determine in the case of each hazardous substance whether, under any circumstances, an employee might be exposed. Any hazardous chemical that an employee works with on a regular basis, or may be potentially exposed to in the case of an emergency, must be inventoried. EHS may be contacted to assist with this process.

c. What's on the inventory list?

There are many substances common to any workplace that you may not think of as "hazardous materials." For example: heating and cooling fluids, cleansers, soaps, paints, varnishes, lacquers, thinners, copying fluid, gasoline, antifreeze, or brake and hydraulic fluid could all be considered hazardous under the right conditions. A general rule of thumb to follow is if the manufacturer has determined that it is hazardous, or it is a pure (single, non-compounded) hazardous chemical, or if the material could burn, explode, corrode, or otherwise injure an employee under reasonable, foreseeable circumstances, it should be listed.

d. What to exclude

Some products found at the University that the OSHA hazard communication standard would not require to be on a chemical inventory list:

- i. Any hazardous waste as defined in the Resource Conservation Recovery Act (RCRA),
- ii. Tobacco or tobacco products,
- iii. Wood or wood products,
- iv. manufactured items (articles) – see below, or
- v. food, drugs or cosmetics intended for personal consumption by employees at the workplace.
- vi. Ionizing and non-ionizing radiation hazards
- vii. Biological hazards

Note: The term "article" as used in the fourth exception raises an interesting point. Under the standard, "article" is defined as a manufactured item: a) Which is formed to a specific shape of design during manufacture. b) Which has an end use that is contingent upon its shape or form as manufactured. c) Which does not release or in any way expose, an employee to a hazardous chemical during normal use. This is very important considering the importance that the Occupational Safety and Health Administration seems to place on the definition. For example, when wood burns it produces smoke which is potentially hazardous. Therefore, wood in a particular workplace could only be exempted if burning

was not a part of its “normal” work application. Another factor to consider is the notion of chemical containment. Just because a substance cannot be contained, doesn’t mean that it shouldn’t be included on your hazardous chemical list. For example, consider welding fumes. Welding fumes are produced under normal working conditions and are considered a hazardous substance that qualifies for admission to your inventory list and SDS file.

e. Inventory Procedure

EHS has a management database “EHS Assistant” which is to be used to enter inventory into a secure database. See EHS Assistant.

4. Labeling

a. General requirements

OSHA requires that containers housing hazardous substances be labeled. The intent of the law is to ensure that employees are fully informed as to the identities of the materials they are exposed to and any inherent danger that handling said substances implies. Labels provide employees with an immediate source of information and should not under any circumstances be removed or defaced. It is the manufacturer’s responsibility to label all hazardous chemicals shipped out of the company’s facility. However, if a hazardous chemical is transferred from a large container to a smaller container, or a label falls off, you may find it necessary to produce or update a label. Louisiana State University, under the Federal Communication Standard’s definition of “employer,” is required to provide its employees with relevant information about the hazardous chemicals to which they are exposed. Words such as “danger,” “caution,” or “harmful if inhaled or ingested,” usually do not fulfill the hazard warning criteria prescribed by the federal standard. According to the standard’s definition of hazard warning, the label must specifically convey the hazard of the chemical. If the inhalation of a given substance causes lung damage, then that is what the label should read, not “harmful if inhaled.” Your label should list the constituents of the product and the hazard(s) of the substance. It is not necessary to list every hazard of the chemical when you create a label; however, acute, chronic and/or well-substantiated hazards should be listed. For example, if you are transferring acid from one container to another, you need only list the name, hazardous properties and a brief warning. If an employee is unfamiliar with the acid, he/she should have enough data from the new label to reference the SDS (which your unit should have on file) and find out any additional information.

b. In-house labeling exceptions

There are three exceptions to the labeling requirements:

- i. consumer products – Cans of spray paint, toilet bowl cleaner, turpentine; in short, anything available over the counter to the general public is exempt from labeling

- requirements, provided that the item has appropriate consumer warnings on the factory label.
- ii. stationary process containers – Such as tanks. The standard states that an employer may use signs, placards, process sheets, batch tickets or other such written materials instead of actually affixing labels to process containers. If your unit is working with some sort of chemical process, for example electro-plating, it may not be practical to permanently label your stationary containers. In this case, a warning sign could be generated and stood or hung proximate to the work area. The sign or placard must convey the same information that a label would and be visible to employees in the area throughout the work shift.
 - iii. portable containers -The Hazard Communication Standard states, “the employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use by the employee who performs the transfer.”

“Immediate use” in this case means “that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.” If hazardous material is going to be in the container after the employee who filled it leaves work, or if another employee is going to use the material, it must be labeled. All this aside, it would be in everyone’s best interest if all containers, even portable ones, were labeled. When an employee fills a portable container, a simple piece of masking tape with the name of the material and its primary hazard will suffice as a temporary label.

c. Incoming container inspection

Containers of hazardous chemicals coming into the workplace must be inspected to ensure that proper labeling procedures have been observed by the manufacturer. If an improperly labeled container arrives, it must be re-labeled.

5. Safety Data Sheets

a. What Are They?

A Safety Data Sheet (SDS) is a written information sheet about a specific hazardous chemical. Since Louisiana State University is not a manufacturer of chemicals, we are not generally required to create original SDSs. We are, however, required to secure, maintain and update SDSs for all hazardous chemicals used at LSU. Whenever your department receives a hazardous material that you do not have a current SDS for, check the hazardous chemical inventory and see if it has been included. Failing this, the department may contact the manufacturer to request one or contact EHS to see if one is available.

The Federal Hazard Communication Standard (FHCS) called for all chemical manufacturers to create new Safety Data Sheets. All SDSs, as a result of the FHCS, now

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must have a date, must list medical conditions that could arise or become aggravated by exposure to the chemical, must state whether the chemical is a carcinogen or contains any carcinogens and, must state the primary routes of entry into the body (for a detailed description of what information is required on an SDS, continue reading; for a summary, see Section 4, Quick Reference Questions and Answers, about SDSs in the appendices). If you receive a chemical with an SDS that does not have the required information, then it is your responsibility to obtain or access on line an accurate copy. One indication that an SDS might be obsolete is its date. If the data sheet is dated more than three years ago, then chances are there is a more current version. In the case of an outdated SDS, every attempt should be made to secure the most recent copy.

b. Employee Access to SDSs

Employees have the right to obtain copies of any SDS(s) and/or list(s) of hazardous chemicals used in their workplace. There are three ways to obtain a Safety Data Sheet:

- 1) Contact your supervisor or safety representative,
- 2) Access the SDS databases on the Internet at the EHS web site
- 3) contact the EHS. If several SDS's are required, please submit the request to the EHS in writing and include the name of the product, the manufacturer's name and address.

c. Understanding The SDS.

Section 1 Identity – Self explanatory

Section 2 Hazardous Ingredients – Here the chemical and common names of all constituents should be listed. If the product's hazard determination was made as a mixture or compound then the common name of the product or chemical name of the compound will suffice.

Section 3 Physical/Chemical Characteristics – This section will tell you what to expect from the chemical. This is particularly important to guarantee proper handling, fire and spill address procedures.

Boiling Point – The temperature at which the material boils. If the material is a mixture, a range might be given.

Vapor Pressure – Tells how much vapor the material may produce. A high vapor pressure indicates that the material will readily evaporate.

Vapor Density – Tells how heavy a vapor is relative to an equal amount of air. A high vapor density means that the vapor will tend to accumulate at the bottom of tanks.

Solubility In Water – Indicates the solubility of the substance in water. Solubility is generally indicated numerically in weight percent. Solubility might also be expressed as follows:

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Water Solubility Table

Negligible.....less than 0.1 percent solubility

Slight.....0.1 to 1 percent solubility

Moderate.....1 to 10 percent solubility

Appreciable.....more than 10 percent solubility

Complete.....soluble in all proportions

Specific Gravity – Indicates how heavy the material is relative to water.

Specific Gravity Table

1.0.....same as water

above 1.0.....heavier than water

below 1.0.....lighter than water

Evaporation Rate – You must exercise caution when interpreting evaporation rate data. There are two commonly used bases from which to derive a figure. Ethyl ether is used as the basis for determining evaporation rates of highly volatile solvents. In this case, values higher than 1 indicate less rapid evaporation than ether. Butyl acetate is the standard used for less volatile solvents and values greater than 1 indicate evaporation rates greater than butyl acetate.

Melting Point – Temperature at which a solid material melts.

Appearance and Color – Self-explanatory.

Section 4 Fire and Explosion Hazard Data – This information is intended to help you in case of an emergency. Special attention should be taken to understand how to interpret the data in this section quickly and correctly.

Flash Point – This figure indicates the temperature at which a material will ignite. There are two general methods used to determine flash point (closed cup and open cup), so the method used in the determination should be specified.

Flammable Limits – This gives the range of concentrations of a gas or vapor (percent by volume of air) which will burn or explode if exposed to an ignition source. Upper explosive limit (UEL) and lower explosive limits (LEL) are given.

Extinguishing Media – Cites the appropriate fire extinguishing media for the material.

Special Fire Fighting Procedures – A list of special provisions including personal protective equipment and procedures.

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Unusual Fire and Explosion Hazards – Lists any peculiarities the material may demonstrate during firefighting procedures. For example, this section could contain the following: “extremely flammable, water reactive, vapors heavier than air and could flow along floor to alternate ignition sources.”

Section 5 Reactivity Data -This information helps the user determine safe storage procedures. This section should provide information on material stability and reactivity and should state what other chemicals or substances to avoid when handling the material.

Stability – Tells how easily a material becomes self-reactive and under what conditions it is most likely to do so.

Incompatibility – Tells what chemicals that the material might come in contact with that should be avoided.

Hazardous Decomposition or Byproducts – Lists hazardous chemicals that are produced if the material is burned, oxidized or heated.

Hazardous Polymerization – Usually a yes or no response indicative of whether or not hazardous polymerization is likely to occur. If “yes” then conditions by which the reaction could take place should be listed.

Section 6 Health Hazard Data – This section gives pertinent health data and effects of exposure.

Routes of Entry – This information tells you how the chemical is most likely to enter the body. Also indicated should be any potential routes of entry in a foreseeable emergency situation. A foreseeable emergency is one that might be expected as a consequence of something going wrong during the normal course of an employee’s job, e.g. a tank explosion, burst pipe, accidental inhalation, ingestion, etc.

Health Hazards – Indicates what the potential health effects of exposure to the material are and whether the effects are acute or chronic. Acute effects are those that occur from a concentrated dose of the material over a relatively short period of time. Chronic conditions are usually associated with continuous, low-level exposures, and do not appear for days, months, or even years after the initial exposure.

Carcinogenicity – Tells if the material is carcinogenic or not. A material is considered carcinogenic if it is specified as such by the National Toxicology Program’s, Annual Report on Carcinogens, the International Agency for Research on Cancer, or OSHA.

Signs and Symptoms of Exposure – The most common symptoms of exposure are described in this section. Specific allergic reactions are rarely listed so there may be other danger signs not mentioned by the SDS.

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Medical Conditions Generally Aggravated by Exposure – Those medical conditions generally recognized as aggravated or complicated by exposure to the material.

Emergency First Aid Procedures – Self-explanatory for the most part. It should be noted that these are first aid procedures only and a qualified medical person should be contacted and apprized of the situation as soon as possible.

Section 7 Control Measures – This section lists protective equipment to be used, types of ventilation and general precautions to consider.

Respiratory Protection – Type of respirator to use.

Ventilation – Type of ventilation suggested for work with the material.

Protective Gloves – Gives construction (type of material) of the glove recommended for work with the substance.

Eye Protection – Indicates type of eye protection.

Other Protective Clothing and/or Equipment – Tells when special suits or protective equipment of any kind should be used.

Work / Hygienic / Maintenance Practices – Indicates personal hygienic practices for working with the material, like washing hands, etc.

Glossary of Terms Used On an SDS

Acute – Short term period of action. Readily apparent.

Asphyxiant – A gas or vapor that can cause injury by reducing the amount of oxygen available for breathing.

Carcinogen – A substance which has been identified as causing cancer in humans.

Chronic – A long time period of action.

Combustible Liquid – A liquid having a flash point at or above 1000F but below 2000F. This definition does not include mixtures containing one or more constituents with flash points outside the parameters indicated.

Compressed Gas – Means 1) a gas or mixture of gases having in a container an absolute pressure exceeding 40 pounds per square inch at 700F, or 2) a gas or mixture of gases having in a container an absolute pressure exceeding 104 pounds per square inch at 1300F, regardless of the pressure at 700F, or 3) a flammable liquid having a vapor pressure exceeding 40 pounds per square inch absolute pressure at 1000F, as determined by the American National Standard Method of Test for Vapor Pressure of Petroleum Products.

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Corrosive Material – A chemical capable of causing visible and irreversible damage to human skin tissue at the site of contact.

Explosive – A chemical that produces a sudden release of pressure, gas and/or heat when subjected to sudden shock, pressure or high temperature.

Exposure – Contact of an individual with a hazardous material during the course of employment through any route of entry.

Flammable Material – A substance that meets any of the following specifications: A flammable aerosol is a chemical substance or mixture, dispensed from a container as a mist, spray or foam by a propellant under pressure, which yields a flame of at least 18 inches at full valve opening, or a flashback (flame extending back through the valve) at any opening. A flammable gas is a gas which, at normal atmospheric pressure and temperature and at a concentration of 13 percent or less, forms a flammable mixture, or that forms a range of flammable mixtures with air greater than 12 percent regardless of the lower limit. A flammable liquid for our purposes, is defined as having a flash point below 1000F except that this does not include any mixture where any one constituent has a flash point at or above 1000F and makes up 99 percent or more of the total volume of the mixture. A flammable solid is a material (other than an explosive) that causes fire through friction, absorption of moisture, spontaneous chemical change, retained heat from manufacturing or processing, or that can be readily ignited and can remain so even after the ignition source is removed.

Flash Point – The minimum temperature at which a substance produces enough vapor to be ignited.

Foreseeable Emergency – Any potential occurrence that could result in the uncontrolled release of a hazardous material into the workplace.

Hazardous Chemical Substance or Mixture – Is a substance considered as one or more of the following: a toxic material, a carcinogen, a corrosive material, an irritant, a strong sensitizer, a dangerously reactive material, a flammable material, a combustible liquid, a pyrophoric material, a strong oxidizer, an explosive material, or a compressed gas.

Health Hazard – A relative term generally referring to any substance that has been shown by at least one established scientific study to produce acute or chronic detrimental health effects to exposed personnel.

Irritant – A chemical substance or mixture, other than a corrosive, that when contacted with the skin produces an inflammatory reaction to the affected area and/or surrounding areas.

Median Lethal Concentration LC50 – The concentration in air of gas, vapor, mist, fume or dust for a given period of time that will kill 50 percent of the test animals using a specified test procedure. Inhalation is the primary route of entry.

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Median Lethal Dose LD50 – The dosage of a substance that will kill 50 percent of the test animals to which the substance is administered using a specified test procedure. Various routes of entry can be used for testing purposes.

LEL (Lower Exposure Limit) – The lowest concentration of a gas or vapor in air that will ignite or explode if an ignition source is provided.

Safety Data Sheet (SDS) – An information document that contains relevant information about a specific chemical or mixture. Also lists the hazards of the chemical, appropriate emergency response procedures, protective equipment that should be worn, etc..

Mutagen – A material that affects organisms at the genetic level and whose effects may be seen in subsequent generations.

Oxidizer – A chemical that promotes combustion in other materials. The definition does not include explosives.

Physical Hazard – A chemical that is either a combustible liquid, a compressed gas, an explosive, is flammable, an organic peroxide, an oxidizer, is pyrophoric, is reactive or water-reactive.

Pyrophoric Material – A chemical substance or mixture that will ignite spontaneously in dry or moist air at below 1300F.

Reactive Material – A chemical substance or mixture that may vigorously polymerize, decompose, condense, or become self-reactive under conditions of shock, pressure or temperature. Includes chemical substances that can be classified as explosive, an organic peroxide, a pressure generating material or a water reactive material.

Sensitizer – A chemical substance or mixture known to cause some form of hyper-sensitive reaction to normal tissue when said tissue is exposed to it.

Teratogen – A chemical that causes physical defects in a developing embryo.

Threshold Limit Values (TLV) – These are the upper exposure limits of airborne concentrations of chemicals that are accepted as safe for employees to be exposed to on a day-in, day-out basis. There are three types of threshold limit values. The Time Weighted Average (TWA) is the maximum concentration that employees working eight hours per day, 40 hours per week can be exposed to with no adverse physical effects. The Short Term Exposure Limit (STEL) is the maximum concentration to which workers can be exposed for a period of up to 15 minutes with no detrimental effects. Finally, the Ceiling (C) is the concentration that should never be exceeded, not even instantaneously.

Toxic – Refers to any chemical or substance that falls into any of the following categories:

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- 1) A chemical that has a median lethal dose of more than 50 milligrams per kilogram but not more than 1000 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each;
- 2) a chemical that has a median lethal dose of more than 200 milligrams per kilogram but not more than 1000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours or less with the bare skin of albino rabbits weighing between 2 and 3 kilograms each; or,
- 3) a chemical that has a median lethal concentration in air of more than 200 ppm but not more than 2000 ppm by volume of gas vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for one hour or less to albino rats weighing between 200 and 300 grams each.

Unstable – A chemical or substance in a pure state (nothing added) that will readily polymerize, decompose, condense, or become self-reactive under conditions of shock, pressure or temperature.

Abbreviations commonly found on an SDS:

AQTX.....	Aquatic Toxicity
RDS.....	Primary irritation dose
atm.....	Atmosphere
IRR.....	Irritant effects (systemic)
bp.....	Boiling point
kg.....	Kilogram
ca.....	(circa) about
l.....	Liter
CAR.....	Carcinogenic effects
LEL.....	Lower explosive limit
cc.....	Cubic centimeter
LFM.....	Linear feet per minute
CC.....	Closed Cup
LC50.....	Median lethal concentration
CFR.....	Code of Federal Regulations

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LD50.....	Median lethal dose	
CNS.....	Central Nervous System	
m ³	Cubic meter	
COC.....	Cleveland Open Cup	
mp.....	Melting point	
conc.....	concentration	
MESA.....	Mining Enforcement and Safety Admin.	
decomp.....	decompose	
mg.....	Milligram	
G.I. or GI.....	Gastrointestinal ml.....	Milliliter
g or gms.....	Grams m Hg.....	Milliliters of Mercury
HW.....	Hazardous waste	
MLD.....	Mild irritation effects	
I.....	Intermittent	
SDS.....	Safety Data Sheets	
inhl.....	Inhalation	
MW.....	Molecular weight	
insol.....	Insoluble	
NEO.....	Neoplastic effects	
NOx.....	Oxides of Nitrogen	
PMCC.....	Pensky-Martens Closed Cup	
Ox.....	Oxides of Phosphorous	
ppb.....	Parts per billion	
TLV.....	Threshold limit value	
UEL.....	Upper exposure limit	

6. Training

Hazard Communication–Teaching Outline

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1. Objectives:

- a. To assure that the employee is made aware of the danger of hazardous materials/chemicals in the workplace.
- b. To assure that the employee is made aware of how such materials/chemicals affect his/her body.
- c. To assure that the employee learns how to recognize through labeling the hazard categories of materials/chemicals.
- d. To assure that the employee learns to interpret the Safety Data Sheet (SDS).
- e. To assure that the employee learns how to protect himself/herself from hazardous materials/chemicals.

2. Modes of Entry into The Body:

- a. Inhalation–Breathing
- b. Ingestion–Entering through the mouth
- c. Absorption–Contact with exposed body areas
- d. Contact–As above (Corrosives)
 - i. Once in the body, many materials/chemicals attack vital organs
 - ii. Attack can be long or short term, but the results can be the same

3. Effects:

- a. Carcinogenic–Cancer
- b. Toxic–Poison the organs
- c. Flammable–Burns
- d. Reactive–Explosion, burns, or toxic fumes leading to injury or death
- e. Cryogenic–Freezing or frostbite of body parts
- f. Corrosive–Destruction of human tissue
- g. Mutagenic–Damage to reproductive processes and fetus

4. Recognizing The Hazard:

- a. The NFPA Hazard Identification System
 - i. Health–Blue
 - ii. Flammability–Red
 - iii. Reactivity–Yellow
 - iv. Others–Colorless
 - v. The numerical rating system
- b. Product labeling by manufacturer
 - i. Display of labels
 - ii. Display of signs

5. Safety Data Sheets:

(OSHA standard format)

Section 1, Identification includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

Section 2, Hazard(s) identification includes all hazards regarding the chemical; required label elements.

Section 3, Composition/information on ingredients includes information on chemical ingredients; trade secret claims.

Section 4, First-aid measures includes important symptoms/ effects, acute, delayed; required treatment.

Section 5, Fire-fighting measures lists suitable extinguishing techniques, equipment; chemical hazards from fire.

Section 6, Accidental release measures lists emergency procedures; protective equipment; proper methods of containment and cleanup.

Section 7, Handling and storage lists precautions for safe handling and storage, including incompatibilities.

Section 8, Exposure controls/personal protection lists OSHA's Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE).

Section 9, Physical and chemical properties lists the chemical's characteristics.

Section 10, Stability and reactivity lists chemical stability and possibility of hazardous reactions.

Section 11, Toxicological information includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12, Ecological information

Section 13, Disposal considerations

Section 14, Transport information

Section 15, Regulatory information

Section 16, Other information, includes the date of preparation or last revision