

EVANGEL UNIVERSITY HAZARDOUS COMMUNICATION PLAN

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EVANGEL UNIVERSITY HAZARDOUS COMMUNICATION PROGRAM

Introduction

Many workers are exposed to chemical hazards at the workplace on a daily basis. Because of the large number of existing chemical products (approx. 575,000) and the large number of new ones being introduced annually, Evangel University has determined that it is very important protect exposed or potentially exposed workers.

Exposure to hazardous chemicals may cause or contribute to many serious health effects such as heart ailments, kidney and lung damage, sterility, cancer, burns, and rashes. Some chemicals may also be safety hazards and have the potential to cause fires, explosions, and other serious accidents.

Because of the seriousness of these safety and health problems the Occupational Safety and Health Administration (OSHA) has issued a standard entitled "Hazard Communication" (29 CFR 1910.1200, 1915.99, 1917.28, 1918.90, 1926.59, and 1928.21). The goal of the standard is to reduce the incidence of chemical source illnesses and injuries.

The purpose of the hazard communication standard is to establish uniform requirements to make sure that the hazards of all chemicals produced, imported, or used within the United States are evaluated and that this hazard information is transmitted to affected employers and employees.

Successful hazard communication programs can help ensure that employee injury and illness rates fall. Evangel University is mandated by this standard to convey hazard information to our employees by means of labels on containers, material safety data sheets (MSDS), training, and other forms of warnings. This manual will provide necessary hazard information to employees, so they can participate in and support the protective measures instituted in the workplace.

Necessary Components of a Written Hazard Communication Program

Employers must develop, implement, and maintain at the workplace a written, comprehensive hazard communication program that includes provisions for:

1. container labeling
2. material safety data sheets
3. an employee training program
4. list of all hazardous materials in the workplace area
5. the means the employer will use to inform employees of the hazards of non-routine tasks
6. hazards associated with chemicals in unlabelled pipes.

The written Hazard Communication Program must be available to employees, their designated representatives, the Assistant Secretary for Occupational Safety and Health, and the Director of the National Institute for Occupational Safety and Health (NIOSH).

The Necessity of Hazard Evaluation

Written hazard evaluation procedures are required. This is usually performed by the manufacturer of the hazardous material, and this information is provided to the user through Material Safety Data Sheets. The federal standard calls for evaluation of both physical and health hazards.

Physical hazards are chemicals which are: combustible liquids, compressed gas, explosive, flammable, organic peroxides, oxidizers, pyrophorics, unstable (reactive), or water-reactive.

The standard defines a health hazard as any chemical for which there is statistically significant evidence, based on at least one study conducted in accordance with established scientific principles, that acute or chronic health effects may occur in exposed employees. This includes carcinogens, toxic agents, reproductive toxins, irritants, corrosives, sensitizers, liver, kidney and nervous system toxins, agents which act on the blood-forming organs, and agents which damage the lungs, skin, eyes or mucous membranes.

The standard applies only to chemicals which are known to be present in the workplace and to which employees may be exposed under normal conditions of use in a foreseeable emergency.

The Necessity of Warning Labels

The federal standard mandates that labels be affixed by the manufacturer, importer or distributor of chemicals in shipped containers. Additionally, employers are to affix labels to containers used by employees in the plant. However, signs, placards, process sheets, batch tickets or blend tickets may be used for stationary containers. Also excluded from labeling requirements are portable containers to which chemicals may be transferred from labeled containers. The labels must include the identity of the contents, hazard warnings, and name and address of the manufacturer or responsible party.

Material Data Safety Sheets (MSDS's)

Under the federal rules, manufacturers, importers and distributors must forward material safety data sheets at the time of initial shipment of a chemical to an employer. The employers are then required to obtain and maintain MSDS for each hazardous chemical used in the workplace.

The MSDS must contain information on the:

1. physical and chemical characteristics
2. known acute and chronic health effects
3. exposure limits and whether OSHA, IARC, or NTP considers the chemical a carcinogen
4. precautionary measures
5. primary routes of entry into the body
6. applicable personal protective equipment
7. date of preparation or last change to the MSDS
8. name, address and telephone number of the MSDS preparer who can provide additional information in an emergency.

MSDS's for each hazardous chemical must be kept in the workplace and the employer must ensure that they are readily accessible during each work shift to employees. The OSHA Act prohibits discrimination against employees for asserting their rights under the act.

An employer may withhold from MSDS the specific chemical identity of a chemical, including the name and other specific information under the federal standard, only if it can be substantiated to be a trade secret; the MSDS must then indicate that the identity is being withheld because it is a trade secret. Even under these circumstances, information about the properties and effects of the chemical must be disclosed in the MSDS.

In an emergency, if a treating physician or nurse determines that the chemical identity is necessary for first aid treatment, the manufacturer, importer or employer shall disclose the trade secret information to the doctor or nurse through a written statement of need. A confidentiality agreement may be required as soon as circumstances permit.

The Necessity of Training

Training and education under the federal standard must be conducted whenever a new employee begins work and/or when new hazards are introduced into the workplace. The training must cover requirements of the standard, the physical and health hazards of chemicals in the work area, and methods employees may use to detect the presence or release of a hazardous chemical in the work area.

Additionally, training must address how employees can protect themselves from the hazards including work practices, emergency procedures, and personal protective equipment. The labeling system and MSDS must be explained and a list of all hazardous chemicals known to be present in the workplace made available. Also, provisions must be made for non-routine tasks and for informing employees of contractors who may be exposed to hazards.

All employers should keep records of who has received training and what training each person has received. Employees who are trained should sign a form indicating they did receive the training.

EVANGEL UNIVERSITY EMPLOYEE HAZARD COMMUNICATION PROGRAM

Overview

The known hazards of chemicals used by Evangel University will be provided to our employees. This Hazardous Communication Program will include 1) product labels, 2) Material Safety Data Sheets, and 3) training. All employees of Evangel University who work with hazardous materials will be apprised of the particular hazards associated with chemicals in their environment at the beginning of their work responsibilities or by their supervisors when new hazards are introduced.

Employees will be trained in the hazards of chemicals in the work place through 1) departmental training, 2) safety workshops sponsored by the Safety Committee, and 3) online training tutorials. Training will include measures taken by Evangel University and measures the employee can take to protect himself/herself from work place hazards.

Properties of Hazardous Chemicals which are present or may at times be present in one's work place are discussed in this Manual.

Detailed Outline

- 1) MSDS and MSDS Files
 - a) Material safety data sheets are received from the company selling or distributing or giving the chemical to Evangel University. No chemical samples may be accepted unless MSDS's have been received.
 - b) The original copy must be given to the Environmental Health and Safety Coordinator Officer (= Safety Committee Chair) who will maintain a master file of MSDS's in his office. In addition, he will provide appropriate work copies to be posted in work areas to departmental supervisors and other areas as required by law.
 - c) Departmental Supervisors are to obtain MSDS's for all hazardous materials in their areas. The Environmental Health and Safety Coordinator will assist in the acquisition of difficult to obtain MSDS's.

- 2) Labels and Signs
 - a) Departmental Supervisors shall be responsible for the appropriate labeling of containers of Hazardous Materials. These should include the standard NFPA Hazard Level labels. The Hazard class information should be available from the MSDS for each product. It is the responsibility of each department head to see to it that all containers are appropriately labeled.
 - b) Warning signs are installed by the using department.

3) Employee Training Sessions

- a) Initial safety training of employees is the responsibility of the Environmental Health and Safety Coordinator (also chair of the Safety Committee). He should train the supervisors initially, and the supervisors should be responsible for training their own people. Employees will feel more comfortable receiving instruction from someone they work closely with, and the supervisor can serve as a good role model in safety procedures.
 - b) All new employees will be directed to complete the appropriate safety training online modules by the Human Resources Coordinator in cooperation with the Chair of the Safety Committee.
 - c) The following topics will be covered in the Hazcom training module:
 - i) Requirements of the Standard and how to read and interpret MSDS's. Includes a discussion of the fines for noncompliance.
 - ii) Employees' rights to know the contents of containers and associated health hazards. Employees have the right to have free access to MSDS information.
 - iii) How to interpret label information and the link to MSDS's.
 - iv) Hazard evaluation: the toxic substances in the workplace and how they can affect a person's health. Discuss how toxic substances enter the body and the acute and long-term effects. Define words such as carcinogen, teratogen, and mutagen.
 - (1) Physical and health hazards.
 - (2) Chemical routes of entry.
 - v) Methods of handling hazardous materials.
 - vi) Location of MSDS's.
 - vii) Special hazards associated with the particular work areas of these employees.
 - viii) Safety
 - (1) Safety and control devices (respirators, gloves, boots, suits, etc.), ventilation.
 - (2) Personnel hygiene (no eating, drinking at work site).
 - ix) Training for emergency situations: Fire, leaks, spills, explosions, accidents, etc. This information is covered in the document entitled "Evangel University Crisis Management Plan" available online.
 - d) Attendance: Attendance and dates of each session are to be logged by the the Safety Committee Chair. He will forward this information to the Human Resources Coordinator and departmental Supervisors.
 - e) Employees will be given an opportunity to provide evaluation feedback on the training sessions, and to ask questions of the trainer.
- 4) Written Program: The Right-to-know manual (Evangel University Hazardous Communication Program) is written and provided by the Environmental Health and Safety Coordinator. It is available to all EU employees online.
 - 5) Emergency Response Arrangements: See document entitled "EVANGEL UNIVERSITY CRISIS MANAGEMENT PLAN." In addition, the Environmental

Health and Safety Coordinator is to provide one set of MSDS's to the local fire and emergency planning departments.

- 6) Toxic substance lists: Based on EPA and Missouri Department of Natural Resources data. Maintained for use in the evaluation of chemical hazards.
- 7) Chemical Inventory: The Environmental Health and Safety Coordinator will maintain a computer database of hazardous materials and their locations on the Evangel University campus. The database used is MS Access and will be maintained in the Environmental Health and Safety Coordinator's office. The intent of the maintenance of this database is to maintain information regarding the appropriate labeling of containers and posting of MSDS's.
- 8) Required Annual Reports: The Environmental Health and Safety Coordinator will provide annuals lists of hazardous materials on the premises of EU to: the Missouri DNR, Local Emergency Planning Committee, and Springfield fire department.

HAZARDOUS MATERIALS

Health Hazards of Chemicals

Most chemicals pose some degree of health hazard. The degree of hazard is directly related to how toxic the chemical is and how much of it one is exposed to. The effect of chemical exposure can be classified according to length of exposure or dose received as either acute or chronic.

Acute effects are the result of exposure to high concentrations of a material for a short period of time while chronic effects are the result of repeated exposure to low concentrations over a long period of time. Acute health effects appear during or shortly after an exposure. An acid burn would be an example of an acute effect.

Chronic effects are those that appear long after an exposure or after repeated exposures to small doses of a material.

The most common route of entry for chemical substances into the body is through inhalation. Gases and vapors in the air you breathe can pass into your bloodstream along with oxygen. Small solid particles can be inhaled into your lungs. The next most common route of entry is absorption through the skin. Many solids, liquids, vapors, and gases can be absorbed through the skin. The third most common route of entry for chemicals into the body is ingestion or swallowing.

Carcinogens are chemicals that have been found to cause cancer or are suspected of causing cancer. Most chemicals are classified as carcinogens based on the result of animal studies.

Corrosives are chemicals that may cause burns.

Irritants are chemicals that may cause reddening, swelling, and pain; short of actual tissue destruction.

Sensitizers are chemicals that may cause an allergic reaction after one or more exposures. Once an individual becomes sensitized, a very small dose of the material may cause a severe adverse effect.

Many chemicals are classified as toxic. The toxicity of a chemical is measured using a variety of animal studies.

- 1) The Oral LD50 (Lethal Dose 50%) is the dose that killed 50% of the rats that received it. LD50 is expressed as milligrams of chemical per kilogram of test animal body weight. A dose of one milligram per kilogram (mg/kg) is equal to 1 one-millionth of the test animal's body weight.
- 2) The Skin LD50 is the dose that killed 50% of the animals that had it applied by direct contact with their bare skin for 24 hours. Skin LD50 is also expressed as mg/kg.
- 3) The Inhalation LC50 (lethal concentration) test is the concentration of a chemical in the air needed to kill 50% of the rats that breathed it. LC50 is expressed as parts-per-million for gases and vapors. One part-per-million (ppm) is equal to one part of chemical mixed with 999,999 parts of air. OSHA considers a chemical to be highly toxic under the Hazard Communication law if:
 - a) the Oral LD50 is equal to 50 mg/kg or less.
 - b) the Skin LD50 is equal to 200 mg/kg or less.
 - c) the LC50 is equal to 200 PPM or less, or 2 mg/l or less.

Health hazards can also be classified based on the particular part of the body or organ affected. Chemicals which may damage the liver are called hepatotoxins.

Chemicals which may damage the kidneys are called nephrotoxins. They include chlorinated solvents and some mercury compounds. Symptoms of severe overexposure include pain and swelling of the kidneys and cloudy urine.

Chemicals which may affect the nervous system are called neurotoxins. They include solvent vapors, mercury metal, and carbon disulfide. Symptoms of overexposure include dizziness, narcosis, decreased coordination, and changes in behavior.

Chemicals which may affect the blood system are called hematopoietic agents. They include carbon monoxide and cyanides. Symptoms of overexposure include discoloration of the skin and unconsciousness.

Chemicals which may damage the lungs are called pulmonary agents. They may cause emphysema, silicosis, burns to the lungs, or other lung conditions.

Reproductive toxins are chemicals which may affect the reproductive system. Teratogens are chemicals that cause birth defects in a developing fetus.

Mutagens are chemicals that cause a defect in either sperm or egg cells prior to conception. Some reproductive toxins cause sterility.

Chemicals which may affect the skin are referred to as cutaneous hazards. They include the majority of industrial solvents and cleaners. Symptoms of overexposure include dry, cracked skin, reddening, and rashes.

Many chemicals can damage or irritate the eye. Examples include acids, caustics, and solvents. Symptoms of overexposure include reddening, pain, and reduced or lost vision.

Physical Hazards of Chemicals

Physical hazards of chemicals are based on the physical properties of those chemicals.

Flammable solids are easily ignited and burn intensely without other fuel being needed. Flammable liquids are liquids having flash points below 100 degree fahrenheit. Many can be ignited by a spark without any pre-heating. Examples include: acetone, methanol, and toluene. Flammable liquid spills should be treated with particular care since large volumes of flammable vapors may be formed.

Combustible liquids are liquids, and liquid mixtures, having flash points at or above 100 degree fahrenheit. Most combustible liquids can't be ignited by a spark without being pre-heated.

Oxidizers are chemicals that contain a lot of oxygen and may start, or assist the burning of other materials. Examples include: chromic acid, and nitric acid. Oxidizers and Flammables should be kept away from each other. Mixing the two together may cause a fire.

Biohazards are materials that pose a potential infectious health hazard. Examples include used syringes, bandages, bacteria cultures, etc.

Specific health hazards and physical hazard information are available for each product on its particular MSDS. In addition, the National Fire Protection Association has a produced a labeling scheme which indicates the relative hazard level of a chemical.

The label is diamond shaped, with spaces indicating dangers related to Health, Flammability, and Reactivity rated on a scale of 0 to 4; with 0 being a low hazard and 4 being an extremely high hazard. Many chemical containers have this labeling system on the labels.



Personal Protective Equipment

To assure that all employees are equipped with adequate and proper personal protective equipment at all times, each employee shall be issued their own personal safety equipment and be accountable for it. This equipment varies depending on what area the employee works in and may include any or all of the following items:

- Tyvek Suit

- Chemical goggles
- Splash shield and hard hat attachment
- Safety glasses
- Gloves
- Hard hat
- Rubber boots
- Chemical/dust cartridge respirator with spare cartridges

Items such as gloves shall be replaced as needed and always available. In the event the above equipment is damaged, it shall be replaced. However, each department shall establish provisions to control abuse, theft and personal disregard for the equipment by requiring employees to pay for new issues required for reasons other than damage or wear and tear. A minimum supply of this equipment shall be well maintained and controlled so that a sufficient supply is always available.

Measures Employees Can Take To Protect Themselves

Safety Rules

Safety is everybody's concern! The prevention of accidents is of vital concern to Evangel University, and is an employee's most important duty to himself, his family, and his fellow employees. It is, therefore, the duty of each employee to correct an unsafe condition immediately. If this is not possible, he shall report any unsafe condition or any violation of safety rules to his immediate supervisor.

In addition, he shall conduct his own work in the safest possible manner at all times. Employees are encouraged to use good judgment and common sense, for they have the best built-in safety device available - their brain. No safety rule or device can relieve anyone of the responsibility to "think."

The unsafe acts of individuals have the potential to kill or seriously maim. Every breach of safety standards will be dealt with according to the circumstances surrounding the situation. Violation of any safety rules are subject to appropriate disciplinary action. The following are required Safety Rules at Evangel University:

Chemical Safety

- 1) Splash goggles are to be worn at all times when handling acids or alkalis, including dry caustics. Splash goggles refer to total face protection.
- 2) Protective suits made of chemical resistant material are to be worn when handling any corrosive material or when walking on equipment containing corrosive material. Protective suits consist of a waist length jacket with pants providing full body protection.
- 3) Approved rubber gloves shall be worn at all times when handling corrosive and systemic poisons.

- 4) Approved respirators shall be worn while handling products and materials that produce corrosive and toxic vapors, fumes, mist or dust (e.g. asbestos).

Practices

- 1) Good housekeeping is essential to safety. All employees are expected to keep their work area and equipment in a clean and orderly condition.
- 2) Jewelry, such as rings, pins or wristwatches, can be dangerous when worn on the job. It is recommended that jewelry not be worn.
- 3) Horseplay has no place on the job and endangers the well-being of other persons; therefore, fighting, scuffling and practical jokes are strictly prohibited.
- 4) Safety signs and barriers are for the protection of employees; therefore, all signs shall be observed and complied with.
- 5) Always walk in the workplace. Do not run.
- 6) Vehicles shall not exceed 20 M.P.H. while operating in Evangel University areas.
- 7) Seat belts shall be worn in all company vehicles.
- 8) Industrial trucks shall be operated only by trained and authorized employees.
- 9) All machine guards shall be kept in place and only be removed for maintenance work. Moving equipment shall not be operated unless it is securely guarded.
- 10) Ladders
 - a) All straight ladders shall be equipped with safety feet.
 - b) Examine ladders before use.
 - c) Defective ladders are to be removed from service.
 - d) Do not place a ladder in front of a door or opening until the opening is secured.
 - e) Adjustments of extension ladders should only be made by the user when standing at the base of ladder, so that the user may observe when the locks are properly engaged.
 - f) Do not place ladders on boxes, barrels or other unstable bases.
 - g) Metal ladders shall not be used within a ten (10) foot radius of any energized electrical line.
- 11) Before repairs are made on moving or electrical equipment all machinery and auxiliary equipment shall be stopped, de-energized and locked out.
- 12) Compressed air is provided as a service to facilitate the operation of pressurized equipment. Compressed air shall never be used to blow clothing off for cleaning purposes.
- 13) All injuries, no matter how slight, must be reported and receive immediate treatment. Supervisory personnel should be informed immediately of all injuries.
- 14) When loading trailers with flammable products, the truck shall be effectively grounded to minimize the potential differences between the metal trailer and the ground, thus preventing the ignition of the flammable vapor from static electricity.
- 15) Evangel University confined space entry procedures (see confined space entry procedures online) shall be adhered to whenever a confined space is entered into.
- 16) Blood or other body fluids shall be handled in accordance with the Evangel University Bloodborne Pathogen Exposure Control Plan (online).

Self-Contained Breathing Apparatus and Respirator Use, Care, Storage

Protective equipment for eyes, face, head and extremities, protective clothing, and respirator devices are provided and are to be used where necessary by reason of hazards of chemical processes or environment. For either daily or routine usage or in an emergency situation, appropriate respirators must be worn in air contaminated with harmful dust, fumes, gases, or vapors.

No Evangel University employees are trained or authorized to use self-contained breathing apparatus units. They are normally to be used in areas where the gas concentration is above that which a gas mask can sufficiently operate properly, in areas that have a deficiency of oxygen, or in atmospheres immediately dangerous to life or health.

Training on the proper use of respirators (for those whose work places them in a situation where respirators are necessary) will be provided to new employees and will be provided to all employees on a yearly basis by a qualified trainer. Respirators shall be cleaned and disinfected after each use and shall be stored in a convenient and sanitary location. Respirators used routinely shall be inspected during each cleaning. Manufacturer's recommendation shall be followed at all times.

Periodic inspections by a management selected trained supervisor shall be conducted for each respirator. To assure proper operation the wearer shall check the face piece seal each time he puts on the respirator in the following manner:

Block the air intake and inhale. Face piece should partially collapse against face. To test exhalation valve, gently exhale. If the unit is not operating properly a heavy blow-by will be felt at the temples.

Respirators shall be inspected during the cleaning and sanitizing process after each use. They shall be checked for face piece connections, valves, canister and connecting tube conditions. Defective, deteriorating or outdated parts are to be replaced. Respirators are to be stored in a sanitary accessible location after cleaning and sanitizing. Equipment shall be maintained as to retain its original effectiveness. Do not interchange manufacturer's parts on either respirators or self-contained breathing devices. Respirator canisters are color coded and are to be placed in service only where applicable.

HOW TO READ AND INTERPRET INFORMATION CONTAINED ON LABELS

Introduction

Label design and content are strongly influenced by statutory and regulatory requirements, industry practices/standards and product liability issues. In some cases, laws and regulations may be very specific in identifying size, wording, and colors to be

used on product labels. Consensus standards are an attempt to bring uniformity to some label areas while allowing for flexibility in others. Product liability concerns are the most difficult and complex to address.

Until recently, the major regulatory requirements affecting the labeling of hazardous products (other than pesticides) arose from DOT regulations governing interstate shipments. In addition, the Federal Hazardous Substances Act, although strictly applicable to consumer products, has influenced some industrial product labeling. Recent passage of the federal OSHA Hazard Communication standard and the various state Right-To-Know Laws now impacts label contents. Under the federal standard, a label must contain:

- 1) the identity of the hazardous chemical(s),
- 2) appropriate hazard warning(s),
- 3) and the name and address of the chemical manufacturer, importer, or other responsible party.

Product liability concerns bring additional factors into play. Under product liability law, the seller of a product has a duty to adequately warn the product user of the hazards associated with the use (and reasonably foreseeable misuse) of the product. From the above, it can be correctly assumed that a single label may have to address several areas of concern. For example, a manufacturer and/or distributor selling products to a number of industrial customers must use a label for a hazardous product that would be acceptable to OSHA when used in the workplace, acceptable to DOT when used in transportation and acceptable to a judge or jury when reviewed in a product liability lawsuit.

The exact label layout is not mandated by law, but general practices may be observed.

- 1) **Product Name:** The name by which the product is sold. It is also the name that will be on the associated Material Safety Data Sheet.
- 2) **Commodity Description:** The DOT proper shipping name and UN or NA number when regulated by DOT.
- 3) **Signal Word:** Indicates the relative degree of hazard, i.e., Danger/Warning/Caution. If more than one hazard is present, the Signal Word for the more severe hazard takes precedence.
- 4) **Statement of Hazard (s):** Provides a brief description of all hazards and DOT regulations as major guides for selection. For DOT-regulated materials, the following order takes precedence:
 - a) Radioactive
 - b) Poison A
 - c) Flammable Gas
 - d) Nonflammable Gas
 - e) Flammable Liquid*
 - f) Oxidizer
 - g) Flammable Solid
 - h) Corrosive Liquid

- i) Poison B
 - j) Corrosive Solid
 - k) Irritating Materials
 - l) Combustible Liquids (containers - 110 gallons)
 - m) ORM-A
 - n) ORM-B
 - o) Combustible Liquids (containers - 110 gallons).
- 5) Precautionary Measures: Briefly sets forth measures to be taken to avoid injury from hazardous properties of a product. May include comments on handling and storage.
 - 6) First Aid: Simple remedial measures that may be taken safely before medical assistance is available; usually limited to recognized procedures based on methods and materials commonly available. May include antidotes or other information not generally known.
 - 7) Fire, Spill or Leak: Usually kept as simple and as brief as possible; where appropriate, advise of the use of suitable material for control.
 - 8) Empty Drum Warning
 - 9) Label Number: Identifies the label for reordering and gives the date first available for use or the date revised.
 - 10) Supplying Company name, address and emergency telephone number.
 - 11) Net Weight
 - 12) DOT Diamond: When required by DOT. Flammable or Corrosive.

Hazard Classification

Health hazards are defined under 29 CFR 1910.1200 as any chemicals which are "carcinogens, toxic, or highly toxic agents, reproductive toxins; irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes."

Physical hazard is defined under 29 CFR 1910.1200 as a chemical which is "a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive."

Container Labeling

All containers must be labeled clearly stating the contents of the container, hazard warnings, and the name and address of the manufacturer or responsible party.

Supervisors of the area these chemicals are used or located must make regular inspections of the containers used in their areas and ensure that these containers are properly labeled. The Environmental Health and Safety Coordinator will make periodic inspections of each area and verify that in-plant containers are labeled.

Shipped containers must be labeled also. The supervisor will certify that all containers being shipped are properly labeled before allowing these containers to leave the property of Evangel University. Such containers must state the contents, hazard

warnings, date of shipment, our address, phone number, and appropriate DOT labels as required by law.

The labeling system used by Evangel University will incorporate the National Fire Protection Association's hazardous material signal system. This system identifies the type of hazard (health, flammability, reactivity) and the level of severity of the hazard. Charts explaining the NFPA code and labels will be placed in areas where hazardous chemicals are in use.

Labeling information will be reviewed annually and updated whenever new MSDS's are issued that show an increase or decrease in hazard, change of chemical, change of supplier, or other changes pertinent to the accurate description and hazards involved in the new/changed chemical.

HOW TO READ AND INTERPRET MATERIAL SAFETY DATA SHEETS

Material Safety Data Sheets can help you identify the health hazards and physical hazards of the chemicals you work with. A Material Safety Data Sheet is available for each hazardous chemical or mixture used in the workplace. A Material Safety Data Sheet heading lists the name, address, and emergency telephone number. The identity of the chemical and the chemical family and formula of the chemical is listed in this section also.

Section 1 of the Material Safety Data Sheet

A list of the physical and chemical characteristics of the material. The boiling point of the material is the temperature that the liquid must be heated to in order to make boil. The higher the boiling point of a liquid, the slower it evaporates into the air and the longer it takes to build up a toxic or explosive concentration. The vapor density of the material is a measure of how heavy the vapor from the material is compared to air having a vapor density of one (1). Vapors that are more dense than air accumulate close to the floor and in low spaces. It is important to note that the resulting higher concentrations near floor level and in low spots can present toxic and explosive hazards.

The solubility of the material in water is also important. Since people are made up mostly of water, materials that are water soluble are usually more readily absorbed through unprotected skin and are more likely to be rapidly distributed throughout the body. Water soluble materials also spread throughout the environment more quickly if spilled or improperly disposed of.

The appearance and odor of the chemical describes what the material looks like and smells like. This information can be helpful in identifying the material if any of it is spilled or released into the work area.

The specific gravity, or density, of the material is a comparison of the weight of a given volume of the material compared to the same volume of water having a s.g. of one (1). A specific gravity higher than one means that the material is heavier than water and will sink if not miscible in water. A specific gravity less than one means that the material is lighter than water and will float on water if not miscible.

The percent of volatile by volume is the percentage of the material that will evaporate into the air if the container is left open or the material is spilled.

The evaporation rate of the material is a measure of how quickly the material will evaporate if the container is left open or the material is spilled. The higher the number, the quicker it evaporates.

Section 2 of the Material Safety Data Sheet

A list of the hazardous ingredients in a mixture of chemicals. The chemicals and common names of all components are listed if they have been found to be health hazards and are present at concentration of 1% or more. Where applicable, the chemical and common names of all components that are considered to be carcinogens is listed if present at concentrations of 0.1% or more.

Section 3 of the Material Safety Data Sheet

A list of the fire and explosion hazard data of the material. A flammable or combustible liquid must be at a certain temperature before enough vapor is given off for the vapor/air mixture to be ignitable. The minimum temperature for that amount of vapor to be given off is called the flash-point. The lower a liquid's flash-point, the more dangerous the fire and explosion potential of the product. The flammable limits of the material will be expressed as lower explosive limit (LEL) and upper explosive limit (UEL). Vapors from flammable liquids can only explode and burn when mixed with air at certain concentrations. Extinguishing media(s) used to put out a fire involving the chemical will be listed. Often, more than one type of fire extinguishing media is listed. Any unusual fire and explosion hazards the material may have will be listed. For example, some materials may react with water to make the fire worse or cause an explosion. Others may form toxic gases under fire conditions.

Section 4 of the Material Safety Data Sheet

A list of specific health hazard data for the chemical. Exposure levels for many chemicals have been established and are expressed as eight hour time weighted averages. They may be called threshold limit values (TLVs) or permissible exposure limits (PELs). These values will be listed on the Material Safety Data Sheet. For most chemicals you can be exposed to the chemical above the listed value so long as your eight hour TWA at the end of the work day is equal to or less than the number listed on the Material Safety Data Sheet. Exposure levels for some chemicals also express "Ceiling Levels". A ceiling level is a concentration that is not to be exceeded even for a short duration.

The known acute and chronic health effects and related health information for the chemical is provided in this section of the Materials Safety Data Sheet. This section of the Material Safety Data Sheet also provides information on the expected symptoms that might result from any exposure. Emergency and first aid procedures are also included. They will explain what to do in the event of an overexposure.

Section 5 of the Material Safety Data Sheet

Provides an explanation of the reactivity of the chemical. Many chemicals react violently when mixed with other chemicals. Materials that are incompatible with the particular chemical listed on the MSDS will be listed. Oxidizers are incompatible with Flammables. Some chemicals will react and bond with themselves, or polymerize, giving off large quantities of heat. The Material Safety Data Sheet explains conditions that might cause a hazardous polymerization so they can be avoided.

Section 6 of the Material Safety Data Sheet

Emergency spill and leak procedures are outlined in this section. Whenever chemicals are released into the work place because of leaks or similar causes, special procedures must be implemented. Personal protective equipment may be needed by those who remain in the area to clean up any spilled material or continue operations. The cleanup of a spill may involve the use of special equipment, such as absorbent materials. Chemically contaminated waste must be disposed in an environmentally acceptable manner.

Section 7 of the Material Safety Data Sheet

Contains an outline of how exposure to chemicals can be controlled by the use of personal protective equipment, appropriate engineering controls, and through effective work practices. Eye protection will protect your eyes from accidental contact with the chemical. Gloves and clothing appropriately selected will protect you from contact with the chemical while you are working with it. Drumming and storage areas are equipped with ventilation devices to lower the concentration of a chemical in the air which reduces your exposure. Special precautions that should be taken during the storage and handling of the chemical are also included.

In Summary, the Material Safety Data Sheet provides a wealth of health and safety information. You should study the Material Safety Data Sheet provided for each of the chemicals that you work with and follow their instructions. Your health, and maybe your life, depends on it.

CONTRACTOR NOTIFICATION

General Information

The attached information package shall be issued with all purchase orders that will require a contractor to enter the Evangel University facilities. A cover page worded as follows shall accompany the package:

IN ORDER TO PROTECT THE HEALTH AND SAFETY OF THE EMPLOYEES OF YOUR COMPANY, EVANGEL UNIVERSITY WILL, UPON REQUEST, SUPPLY SAFETY AND HEALTH INFORMATION RELATIVE TO THE HAZARDOUS CHEMICALS AND SUBSTANCES YOU MAY ENCOUNTER ON OUR CAMPUS DURING THE COURSE OF YOUR CONTRACT. THIS INFORMATION MAY INCLUDE MATERIAL SAFETY DATA SHEETS (MSDS) FOR SPECIFIC HAZARDOUS PRODUCTS AS WELL AS THE LOCATION OF SUCH PRODUCTS ON THE CAMPUS.

REQUESTS FOR SUCH INFORMATION SHOULD BE DIRECTED TO THE ENVIRONMENTAL HEALTH AND SAFETY COORDINATOR OR THE PHYSICAL PLANT DIRECTOR. YOU WILL BE RESPONSIBLE TO RELAY SUCH INFORMATION TO THE EMPLOYEES OF YOUR SUBCONTRACTORS.

The purpose of this package obviously is to reduce our liability should someone from an outside organization be injured and claim he was unfamiliar with our products. A provision of the new Right-To-Know-Law requires us to inform contractors of the hazards in our facilities. The above notification and the following information will serve that purpose.

Hazards of Various Categories of Chemicals Potentially Present at Evangel University

Acids

Health Hazards: May be toxic if inhaled or swallowed in large amounts. Vapors are extremely irritating. Contact may cause burns to skin and eyes. Runoff from fire control or dilution water may cause pollution.

Physical Hazards: Does not ignite readily. Reaction can be violent with water. Hazardous gases may accumulate in tanks. In an emergency, keep all unnecessary people away. Stay upwind and keep out of low areas. Isolate hazardous area and deny entry. Wear positive pressure breathing apparatus and special protective clothing. For emergency assistance, call 911. In case of water pollution, call local authorities.

Fire: Do not get water inside the container. For small fires use dry chemicals or CO₂ (carbon dioxide). For large fires flood with water. Move containers from fire area if you can without risk. Cool containers that are exposed to flames with water from the side until well after fire is out.

Spill or Leak: Do not get water inside the container. Do not touch spilled material. Stop the leak if you can without risk. Use water spray to reduce vapors, but do not put water on leak area. For small spills, flush area with water (USE CAUTION). For large spills, dike for later disposal and dilute with large amounts of water.

First Aid: Move the victim to fresh air and call emergency medical care. If he is not breathing, give artificial respiration. If breathing is difficult, give him oxygen. Speed in removing material from skin is of extreme importance. Wipe material from skin immediately, then flush skin or eyes with running water for at least fifteen minutes. Keep the victim quiet and maintain normal body temperature.

Chlorinated Hydrocarbons

Health Hazards: May be fatal if inhaled, swallowed, or absorbed through the skin. Contact may cause burns to the skin and eyes. Runoff from fire control or dilution water may cause pollution.

Physical Hazards: Some of these materials may burn but do not ignite readily. In an emergency, keep all unnecessary people away. Stay upwind and keep out of low areas. Isolate the hazardous area and prevent entry. Wear positive pressure breathing apparatus and special protective clothing. For emergency assistance, call 911. In case of water pollution, call local authorities.

Fire: For small fires, use dry chemical, CO₂ (carbon dioxide), water spray or foam. For large fires, use water spray, fog or foam. Move containers from fire area if you can without risk. Fight fire from maximum distance.

Spill or Leak: Do not touch the spilled material. Stop leak if you can do it without risk. Use water spray to reduce vapors. For small spills, take up with sand or other noncombustible absorbent material, then flush the area with water. For large spills, dike far ahead of the spill for later disposal.

First Aid: Move the victims to fresh air and call emergency medical care. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact with material, immediately flush the skin and/or eyes with running water for at least fifteen minutes. Remove and isolate contaminated clothing and shoes. Keep victim quiet and maintain normal body temperature. Effects may be delayed so keep victim under observation.

Alcohols

Health Hazards: May be fatal if inhaled, swallowed or absorbed through the skin. Contact may cause irritation to the skin and eyes. Runoff from fire control or dilution water may cause pollution.

Physical Hazards: These materials will burn and may be ignited by heat, sparks and flames. Flammable vapor may spread away from the spill. Container may explode from heat or exposure to fire. Vapor explosion hazard exists indoors or outdoors. Runoff to the sewer may create fire or explosion hazard. In an emergency, keep all unnecessary people away. Stay upwind and keep out of low areas. Isolate the hazardous area and deny entry. Wear self-contained breathing apparatus and full protective clothing. Isolate the container involved in the fire. For emergency assistance, call 911. Also, in case of water pollution, call local authorities.

Fire: For small fires use dry chemical, CO₂ (carbon dioxide), water spray or foam. For large fires use water spray, fog or foam. Move containers away from the fire area if you can do so without risk. Stay away from the tanks. Cool containers that are exposed to flames with water until the fire has been extinguished.

Spill or Leak: No flares, smoking or flames are permitted in the hazardous area. Stop the leak if you can do so without risk. Use water spray to knock down the vapors. For small spills, soak up with sand, or other noncombustible absorbent material, then flush area with water. For large spills, dike ahead of the spill for later disposal.

First Aid: Move the victim to fresh air and call emergency medical care. If he is not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact with the material, immediately flush the skin or eyes with running water for at least fifteen minutes. Remove and isolate contaminated clothing and shoes. Effects may be delayed, so keep the victim quiet, under observation, and maintain the normal body temperature.

Flammables

Health Hazards: Vapors may cause dizziness or suffocation. Contact may irritate or burn skin and eyes. Fire may produce irritating or poisonous gases. Runoff from fire control or dilution water may cause pollution.

Physical Hazards: These materials will burn and may be ignited by heat, sparks and flames. Flammable vapor may spread away from the spill. Containers may explode from heat or exposure to fire. Vapor explosion hazard exists indoors or outdoors. Runoff to the sewer may create fire or explosion hazard. In an emergency, keep all unnecessary people away. Stay upwind and keep out of low areas. Isolate the hazardous area and deny entry. Wear self-contained breathing apparatus and full protective clothing. For emergency assistance, call 911. Also, in case of water pollution, call local authorities.

Fire: For small fires use dry chemical, CO₂ (carbon dioxide), water spray or foam. For large fires use water spray, fog or foam. Move containers away from the fire area if you can do so without risk. Cool containers that are exposed to flames with water until the fire has been extinguished. If this is impossible, withdraw immediately in case of a hissing sound from venting of the safety device or discoloration of the container.

Spill or Leak: No flares, smoking or flames are permitted in the hazardous area. Stop the leak if you can do so without risk. Use water spray to knock down the vapors. For small spills, soak up with sand, or other noncombustible absorbent material, then flush area with water. For large spills, dike ahead of the spill for later disposal.

First Aid: Move the victim to fresh air and call emergency medical care. If he is not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact with the material, immediately flush the skin or eyes with running water for at least fifteen minutes. Remove and isolate contaminated clothing and shoes.

Corrosives

Health Hazards: Contact causes burns to skin and eyes. If inhaled, it may be harmful. Fire may produce irritating or poisonous gases. Runoff from fire control or dilution water may cause pollution.

Physical Hazards: Some of these materials may burn but do not ignite readily. Explosive concentrations of gas may accumulate in tanks. Some of these materials may ignite combustibles (wood, paper, oil, etc.). In an emergency, keep all unnecessary people away. Stay upwind and keep out of low areas. Isolate the hazardous area and deny entry. Wear self-contained breathing apparatus and full protective clothing. For emergency assistance, call 911. Also, in case of water pollution, call local authorities.

Fire: Some of these materials may react violently with water. For small fires use dry chemical, CO₂ (carbon dioxide), water sprays or foam. For large fires use water spray, fog or foam. Move containers from fire area if you can do so without risk. Cool containers which are exposed to flames with water until fire is extinguished.

Spill or Leak: Do not touch spilled material. Stop leak if you can do so without risk by using dikes, absorbent and shutting off valve. For small spills, soak up with sand or other noncombustible absorbent material, neutralize and then flush with water. For large spills, dike far ahead of the spill for later disposal.

First Aid: Move the victim to fresh air and call emergency medical care. Remove and dispose of contaminated clothing and shoes. In case of contact with the material, immediately flush skin or eyes with running water for at least fifteen minutes. Keep victim quiet and maintain normal body temperature.

Oxidizers

Health Hazards: If inhaled it may be harmful. Some of these materials may be fatal if inhaled, swallowed or absorbed through the skin. Contact may cause burns to the skin and eyes. Fire may produce irritating or poisonous gases. Runoff from fire control or dilution water may cause pollution.

Physical Hazards: Oxidizers have the potential to explode on contact with organic materials, especially alcohol, ether, glycerin and combustible gases or with sulfuric acid and fuels. May ignite combustibles. Explosive concentrations of gas may accumulate in tanks. Runoff to sewer may create fire or explosion hazards. In an emergency, keep all unnecessary people away. Stay upwind and keep out of low areas. Isolate the hazardous area and prevent entry. Wear self-contained breathing apparatus and full protective clothing. For emergency assistance, call 911. In case of water pollution, call local authorities.

Fire: For small fires, use water only. No dry chemicals or CO₂. For large fires, flood with water. Move containers from the fire area if you can do it without risk. Cool containers that are exposed to flames with water from the side until well after the fire is out. For massive fires in the cargo area, use unmanned hose holders or monitor nozzles. If this is impossible, withdraw from the area and let the fire burn.

Spill or Leak: Keep combustibles away from the spill material. Do not touch the spilled material. Stop leak if you can do it without risk. Use water spray to reduce vapors. For small spills, flush the area with flooding amounts of water. For large spills, dike far ahead of the spill for later disposal.

First Aid: Move the victim to fresh air and call emergency medical care. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact with material, immediately flush skin or eyes with running water for at least fifteen minutes. Remove and isolate contaminated clothing and shoes. Keep victim quiet and maintain normal body temperature. Effects may be delayed, keep victim under observation.

Alkalies

Health Hazards: Contact causes burns to skin and eyes. May be harmful if inhaled or swallowed in large amounts. Runoff from fire control or dilution water may cause pollution.

Physical Hazards: Does not ignite readily. Hazardous gases accumulate in tanks. In an emergency, keep all unnecessary people away. Stay upwind and keep out of low areas. Isolate hazardous area and deny entry. Wear self-contained breathing apparatus and full protective clothing. For emergency assistance call 911. In case of water pollution, call local authorities.

Fire: May react violently with water. For small fires use dry chemical, carbon dioxide, water spray or foam. For large fires, flood with water. Move containers from fire area if you can do it without risk. Move containers from fire area if you can do it without risk. Cool containers that are exposed to flames with water from the side until well after fire is out.

Spill or Leak: Do not touch spilled material. Stop the leaks if you can do it without risk. For small spills, take up with sand or other noncombustible absorbent material, then flush area with water. For large spills, dike far ahead of spill for later disposal.

First Aid: Move victim to fresh air and call emergency medical care. Remove and isolate contaminated clothing and shoes. In case of contact with material, immediately flush skin or eyes with running water for at least fifteen minutes. Keep victim quiet and maintain normal body temperature.