HAZARD COMMUNICATION

PROGRAM

FOR OFF-SITE MEDICAL AND SUPPORT STAFF OF STRONG HEALTH

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Environmental Health & Safety
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INTRODUCTION

This program was designed to instruct medical and support staff of Strong Health about the Occupational Safety and Health Administration's (OSHA's) Hazard Communication Standard 29CFR 1910.1200. Medical staff and others need to read this program and become familiar with its contents. This document should be used by off-site facilities as an instructional program to gain a better understanding of the hazards associated with chemicals used in the workplace.

The Hazard Communication Standard is a performance-oriented regulation that mandates a program of evaluating potential hazards of chemicals, communicating information concerning hazards and implementing appropriate protective measures to employees that use hazardous chemicals in a non-laboratory setting. These hazardous chemicals include both those regulated in 29 CFR 1910, Subpart Z, and any chemical meeting the definition of a hazardous chemical as set forth in OSHA's Hazard Communication Standard.

This document is divided into three sections. Section I outlines the specific requirements of the standard and the manner in which to comply with the regulations. Section II focuses on required employee training information. Section III provides a summary of the hazards associated with some of the chemicals most commonly encountered by medical staff and actions to take in the event of a spill or exposure to a chemical agent. It is important to recognize that the Hazard Communication Standard, as with any safety regulation, is designed to protect employees and is part of an overall program to provide a healthy and safe work environment.

Because of the importance of this standard you may be interviewed during internal audits or by OSHA inspectors to determine if your employer is providing you adequate training. You must be able to show that you have an understanding of the potential dangers of the chemicals in your workplace and the means to protect yourself from these hazards.
SECTION 1: REQUIREMENTS AND RESPONSIBILITIES

I. REQUIREMENTS

The following are the requirements of the Hazard Communication Standard.

A. The Hazard Communication Standard (Haz Comm) applies to all employers who use hazardous chemicals.

B. The standard applies to all chemicals, which are defined as hazardous by the standard, and are used in the workplace in a manner in which employees may be exposed to the chemicals under conditions of use or foreseeable emergencies.

The Standard defines a hazardous chemical as any chemical, which is a physical hazard or a health hazard.

Physical hazards include:
- combustible liquids;
- compressed gases;
- explosives;
- flammables;
- organic peroxides; and
- oxidizers.

Chemicals considered health hazards fall into one of the following categories:
- carcinogen;
- toxic or highly toxic;
- reproductive toxin;
- irritant;
- corrosive;
- sensitizer;
- hepatotoxin;
- nephrotoxin;
- neurotoxin;
- agents affecting the hematopoietic system; and
- agents which damage the lungs, skin, eyes or mucous membranes.

Definitions of these categories can be found in Appendix 1.

C. The employer is required to develop and maintain a written Hazard Communication Program, which describes how it will meet the requirements of the Standard. This document was written to comply with this standard. A copy of the OSHA’s Hazard Communication Standard is found in Appendix 2 of this document.
D. The employer is required to compile a list of the hazardous chemicals present in the workplace. A suggested chemical inventory form is available in Appendix 3.

E. All containers of hazardous chemicals must be labeled with the following information:
   ♦ the identity of the hazardous chemical(s);
   ♦ the appropriate hazard warnings; and,
   ♦ the name and address of the chemical manufacturer, importer or other responsible party.

Exceptions to this rule include:
   ♦ containers in which chemicals are transferred from a labeled container for immediate use by the employee performing the transfer; and
   ♦ alternatives to labels may also be used such as signs, placards, process sheets, operating procedures or other written materials instead of affixing labels to individual stationary process containers as long as the materials contain the required labeling information. An example of this for nurses could be an area designated for sterilizing instruments in containers.

F. Employers are required to maintain Material Safety Data Sheets or MSDSs for all hazardous chemicals used in the workplace and must be available to employees during their work shift. The required information on the MSDSs is provided by chemical manufacturers and maintained for employee use. MSDSs shall be maintained for each chemical in a readily accessible location.

G. Employers are also required to provide information and training to employees on the Hazard Communication Standard and the hazards of the chemical s used in the workplace.

II. RESPONSIBILITIES

Responsibility for implementing the Haz Comm resides with each department where hazardous chemicals are utilized in a non-laboratory setting. The responsibility for implementing and fulfilling the mandates of the Haz Comm are as follows:

A. Supervisors have primary responsibility for:
   
   1. Informing and training employees on potential hazards associated with the use of hazardous chemicals in their work area, and when new chemical hazards are introduced;
   2. Completing a Job Hazard Assessment, see Appendix 4, to determine the personal protective equipment needed to protect employees;
   3. Supervising employees in the implementation of engineering controls, safe work practices, and personal protective equipment (PPE) used to reduce potential exposure to the lowest practical level;
4. Investigating and reporting incidents relating to the use of hazardous chemicals;
5. Selecting chemicals, supervising the use and disposal of chemicals, and maintaining
   an inventory of hazardous chemicals for all work locations under their direction;
   and,
6. Maintaining training records of all those who have attended training sessions
   relating to Haz Comm.

B. Employees responsibilities include:

1. Awareness of the hazards associated with the chemicals used and the methods of
   reducing exposures.
2. Attending training as required under this standard;
3. Planning and using chemicals in accordance with established safe work practices
   and protocols;
4. Using all of the appropriate PPE required for working with a chemical
5. Disposing of chemicals in an appropriate manner;
6. Reporting unsafe conditions to their supervisor; and,
7. Reporting incidents of hazardous chemical exposure to their supervisor.

III. RECORDS

A. Chemical inventories will be maintained by the department and kept in a location
   accessible in an emergency.

B. Attendance records of Haz Comm sessions conducted by department supervisors
   are to be retained in employee files or in an office training file.

C. Injuries or chemical exposures will be documented on the appropriate incident
   report form. A copy is to be retained by the supervisor.

D. Medical records will be retained as established by protocol.

IV. MULTI-EMPLOYER WORKPLACE

A. Supervisors will provide an inventory of the chemicals and a copy of the MSDSs
   to outside contractors for those hazardous chemicals used in the immediate
   work/construction area.

B. Outside contractors are required to have an MSDS for any hazardous chemical
   brought into clinical locations and have them readily available to employees.
SECTION 2: REQUIRED EMPLOYEE INFORMATION & TRAINING

The OSHA Hazard Communication Standard requires that employees be informed of the requirements of the Standard, the location of the written Hazard Communication Plan, operations in the workplace involving hazardous chemicals, lists of hazardous chemicals used in the workplace and the location of MSDSs for these chemicals. Review of this program and completion of the attendance sheet and quiz meets the minimum requirement for awareness training. The supervisor must provide documented site-specific training to all staff on the chemicals used in the work area.

I. TRAINING

A. Required Training and Frequency of Training

Employees are to be provided with information and training to ensure they are mindful of the hazards of chemicals present in their work area. Documentation of training is required. Before the initial work assignment, training is needed regarding the chemicals to be used and the hazards they present. This training is the responsibility of the supervisor. Retraining is required when a new hazard is introduced in a work area.

B. Purpose and Content of Training

The purpose of this training is to inform individuals of the risks and hazards associated with chemical use and what to do if an emergency occurs. The training should consists of:

1. The existence of the Hazard Communication program (Haz Comm) and its requirements;
2. How to read and understand the material found on an MSDS;
3. Methods to minimize employee exposure to hazardous chemicals;
4. Signs and symptoms associated with exposure to hazardous chemicals;
5. Location and availability of known reference materials, including MSDS, outlining the hazards, safe handling, storage, and disposal of hazardous chemicals;
6. Proper use and limitations of personal protective equipment;
7. Proper use and limitations of safety and emergency equipment; and,
8. Emergency procedures to follow in the event of a chemical spill.

II. READING AND INTERPRETING MSDSs & LABELS

The two key written materials that convey information on the hazards of chemicals are Material Safety Data Sheets (MSDSs) and labels. The Hazard Communication Standard requires that
MSDSs be available for all hazardous chemicals and that all containers of these chemicals be labeled. This section highlights the types of information found in an MSDS and how to use that information to protect you from the hazards associated with chemicals in the workplace.

A. Material Safety Data Sheets (MSDSs)

A copy of the MSDS must be readily available for all chemicals used. MSDS are sent by the manufacturer/supplier usually with the first order of the chemical. The MSDS should be located in a notebook, kept in alphabetical order and be available to personnel during any working hour. MSDS should be kept in a central location known to all employees.

MSDS are also available through the manufacturer/suppliers during normal work hours. MSDSs are available after normal working hours and for emergency exposures by contacting the local Poison Control Center.

MSDSs are generally broken down into eight sections. The Hazard Communication Standard requires certain information to be included on MSDSs but not a rigid format, variation among MSDSs will occur. The following list is a breakdown of the required sections on an MSDS:

Section I: Manufacturer Information: Lists the manufacturer’s name, address telephone and provides emergency numbers.

Section II: Hazardous Ingredients/Identity Information: Provides a listing of the chemicals found in the listed material and the allowable exposure limits.

Section III: Physical/Chemical Characteristics: Gives information including the boiling point, solubility, melting point and other technical information of the material.

Section IV: Fire and Explosion Hazard Data: Provides the temperature at which product burns, type of extinguisher needed for fires and other information in case of a fire.

Section V: Reactivity Data: Lists chemicals that are not compatible with this material and gives hazard information.

Section VI: Health Hazard Data: Lists different ways the chemical can enter body. For each mode of entry, the possible health effects are listed. Specific health effects such as carcinogenicity and reproductive effects are also listed.

Section VII: Precautions for Safe Handling and Use: Gives special material handling data and spill procedures.

Section VIII: Control Measures: Lists recommendations for PPE and if special ventilation requirements are needed.
Appendix 5 contains a blank MSDS to illustrate the format and types of information on a MSDS. Any reproductive health hazard information will be listed in the Health Hazard Data Section of the MSDS. Because many chemicals have not been tested for potential reproductive health effects some MSDSs will state that the effects are unknown.

B. Labels and Signs

The hazard warnings on the label outline the appropriate measures to be taken in the case of an emergency and give the main hazard(s) associated with the use of the chemical. If a label is missing from a container in which the chemical can be properly identified, a new label shall be affixed containing the required information. Never mix chemicals that do not have proper labels. Never assume an unlabeled container is harmless. Never remove any label unless you immediately replace it with a new label containing at a minimum, the information listed on the previous label. Labels are an important first source of information on the chemicals used in the workplace. Labels can be seen as a condensed version of an MSDS. The following information is required to be affixed on all containers of hazardous chemicals:

1. All purchased chemicals, purchased solutions, and in-house prepared solutions must have identity labels showing:
   - The identity of the hazardous chemical(s) with proper names.
   - Appropriate hazard warnings such as FLAMMABLE or CORROSIVE etc.
   - The name and address of the chemical manufacturer, importer or other responsible party.

2. Abbreviations are not an acceptable method to identify the contents of a container.

3. In addition, product labels and DOT shipping labels must be retained on all bulk quantities of chemicals.

4. Signs indicating the location of safety showers, eyewash stations, and other safety and first aid equipment are required.

5. Warnings signs are required in areas or on equipment where special or unusual hazards exist.

III. METHODS OF LIMITING CHEMICAL EXPOSURE

Three main methods exist to control exposure: engineering controls, safe work practices, and personal protective equipment (PPE).

A. Engineering Controls
Engineering controls are the preferred method of reducing exposure. Engineering controls should be used whenever the chemical hazard information on the chemical label or the MSDS indicates a need. A common need for engineering controls is indicated when an MSDS states “use local exhaust.” Examples of engineering controls include switching to a less hazardous chemical, isolating the chemical by using isolation rooms or using remote equipment, and using local ventilation such as a fume hood or glove box.

B. Safe Work Practices

Safe work practices offer a second method to reduce exposure after the use of engineering controls. MSDS and chemical labels should be reviewed for specific work practice instructions before using chemicals. Additional examples of safe work practices include not working alone, washing hands after using chemicals, and reducing the amount of chemicals used.

C. Personal Protective Equipment (PPE)

PPE should be used in addition to, but not as a substitute, for engineering controls and safe work practices to reduce exposure. PPE may consist of respiratory protection, eye protection, face protection, gloves, hearing protection, and protective clothing. MSDS and chemical labels contain specific information on the proper personal protective equipment needed. A PPE Job Hazard Assessment Form, Appendix 4, is to be filled out by the supervisor to assist in the proper selection of PPE. When PPE is selected, its use shall be in accordance with OSHA standard 29 CRF 1910 subpart I, sections 132-139, and in consultation with the manufacturer.

Personnel must wear PPE to help prevent chemical exposures. PPE needed for the performance of a job function is normally provided by the supervisor at no cost to the employee.

D. Chemical Procurement, Distribution, Storage and Disposal

1. Procurement

a. Before a substance is used, an MSDS with information on proper handling, storage, and disposal shall be obtained and made available for those who will be using the substance. No container is to be accepted without an adequate identifying label. Manufacturers’ labels are not to be defaced or removed.

b. Whenever possible, supervisors should consider using alternative chemicals in the place of very hazardous chemicals.

c. To reduce future wastes, purchase only those quantities necessary.

2. Distribution
When chemicals are transported by hand or cart, the container should be placed within a second, larger container or bucket.

3. Storage

   a. Periodic inventories must be conducted. An example of a chemical inventory sheet is located on Appendix 3. The local hazardous waste management resources should be consulted before disposal of unneeded or excess items. At least annually a visual inspection for replacement, deterioration, and of container integrity should be performed when inventories are updated.

   b. Chemicals must be stored correctly. Consult the MSDS and product labels for recommended storage procedures. Manufacturers should be consulted for additional recommended storage recommendations.

4. Disposal

   a. All hazardous waste generated shall be disposed of in accordance with local, state and federal regulations. Local hazardous waste management resources shall be contacted for guidance on the disposal of any chemical waste.

   b. Training on the proper disposal of hazardous waste is available through many sources. Contact local hazardous waste management resources for these materials or other additional information.
SECTION 3.: CHEMICALS - HAZARDS AND EMERGENCY RESPONSE

I. EXPOSURE LIMITS

Minimizing exposures to chemicals is important to worker safety. Consulting the MSDS can provide valuable information on preventing exposures to chemicals. Effects from adverse chemical exposures can lead to long-term health effects. Exposure to chemicals are described in many ways. Acute / short term exposures are exposures that occur over a very short period of time, usually less than 15 minutes. Chronic / long term exposures occur over a long period of time, usually weeks or years.

OSHA regulates the amount of chemical an employee can be exposed to. OSHA’s Permissible Exposure Limits (PEL’s) for a chemical is a legal regulatory limit, time weighted average, which cannot be exceeded over an 8-hour work period. Short Term Exposure Limits (STEL’s) are limits that cannot be exceeded for more than 15 minutes.

The American Congress of Governmental Industrial Hygienists (ACGIH) publishes a list of Threshold Limit Values (TLVs) for chemicals. Threshold Limit Values (TLV’s) for a chemical is the average airborne concentration of a chemical that is thought most people can be exposed to for an 8-hour limit with no ill effects.

Methods of detecting chemicals can include:
- Monitoring by the employer,
- Continuous monitoring devices,
- Observation of the chemical’s appearance, odor, or other characteristics.

II. SPILL CONTROL POLICY

A chemical spill may occur to anyone who uses chemicals. Preplanning a response to a chemical spill is vital to minimize exposure and limit property damage. Trained chemical users can clean small spills - those, which by their small volume or low toxicity, are not deemed to present a health hazard to trained chemical users. Small chemical spills are to be cleaned up immediately. Some spills can create slippery conditions that can lead to additional hazards. The appropriate PPE must be worn when cleaning these spills to help prevent exposures.

Some hazardous substances necessitate special clean-up procedures to minimize hazards to clean-up personnel. Major spills are those spills, which by which their large volume or high toxicity present a health hazard under normal conditions. Clean up of these spills should not be attempted by employees. Appropriate emergency services should be notified immediately to arrange for a spill response team.
A. Spill Emergency Plan

1. Emergency preplanning to be followed before working with toxic chemicals:
   a. Determine the potential location of releases.
   b. Determine the quantities of material that may be released.
   c. Know the chemical and physical properties of the material (physical state, vapor pressure, air or water reactivity).
   d. Know the hazardous properties of the material (toxicity, corrosivity, flammability).
   e. Have the required PPE and spill kits (if needed) available.

2. In the event of a small spill, the following general procedures are to be followed:
   a. Attend to any persons who may have been contaminated. If personal exposure may have occurred, have the person use the eye wash station or safety shower. Direct the person to appropriate medical facilities.
   b. Notify persons in the immediate area of the spill.
   c. Close the door.
   d. Avoid breathing vapors of the spilled material.
   e. Leave any local exhaust ventilation on.
   f. Secure supplies to effect clean-up.
   g. During clean-up, wear the appropriate PPE.
   h. Place the collected waste in an appropriate container for disposal.

3. In the event of a major spill, the following procedures are to be followed:
   a. Attend to any persons who may have been contaminated. If personal exposure may have occurred, have the person use the eye wash station or safety shower. Remove the person from the area and seek medical assistance if needed.
   b. Alert others in the immediate area of the spill. Evacuate personnel from the area.
   c. Confine the fumes/vapors from the spill by closing the door to the room where the spill occurred.
   d. Contact appropriate emergency response personnel from a safe location.
   e. Be available for the emergency spill response personnel to provide necessary information concerning the spill and other hazards that may be present in the spill area.

III. COMMON CHEMICALS

This section is designed to provide information of common chemicals used by medical staff in a clinical setting. This section might not include all chemicals used in specialty medical areas but
it is designed to cover the majority of chemicals encountered. Those chemicals used that are not listed need to be reviewed by the supervisor so the hazards and means of protection can be established and explained to the employees.

A. Chemicals common to medical care personnel

The chemicals medical staff most commonly comes in contact with are the following:

Antineoplastic (chemotherapeutic) Agents
Disinfecting Agents
Housekeeping Chemicals
Anesthetic Gases
Compressed Gases
Mercury (elemental)
Isopropyl Alcohol
Formaldehyde
Prescription Drugs (liquid forms)
Pentamidine
Ribavirin

1. Antineoplastic Agents

These agents can cause severe irritation to tissue upon exposure and may be very toxic. Some are suspected or known carcinogens. Nurses and other staff must be trained on the precautions and handling procedures necessary to properly work with these agents. The MSDS must be reviewed before the initial administration of the agent. This information included the routine use, administration, clean-up of spills, and disposal of excreta from patients being treated with these agents.

2. Disinfecting Agents

Disinfecting Agents are used by employees to disinfect instruments, contaminated surfaces and other items to prevent the spread of organisms and infection. Some of the disinfecting agents contain chemicals such as glutaraldehyde, which may have adverse health effects associated with them. Disinfectants containing chemicals such as glutaraldehyde should be used in well-ventilated areas and the potential for contact with skin or breathing vapors should be minimized. When performing duties with the potential of creating splashes or sprays, proper eye protection must be worn to prevent eye contact with the chemicals. Appropriate gloves and gowns / lab coats must be used to minimize dermal exposures. Disinfecting agents should be sprayed onto a cloth whenever possible instead of spraying directly on surfaces to minimize the amount of chemical aerosolized.

3. Housekeeping Chemicals

Housekeeping Chemicals might be used by staff housekeepers or contractual employees
for cleaning environmental surfaces. In general, the majority of these chemicals have a low hazard level. The most hazardous chemicals such as floor strippers are used infrequently and require special precautions. Gloves are to be used to prevent dermal exposure. For those tasks where the risk of eye exposure is possible, safety glasses, goggles, or a face shield is required.

4. Anesthetic Gases

Anesthetic Gases can be found in the operating rooms, labor & delivery, emergency department, outpatient clinics, dental surgery, and recovery rooms and may be found much less frequently in other areas. Anesthetic gases used include nitrous oxide, halothane, enflurane, and isoflurane.

Anesthetic gases can be released and cause exposures by the following pathways: during hook-up and check-out of the system, excess gas can seep out of a patient's mask which does not fit properly. The post-operative patient may exhale gas into the room. Leaks can develop in hoses fittings and other parts of the delivery system, and gas can escape when scavenging systems (which are designed to capture excess and exhaled gas) are misused or not used at all. The hazards associated with exposure to anesthetic gases are outlined below.

a. Nitrous Oxide

Acute exposure by inhalation to high concentrations of nitrous oxide can cause central nervous system depression, drowsiness, lightheadedness, confusion, hysteria, anesthesia and unconsciousness. Chronic occupational exposure has been linked to neurologic problems, bone marrow depression, and kidney and liver disorders. Spontaneous abortions and fetal malformations have been reported in dentists and their assistants and linked to Nitrous Oxide exposure. Skin and eye exposure with liquid nitrous oxide can cause frostbite.

b. Halogenated Anesthetic Gases

These gases include Halothane, Enflurane, and Isoflurane. Acute exposure to these gases can cause respiratory depression, muscle relaxation and loss of consciousness. Waste anesthetic gases are considered chronic low-level health hazards. Suspected health effects include hepatic and renal diseases. Studies of health care workers have linked exposure to waste anesthetic gases with cancers, spontaneous abortions, fetal malformations, infertility and sterility.

5. Compressed Gases

Compressed Gases are considered a physical hazard by the Hazard Communication standard and should be treated with care. Regardless of the chemical composition of the compressed gas, any cylinder or other container with pressurized contents presents a significant physical hazard if the gas is released uncontrollably. Read the label of the
compressed gas cylinder to determine the contents and the possible health hazard it may present to you.

Cylinders also present a hazard to ankles, feet and toes when they are dropped or tipped over. Cylinders shall be fastened to a sturdy object with straps, chains or other devices. All cylinders not being used should have a protective cap covering the cylinder valve. Some compressed gases can present a health hazard to you.

6. Mercury

Elemental Mercury or silver mercury can be found in many types of medical care equipment including thermometers, Cantor tubes, Coulter counters and sphygmomanometers. Mercury is an odorless chemical that generates vapors at room temperature. The main route of mercury exposure is the inhalation of vapors. Skin contact and ingestion of elemental mercury should also be avoided. Short-term exposure to high levels of mercury can cause severe respiratory irritation, digestive disturbances and renal damage. The health hazards associated with chronic exposure to relatively low levels of mercury vapor are significant and include central nervous systems effects, tremors, irritability, emotional instability, gingivitis, anorexia and weight loss. Mercury is also nephrotoxic and can cause sensitization dermatitis. Care should be taken to avoid exposure to mercury vapors and keep all areas free of mercury contamination.

The proper clean up and disposal of mercury in the event of a spill is vital to reduce exposures. Cleaning up a broken thermometer should follow the guidelines listed in Appendix 6. The amount of mercury in a thermometer is not enough to cause adverse health effects but must be properly cleaned up. Larger spills or releases of mercury such as a blood pressure manometer or a cantor tube are cleaned-up by emergency responders. Upon recognition of a broken manometer or other large source of mercury, relocate the patient and contact appropriate emergency response personnel. Quick response and clean up by properly trained emergency responders limits the exposure to mercury vapors and prevents lingering problems of contamination.

7. Isopropyl Alcohol

Isopropyl Alcohol is commonly used in medical applications as both an antiseptic and a disinfectant. In addition to being flammable, isopropyl alcohol can cause irritation to the eyes, nose and throat. It can cause defatting of the skin, which leads to irritation, drying and cracking. Contact dermatitis has also been noted. Exposure to high concentrations has a narcotic effect with symptoms of drowsiness, headache, staggering and unconsciousness.

8. Formaldehyde and Formalin Solutions

Formaldehyde and Formalin Solutions are used in laboratories and other areas as a cold sterilant and to fix tissue samples. Formaldehyde is regulated under 29 CFR 1910.1048.
This standard is a performance-oriented regulation that mandates a program of evaluating potential hazards of Formaldehydes and communicating information concerning hazards and appropriate protective measures to employees that use Formaldehyde based chemicals. Formaldehyde is prepared in aqueous solutions ranging in concentration up to 37%. Formaldehyde is considered a carcinogen by OSHA, NTP, IARC and ACGIH. A number of cancers have been associated with exposure to formaldehyde however the strongest associations found concern nasal and nasopharyngeal cancer. Chronic exposure has also been associated with lung cancer in humans. Reproductive effects have been noted in males and females.

Acute exposure to formaldehyde can cause severe irritation of skin, throat and nose. High levels can cause tissue damage and severe respiratory tract injury. Formaldehyde is also a pulmonary sensitizer. Specimen containers containing formaldehyde solutions should be handled carefully. Proper protective equipment, including gloves and gas-proof goggles, should be worn and proper ventilation is required when there is a potential for exposure. In the event of a spill of a specimen container, soak up the spilled liquid with paper towels and place the debris in a sealed container for disposal as hazardous waste.

9. Prescription Drugs

Prescription drugs and other pharmaceutical agents in a liquid form can present an opportunity for chemical exposure. Prescription drugs in solid form can present a potential for exposure if the materials are cut, crushed, or powdered. The hazards to personnel vary based on concentration of the active ingredient and the mode of entry. The MSDS for these chemical agents must be made available in accordance with the OSHA Hazard Communication Standard.

10. Pentamidine

Pentamidine is a drug that is administered primarily in aerosol form to patients being treated for Pneumocystis carinii pneumonia. Acute irritation has been noted in staff members exposed to the aerosol. Staff members administering pentamidine should minimize the release of aerosolized pentamidine and limit the amount of time spent in the room where the drug is administered.

The chronic health effects and reproductive effects from pentamidine are unknown at this time so care should be taken to minimize exposure to the drug.

11. Ribavirin (Virazole)

Ribavirin is another drug used in aerosol form in the clinical setting. Ribavirin is used to treat lower respiratory tract infections in small children caused by respiratory syncytial virus (RSV). Ribavirin is aerosolized into a tent or hood containing the patient. Exposure occurs when staff are required to enter the tent and from passive leakage from the tents.
Health care workers exposed to ribavirin have complained of severe headaches, eye irritation, coughing and upper respiratory tract irritation. Lung irritation, wheezing and shortness of breath has been noted in people with asthma. Ribavirin has also been found to be teratogenic and/or embryo lethal in studies on rodents. Currently there is no data on reproductive effects in humans. Pregnant employees or employees planning pregnancy should use the recommended procedures and personal protective equipment to limit exposure.

IV. SPECIAL CHEMICALS USED IN THIS LOCATION

THIS SECTION IS TO BE COMPLETED AFTER THE SUPERVISOR OR OTHER DESIGNATED PERSONNEL HAVE COMPLETED THE CHEMICAL INVENTORY, OBTAINED THE MSDS FOR THE CHEMICALS USED, AND DETERMINE FROM THE PRODUCT LABEL THE HAZARDS THE CHEMICALS POSE, AND DISCUSS WITH THE EMPLOYEES THE HAZARDS. PLACE THE GATHERED INFORMATION AFTER THIS PAGE.
APPENDIX I
DEFINITIONS OF HAZARDS
(according to OSHA's Hazard Communication Standard)

Physical Hazards

Combustible - ignites at 100°F or above but below 200°F.

Compressed gas - gas under high pressure in a cylinder, hazard of violent release if valve is broken off or cylinder is dropped.

Explosive - ignites suddenly and violently.

Flammable - ignites at temperature below 100°F.

Organic peroxide - explodes if shaken or shocked; some liquids such as ether form organic peroxides after long storage times if stored improperly. It has a chemical structure related to hydrogen peroxide.

Oxidizer - gives off oxygen and will support combustion (Examples: sodium nitrate, sulfuric acid).

Pyrophoric - catches fire in air without needing a source of ignition at a temperature of 130°F or below.

Unstable (reactive) - may react in air or with other chemicals, causing explosion or heat.

Water reactive - reacts spontaneously in contact with water giving off toxic or ignitable vapors or causing hazardous pressure increases.

Health Hazards

Carcinogen - has been found to cause cancer in humans or at least two experiments with animals.

Corrosive- causes burns to human tissue on contact (Examples: sulfuric acid, lye, phenol).

Highly Toxic - contact with a small amount of the chemical (1 teaspoon or less) may cause illness from single exposure.

Irritant - causes irritation of skin, eyes or upper respiratory tract.

Sensitizer - may cause allergic reactions such as skin rash, especially after repeated contact.

Toxic - causes illness, but need single contact with larger amount of the chemical than for "highly toxic" chemicals or repeated contacts with smaller amounts.

Target Organ Effects- chemical causes harm to a certain organ or organs of the body, called "target organs".
Appendix 2

OSHA Regulations (Standards - 29 CFR)
Hazard Communication. - 1910.1200

Standard Number: 1910.1200
Standard Title: Hazard Communication.
SubPart Number: Z
SubPart Title: Toxic and Hazardous Substances

(a) "Purpose."
(a)(1)
The purpose of this section is to ensure that the hazards of all chemicals produced or imported are evaluated, and that
information concerning their hazards is transmitted to employers and employees. This transmittal of information is to be
accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other
forms of warning, material safety data sheets and employee training.
..1910.1200(a)(2)
(a)(2)
This occupational safety and health standard is intended to address comprehensively the issue of evaluating the potential
hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to employees,
and to preempt any legal requirements of a state, or political subdivision of a state, pertaining to this subject. Evaluating the
potential hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to
employees, may include, for example, but is not limited to, provisions for: developing and maintaining a written hazard
communication program for the workplace, including lists of hazardous chemicals present; labeling of containers of chemicals
in the workplace, as well as of containers of chemicals being shipped to other workplaces; preparation and distribution of
material safety data sheets to employees and downstream employers; and development and implementation of employee
training programs regarding hazards of chemicals and protective measures. Under section 18 of the Act, no state or political
subdivision of a state may adopt or enforce, through any court or agency, any requirement relating to the issue addressed by
this Federal standard, except pursuant to a Federally-approved state plan.
(b) "Scope and application."
(b)(1)
This section requires chemical manufacturers or importers to assess the hazards of chemicals which they produce or import,
and all employers to provide information to their employees about the hazardous chemicals to which they are exposed, by
means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and
training. In addition, this section requires distributors to transmit the required information to employers. (Employers who do
not produce or import chemicals need only focus on those parts of this rule that deal with establishing a workplace program and
communicating information to their workers. Appendix E of this section is a general guide for such employers to help them
determine their compliance obligations under the rule.)
(b)(2)
This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be
exposed under normal conditions of use or in a foreseeable emergency.
(b)(3)
This section applies to laboratories only as follows:
(b)(3)(i)
Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;
..1910.1200(b)(3)(ii)
(b)(3)(ii)
Employers shall maintain any material safety data sheets that are received with incoming shipments of hazardous chemicals,
and ensure that they are readily accessible during each workshift to laboratory employees when they are in their work areas;
(b)(3)(iii)
Employers shall ensure that laboratory employees are provided information and training in accordance with paragraph (h) of
this section, except for the location and availability of the written hazard communication program under paragraph (h)(2)(iii) of
this section; and,
(b)(3)(iv)
Laboratory employers that ship hazardous chemicals are considered to be either a chemical manufacturer or a distributor under
this rule. and thus must ensure that any containers of hazardous chemicals leaving the laboratory are labeled in accordance with
paragraph (f)(1) of this section, and that a material safety data sheet is provided to distributors and other employers in accordance with paragraphs (g)(6) and (g)(7) of this section.

(b)(4)
In work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use (such as are found in marine cargo handling, warehousing, or retail sales), this section applies to these operations only as follows:

(b)(4)(i)
Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

(b)(4)(ii)
Employers shall maintain copies of any material safety data sheets that are received with incoming shipments of the sealed containers of hazardous chemicals, shall obtain a material safety data sheet as soon as possible for sealed containers of hazardous chemicals received without a material safety data sheet if an employee requests the material safety data sheet, and shall ensure that the material safety data sheets are readily accessible during each work shift to employees when they are in their work area(s); and,

(b)(4)(iii)
Employers shall ensure that employees are provided with information and training in accordance with paragraph (h) of this section (except for the location and availability of the written hazard communication program under paragraph (h)(2)(iii) of this section), to the extent necessary to protect them in the event of a spill or leak of a hazardous chemical from a sealed container.

(b)(5)
This section does not require labeling of the following chemicals:

(b)(5)(i)
Any pesticide as such term is defined in the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(b)(5)(ii)
Any chemical substance or mixture as such terms are defined in the Toxic Substances Control Act (15 U.S.C. 2601 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(b)(5)(iii)
Any food, food additive, color additive, drug, cosmetic, or medical or veterinary device or product, including materials intended for use as ingredients in such products (e.g. flavors and fragrances), as such terms are defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) or the Virus-Serum-Toxin Act of 1913 (21 U.S.C. 151 et seq.), and regulations issued under those Acts, when they are subject to the labeling requirements under those Acts by either the Food and Drug Administration or the Department of Agriculture;

(b)(5)(iv)
Any distilled spirits (beverage alcohols), wine, or malt beverage intended for nonindustrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. 201 et seq.) and regulations issued under that Act, when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol, Tobacco, and Firearms;

(b)(5)(v)
Any consumer product or hazardous substance as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, when subject to a consumer product safety standard or labeling requirement of those Acts, or regulations issued under those Acts by the Consumer Product Safety Commission; and,

(b)(5)(vi)
Agricultural or vegetable seed treated with pesticides and labeled in accordance with the Federal Seed Act (7 U.S.C. 1551 et seq.) and the labeling regulations issued under that Act by the Department of Agriculture.

(b)(6)
This section does not apply to:

(b)(6)(i)
Any hazardous waste as such term is defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency;

(b)(6)(ii)
Any hazardous substance as such term is defined by the Comprehensive Environmental Response, Compensation and Liability
ACT (CERCLA) (42 U.S.C. 9601 et seq.) when the hazardous substance is the focus of remedial or removal action being conducted under CERCLA in accordance with the Environmental Protection Agency regulations.

(b)(6)(iii)
Tobacco or tobacco products;

(b)(6)(iv)
Wood or wood products, including lumber which will not be processed, where the chemical manufacturer or importer can establish that the only hazard they pose to employees is the potential for flammability or combustibility (wood or wood products which have been treated with a hazardous chemical covered by this standard, and wood which may be subsequently sawed or cut, generating dust, are not exempted);

(b)(6)(v)
Articles (as that term is defined in paragraph (c) of this section);

(b)(6)(vi)
Food or alcoholic beverages which are sold, used, or prepared in a retail establishment (such as a grocery store, restaurant, or drinking place), and foods intended for personal consumption by employees while in the workplace;

(b)(6)(vii)
Any drug, as that term is defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.), when it is in solid, final form for direct administration to the patient (e.g., tablets or pills); drugs which are packaged by the chemical manufacturer for sale to consumers in a retail establishment (e.g., over-the-counter drugs); and drugs intended for personal consumption by employees while in the workplace (e.g., first aid supplies);

(b)(6)(viii)
Cosmetics which are packaged for sale to consumers in a retail establishment, and cosmetics intended for personal consumption by employees while in the workplace;

(b)(6)(ix)
Any consumer product or hazardous substance, as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, where the employer can show that it is used in the workplace for the purpose intended by the chemical manufacturer or importer of the product, and the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended;

(b)(6)(x)
Nuisance particulates where the chemical manufacturer or importer can establish that they do not pose any physical or health hazard covered under this section;

(b)(6)(xi)
Ionizing and nonionizing radiation; and,

(b)(6)(xii)
Biological hazards.

(c) "Definitions."
"Article" means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

"Assistant Secretary" means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

"Chemical" means any element, chemical compound or mixture of elements and/or compounds.

"Chemical manufacturer" means an employer with a workplace where chemical(s) are produced for use or distribution.

"Chemical name" means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

"Combustible liquid" means any liquid having a flashpoint at or above 100 deg. F (37.8 deg. C), but below 200 deg. F (93.3 deg. C), except any mixture having components with flashpoints of 200 deg. F (93.3 deg. C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

"Commercial account" means an arrangement whereby a retail distributor sells hazardous chemicals to an employer, generally in large quantities over time and/or at costs that are below the regular retail price.

"Common name" means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

"Compressed gas" means:
(i) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70 deg. F (21.1 deg. C); or
(ii) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130 deg. F (54.4 deg. C)
regardless of the pressure at 70 deg. F (21.1 deg. C); or
(iii) A liquid having a vapor pressure exceeding 40 psi at 100 deg. F (37.8 deg. C) as determined by ASTM D-323-72.
"Container" means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a
hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems
in a vehicle, are not considered to be containers.
"Designated representative" means any individual or organization to whom an employee gives written authorization to exercise
such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as
a designated representative without regard to written employee authorization.
"Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human
Services, or designee.
"Distributor" means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other
distributors or to employers.
"Employee" means a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable
emergencies. Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated
instances are not covered.
"Employer" means a person engaged in a business where chemicals are either used, distributed, or are produced for use or
distribution, including a contractor or subcontractor.
"Explosive" means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to
sudden shock, pressure, or high temperature.
"Exposure or exposed" means that an employee is subjected in the course of employment to a chemical that is a physical or
health hazard, and includes potential (e.g. accidental or possible) exposure. "Subjected" in terms of health hazards includes any
route of entry (e.g. inhalation, ingestion, skin contact or absorption.)
"Flammable" means a chemical that falls into one of the following categories:
(i) "Aerosol, flammable" means an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame
projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of
valve opening;
(ii) "Gas, flammable" means: (A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a
concentration of thirteen (13) percent by volume or less; or
(B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12)
percent by volume, regardless of the lower limit;
(iii) "Liquid, flammable" means any liquid having a flashpoint below 100 deg. F (37.8 deg. C), except any mixture having
components with flashpoints of 100 deg. F (37.8 deg. C) or higher, the total of which make up 99 percent or more of the total
volume of the mixture.
(iv) "Solid, flammable" means a solid, other than a blasting agent or explosive as defined in 1910.109(a), that is liable to cause
fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing,
or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical
shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns
with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.
"Flashpoint" means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when
tested as follows:
(i) Tagliabue Closed Tester (See American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-
1979 (ASTM D 56-79)) for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100 deg. F (37.8 deg.
C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or
(ii) Pensky-Martens Closed Tester (see American National Standard Method of Test for Flash Point by Pensky-Martens Closed
Tester, Z11.7-1979 (ASTM D 93-79)) for liquids with a viscosity equal to or greater than 45 SUS at 100 deg. F (37.8 deg. C),
or that contain suspended solids, or that have a tendency to form a surface film under test; or
(iii) Setaflash Closed Tester (See American National Standard Method of Test for Flash Point by Setaflash Closed Tester,
ASTM D 3278-78)).
Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint
determination methods specified above.
"Foreseeable emergency" means any potential occurrence such as, but not limited to, equipment failure, rupture of containers,
or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.
"Hazardous chemical" means any chemical which is a physical hazard or a health hazard.
"Hazard warning" means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form
of warning which convey the specific physical and health hazard(s). Including target organ effects. Of the chemical(s) in the
container(s). (See the definitions for "physical hazard" and "health hazard" to determine the hazards which must be covered.)
"Health hazard" means a 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. The term "health hazard" includes 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. Appendix A provides further definitions and explanations of the scope of health hazards covered by this section, and Appendix B describes the criteria to be used to determine whether or not a chemical is to be considered hazardous for purposes of this standard.
"Identity" means any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.
"Immediate use" 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.
"Importer" means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or employers within the United States.
"Label" means any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.
"Material safety data sheet (MSDS)" means written or printed material concerning a hazardous chemical which is prepared in accordance with paragraph (g) of this section.
"Mixture" means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.
"Organic peroxide" means an organic compound that contains the bivalent -O-O-structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.
"Oxidizer" means a chemical other than a blasting agent or explosive as defined in 1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.
"Physical hazard" means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.
"Produce" means to manufacture, process, formulate, blend, extract, generate, emit, or repackage.
"Pyrophoric" means a chemical that will ignite spontaneously in air at a temperature of 130 deg. F (54.4 deg. C) or below.
"Responsible party" means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.
"Specific chemical identity" means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.
"Trade secret" means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Appendix D sets out the criteria to be used in evaluating trade secrets.
"Unstable (reactive)" means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.
"Use" means to package, handle, react, emit, extract, generate as a byproduct, or transfer.
"Water-reactive" means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.
"Work area" means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.
"Workplace" means an establishment, job site, or project, at one geographical location containing one or more work areas.
.1910.1200(d)
(d) "Hazard determination."
(d)(1) Chemical manufacturers and importers shall evaluate chemicals produced in their workplaces or imported by them to determine if they are hazardous. Employers are not required to evaluate chemicals unless they choose not to rely on the evaluation performed by the chemical manufacturer or importer for the chemical to satisfy this requirement.
(d)(2) Chemical manufacturers, importers or employers evaluating chemicals shall identify and consider the available scientific evidence concerning such hazards. For health hazards, evidence which is statistically significant and which is based on at least one positive study conducted in accordance with established scientific principles is considered to be sufficient to establish a hazardous effect if the results of the study meet the definitions of health hazards in this section. Appendix A shall be consulted for the scope of health hazards covered, and Appendix B shall be consulted for the criteria to be followed with respect to the completeness of the evaluation, and the data to be reported.
The chemical manufacturer, importer or employer evaluating chemicals shall treat the following sources as establishing that the chemicals listed in them are hazardous:

(d)(3)(i) 29 CFR part 1910, subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA); or,
(d)(3)(ii) "Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment," American Conference of Governmental Industrial Hygienists (ACGIH) (latest edition). The chemical manufacturer, importer, or employer is still responsible for evaluating the hazards associated with the chemicals in these source lists in accordance with the requirements of this standard.

(d)(4) Chemical manufacturers, importers and employers evaluating chemicals shall treat the following sources as establishing that a chemical is a carcinogen or potential carcinogen for hazard communication purposes:
(d)(4)(i) National Toxicology Program (NTP), "Annual Report on Carcinogens" (latest edition);
(d)(4)(ii) International Agency for Research on Cancer (IARC) "Monographs" (latest editions); or
(d)(4)(iii) 29 CFR part 1910, subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration.
Note: The "Registry of Toxic Effects of Chemical Substances" published by the National Institute for Occupational Safety and Health indicates whether a chemical has been found by NTP or IARC to be a potential carcinogen.

(d)(5) The chemical manufacturer, importer or employer shall determine the hazards of mixtures of chemicals as follows:
(d)(5)(i) If a mixture has been tested as a whole to determine its hazards, the results of such testing shall be used to determine whether the mixture is hazardous;
(d)(5)(ii) If a mixture has not been tested as a whole to determine whether the mixture is a health hazard, the mixture shall be assumed to present the same health hazards as do the components which comprise one percent (by weight or volume) or greater of the mixture, except that the mixture shall be assumed to present a carcinogenic hazard if it contains a component in concentrations of 0.1 percent or greater which is considered to be a carcinogen under paragraph (d)(4) of this section;
(d)(5)(iii) If a mixture has not been tested as a whole to determine whether the mixture is a physical hazard, the chemical manufacturer, importer, or employer may use whatever scientifically valid data is available to evaluate the physical hazard potential of the mixture; and,
(d)(5)(iv) If the chemical manufacturer, importer, or employer has evidence to indicate that a component present in the mixture in concentrations of less than one percent (or in the case of carcinogens, less than 0.1 percent) could be released in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health risk to employees in those concentrations, the mixture shall be assumed to present the same hazard.

(d)(6) Chemical manufacturers, importers, or employers evaluating chemicals shall describe in writing the procedures they use to determine the hazards of the chemical they evaluate. The written procedures are to be made available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director. The written description may be incorporated into the written hazard communication program required under paragraph (e) of this section.

(e) "Written hazard communication program."
(e)(1) Employers shall develop, implement, and maintain at each workplace, a written hazard communication program which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for labels and other forms of warning, material safety data sheets, and employee information and training will be met, and which also includes the following:
(e)(1)(i) A list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas); and,
(e)(1)(ii) The methods the employer will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of
reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas.

(e)(2)
"Multi-employer workplaces." Employers who produce, use, or store hazardous chemicals at a workplace in such a way that the employees of other employer(s) may be exposed (for example, employees of a construction contractor working on-site) shall additionally ensure that the hazard communication programs developed and implemented under this paragraph (e) include the following:

(e)(2)(i)
The methods the employer will use to provide the other employer(s) on-site access to material safety data sheets for each hazardous chemical the other employer(s)' employees may be exposed to while working;

(e)(2)(ii)
The methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies; and,

(e)(2)(iii)
The methods the employer will use to inform the other employer(s) of the labeling system used in the workplace.

(e)(3)
The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this paragraph (e).

(e)(4)
The employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with the requirements of 29 CFR 1910.1020 (e).

(e)(5)
Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the written hazard communication program may be kept at the primary workplace facility.

(f) "Labels and other forms of warning."

(f)(1)
The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information:

(f)(1)(i)
Identity of the hazardous chemical(s);

(f)(1)(ii)
Appropriate hazard warnings; and

(f)(1)(iii)
Name and address of the chemical manufacturer, importer, or other responsible party.

(f)(2)
(f)(2)(i)
For solid metal (such as a steel beam or a metal casting), solid wood, or plastic items that are not exempted as articles due to their downstream use, or shipments of whole grain, the required label may be transmitted to the customer at the time of the initial shipment, and need not be included with subsequent shipments to the same employer unless the information on the label changes;

(f)(2)(ii)
The label may be transmitted with the initial shipment itself, or with the material safety data sheet that is to be provided prior to or at the time of the first shipment; and,

(f)(2)(iii)
This exception to requiring labels on every container of hazardous chemicals is only for the solid material itself, and does not apply to hazardous chemicals used in conjunction with, or known to be present with, the material and to which employees handling the items in transit may be exposed (for example, cutting fluids or pesticides in grains).

(f)(3)
Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked in accordance with this section in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (49 U.S.C. 1801 et seq.) and regulations issued under that Act by the Department of Transportation.

(f)(4)
If the hazardous chemical is regulated by OSHA in a substance-specific health standard, the chemical manufacturer, importer, distributor or emmlovers shall ensure that the labels or other forms of warnine used are in accordance with the requirements of
that standard.

(f)(5) Except as provided in paragraphs (f)(6) and (f)(7) of this section, the employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with the following information:

(f)(5)(i) Identity of the hazardous chemical(s) contained therein; and,

(f)(5)(ii) Appropriate hazard warnings, or alternatively, words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical.

(f)(6) The employer may use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required by paragraph (f)(5) of this section to be on a label. The written materials shall be readily accessible to the employees in their work area throughout each work shift.

(f)(7) 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 of the employee who performs the transfer. For purposes of this section, drugs which are dispensed by a pharmacy to a health care provider for direct administration to a patient are exempted from labeling.

(f)(8) The employer shall not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

(f)(9) The employer shall ensure that labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the material presented, as long as the information is presented in English as well.

(f)(10) The chemical manufacturer, importer, distributor or employer need not affix new labels to comply with this section if existing labels already convey the required information.

(f)(11) Chemical manufacturers, importers, distributors, or employers who become newly aware of any significant information regarding the hazards of a chemical shall revise the labels for the chemical within three months of becoming aware of the new information. Labels on containers of hazardous chemicals shipped after that time shall contain the new information. If the chemical is not currently produced or imported, the chemical manufacturer, importers, distributor, or employer shall add the information to the label before the chemical is shipped or introduced into the workplace again.

(g) "Material safety data sheets."

(g)(1) Chemical manufacturers and importers shall obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Employers shall have a material safety data sheet in the workplace for each hazardous chemical which they use.

(g)(2) Each material safety data sheet shall be in English (although the employer may maintain copies in other languages as well), and shall contain at least the following information:

(g)(2)(i) The identity used on the label, and, except as provided for in paragraph (i) of this section on trade secrets:

(g)(2)(i)(A) If the hazardous chemical is a single substance, its chemical and common name(s);

(g)(2)(i)(B) If the hazardous chemical is a mixture which has been tested as a whole to determine its hazards, the chemical and common name(s) of the ingredients which contribute to these known hazards, and the common name(s) of the mixture itself; or,

(g)(2)(i)(C) If the hazardous chemical is a mixture which has not been tested as a whole:
The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise 1% or greater of the composition, except that chemicals identified as carcinogens under paragraph (d) of this section shall be listed if the concentrations are 0.1% or greater; and,

The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise less than 1% (0.1% for carcinogens) of the mixture, if there is evidence that the ingredient(s) could be released from the mixture in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health risk to employees; and,

The chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture;

Physical and chemical characteristics of the hazardous chemical (such as vapor pressure, flash point);

The physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity;

The health hazards of the hazardous chemical, including signs and symptoms of exposure, and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;

The primary route(s) of entry;

The OSHA permissible exposure limit, ACGIH Threshold Limit Value, and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the material safety data sheet, where available;

Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Annual Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions), or by OSHA;

Any generally applicable precautions for safe handling and use which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks;

Any generally applicable control measures which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, such as appropriate engineering controls, work practices, or personal protective equipment;

Emergency and first aid procedures;

The date of preparation of the material safety data sheet or the last change to it; and,

The name, address and telephone number of the chemical manufacturer, importer, employer or other responsible party preparing or distributing the material safety data sheet, who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

If no relevant information is found for any given category on the material safety data sheet, the chemical manufacturer, importer or employer preparing the material safety data sheet shall mark it to indicate that no applicable information was found.

Where complex mixtures have similar hazards and contents (i.e. the chemical ingredients are essentially the same, but the specific composition varies from mixture to mixture), the chemical manufacturer, importer or employer may prepare one material safety data sheet to apply to all of these similar mixtures.

The chemical manufacturer, importer or employer preparing the material safety data sheet shall ensure that the information recorded accurately reflects the scientific evidence used in making the hazard determination. If the chemical manufacturer, importer or employer become aware of any significant information regarding
the hazards of a chemical, or ways to protect against the hazards, this new information shall be added to the material safety data sheet within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the information to the material safety data sheet before the chemical is introduced into the workplace again.

.1910.1200(g)(6)
(g)(6)
(g)(6)(i) Chemical manufacturers or importers shall ensure that distributors and employers are provided an appropriate material safety data sheet with their initial shipment, and with the first shipment after a material safety data sheet is updated;
(g)(6)(ii) The chemical manufacturer or importer shall either provide material safety data sheets with the shipped containers or send them to the distributor or employer prior to or at the time of the shipment;
(g)(6)(iii) If the material safety data sheet is not provided with a shipment that has been labeled as a hazardous chemical, the distributor or employer shall obtain one from the chemical manufacturer or importer as soon as possible; and,
(g)(6)(iv) The chemical manufacturer or importer shall also provide distributors or employers with a material safety data sheet upon request.
(g)(7)
(g)(7)(i) Distributors shall ensure that material safety data sheets, and updated information, are provided to other distributors and employers with their initial shipment and with the first shipment after a material safety data sheet is updated;
(g)(7)(ii) The distributor shall either provide material safety data sheets with the shipped containers, or send them to the other distributor or employer prior to or at the time of the shipment;
.1910.1200(g)(7)(iii)
(g)(7)(iii) Retail distributors selling hazardous chemicals to employers having a commercial account shall provide a material safety data sheet to such employers upon request, and shall post a sign or otherwise inform them that a material safety data sheet is available;
(g)(7)(iv) Wholesale distributors selling hazardous chemicals to employers over-the-counter may also provide material safety data sheets upon the request of the employer at the time of the over-the-counter purchase, and shall post a sign or otherwise inform such employers that a material safety data sheet is available;
(g)(7)(v) If an employer without a commercial account purchases a hazardous chemical from a retail distributor not required to have material safety data sheets on file (i.e., the retail distributor does not have commercial accounts and does not use the materials), the retail distributor shall provide the employer, upon request, with the name, address, and telephone number of the chemical manufacturer, importer, or distributor from which a material safety data sheet can be obtained;
(g)(7)(vi) Wholesale distributors shall also provide material safety data sheets to employers or other distributors upon request; and,
(g)(7)(vii) Chemical manufacturers, importers, and distributors need not provide material safety data sheets to retail distributors that have informed them that the retail distributor does not sell the product to commercial accounts or open the sealed container to use it in their own workplaces.
.1910.1200(g)(8)
(g)(8) The employer shall maintain in the workplace copies of the required material safety data sheets for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s). (Electronic access, microfiche, and other alternatives to maintaining paper copies of the material safety data sheets are permitted as long as no barriers to immediate employee access in each workplace are created by such options.)
(g)(9) Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the material safety data sheets may be kept at the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required information in an emergency.
(g)(10) Material safety data sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual
hazardous chemicals. However, the employer shall ensure that in all cases the required information is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work area(s).

(g)(11) Material safety data sheets shall also be made readily available, upon request, to designated representatives and to the Assistant Secretary, in accordance with the requirements of 29 CFR 1910.1020(e). The Director shall also be given access to material safety data sheets in the same manner.

..1910.1200(h)

(h) "Employee information and training."

(h)(1) Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and material safety data sheets.

(h)(2) "Information." Employees shall be informed of:

(h)(2)(i) The requirements of this section;
(h)(2)(ii) Any operations in their work area where hazardous chemicals are present; and,
(h)(2)(iii) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section.

(h)(3) "Training." Employee training shall include at least:

(h)(3)(i) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);
(h)(3)(ii) The physical and health hazards of the chemicals in the work area;
(h)(3)(iii) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,
(h)(3)(iv) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

(i) "Trade secrets."

(i)(1) The chemical manufacturer, importer, or employer may withhold the specific chemical identity, including the chemical name and other specific identification of a hazardous chemical, from the material safety data sheet, provided that:

(i)(1)(i) The claim that the information withheld is a trade secret can be supported;
(i)(1)(ii) Information contained in the material safety data sheet concerning the properties and effects of the hazardous chemical is disclosed;
(i)(1)(iii) The material safety data sheet indicates that the specific chemical identity is being withheld as a trade secret; and,
(i)(1)(iv) The specific chemical identity is made available to health professionals, employees, and designated representatives in accordance with the applicable provisions of this paragraph.

..1910.1200(i)(2)

(i)(2) Where a treating physician or nurse determines that a medical emergency exists and the specific chemical identity of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall
immediately disclose the specific chemical identity of a trade secret chemical to that treating physician or nurse, regardless of
the existence of a written statement of need or a confidentiality agreement. The chemical manufacturer, importer, or employer
may require a written statement of need and confidentiality agreement, in accordance with the provisions of paragraphs (i)(3)
and (4) of this section, as soon as circumstances permit.
(i)(3)
In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical
identity, otherwise permitted to be withheld under paragraph (i)(1) of this section, to a health professional (i.e. physician,
industrial hygienist, toxicologist, epidemiologist, or occupational health nurse) providing medical or other occupational health
services to exposed employee(s), and to employees or designated representatives, if:
(i)(3)(i)
The request is in writing;
(i)(3)(ii)
The request describes with reasonable detail one or more of the following occupational health needs for the information:
(i)(3)(ii)(A)
To assess the hazards of the chemicals to which employees will be exposed;
(i)(3)(ii)(B)
To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels;
(i)(3)(ii)(C)
To conduct pre-assignment or periodic medical surveillance of exposed employees;
(i)(3)(ii)(D)
To provide medical treatment to exposed employees;
(i)(3)(ii)(E)
To select or assess appropriate personal protective equipment for exposed employees;
(i)(3)(ii)(F)
To design or assess engineering controls or other protective measures for exposed employees; and,
(i)(3)(ii)(G)
To conduct studies to determine the health effects of exposure.
(i)(3)(iii)
The request explains in detail why the disclosure of the specific chemical identity is essential and that, in lieu thereof, the
disclosure of the following information to the health professional, employee, or designated representative, would not satisfy the
purposes described in paragraph (i)(3)(ii) of this section:
(i)(3)(iii)(A)
The properties and effects of the chemical;
(i)(3)(iii)(B)
Measures for controlling workers' exposure to the chemical;
(i)(3)(iii)(C)
Methods of monitoring and analyzing worker exposure to the chemical; and,
(i)(3)(iii)(D)
Methods of diagnosing and treating harmful exposures to the chemical;
(i)(3)(iv)
The request includes a description of the procedures to be used to maintain the confidentiality of the disclosed information; and,
..1910.1200(i)(3)(v)
(i)(3)(v)
The health professional, and the employer or contractor of the services of the health professional (i.e. downstream employer,
labor organization, or individual employee), employee, or designated representative, agree in a written confidentiality
agreement that the health professional, employee, or designated representative, will not use the trade secret information for any
purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to
OSHA, as provided in paragraph (i)(6) of this section, except as authorized by the terms of the agreement or by the chemical
manufacturer, importer, or employer.
(i)(4)
The confidentiality agreement authorized by paragraph (i)(3)(iv) of this section:
(i)(4)(i)
May restrict the use of the information to the health purposes indicated in the written statement of need;
(i)(4)(ii)
May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-
estimate of likely damages; and,

(i)(4)(iii)
May not include requirements for the posting of a penalty bond.

(i)(5)
Nothing in this standard is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.

(i)(6)
If the health professional, employee, or designated representative receiving the trade secret information decides that there is a need to disclose it to OSHA, the chemical manufacturer, importer, or employer who provided the information shall be informed by the health professional, employee, or designated representative prior to, or at the same time as, such disclosure.

..1910.1200(i)(7)
(i)(7)
If the chemical manufacturer, importer, or employer denies a written request for disclosure of a specific chemical identity, the denial must:

(i)(7)(i)
Be provided to the health professional, employee, or designated representative, within thirty days of the request;

(i)(7)(ii)
Be in writing;

(i)(7)(iii)
Include evidence to support the claim that the specific chemical identity is a trade secret;

(i)(7)(iv)
State the specific reasons why the request is being denied; and,

(i)(7)(v)
Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

(i)(8)
The health professional, employee, or designated representative whose request for information is denied under paragraph (i)(3) of this section may refer the request and the written denial of the request to OSHA for consideration.

(i)(9)
When a health professional, employee, or designated representative refers the denial to OSHA under paragraph (i)(8) of this section, OSHA shall consider the evidence to determine if:

..1910.1200(i)(9)(i)
(i)(9)(i)
The chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity is a trade secret;

(i)(9)(ii)
The health professional, employee, or designated representative has supported the claim that there is a medical or occupational health need for the information; and,

(i)(9)(iii)
The health professional, employee or designated representative has demonstrated adequate means to protect the confidentiality.

(i)(10)
(i)(10)(i)
If OSHA determines that the specific chemical identity requested under paragraph (i)(3) of this section is not a "bona fide" trade secret, or that it is a trade secret, but the requesting health professional, employee, or designated representative has a legitimate medical or occupational health need for the information, has executed a written confidentiality agreement, and has shown adequate means to protect the confidentiality of the information, the chemical manufacturer, importer, or employer will be subject to citation by OSHA.

..1910.1200(i)(10)(ii)
(i)(10)(ii)
If a chemical manufacturer, importer, or employer demonstrates to OSHA that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm from the unauthorized disclosure of a trade secret specific chemical identity, the Assistant Secretary may issue such orders or impose such additional limitations or conditions upon the disclosure of the requested chemical information as may be appropriate to assure that the occupational health services are provided without an undue risk of harm to the chemical manufacturer, importer, or employer.

(i)(11)
If a citation for a failure to release specific chemical identity information is contested by the chemical manufacturer, importer, or employer, the matter will be adjudicated before the Occupational Safety and Health Review Commission in accordance with the Act's enforcement scheme and the applicable Commission rules of procedure. In accordance with the Commission rules.

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when a chemical manufacturer, importer, or employer continues to withhold the information during the contest, the
Administrative Law Judge may review the citation and supporting documentation "in camera" or issue appropriate orders to
protect the confidentiality of such matters.

(i)(12)
Notwithstanding the existence of a trade secret claim, a chemical manufacturer, importer, or employer shall, upon request,
disclose to the Assistant Secretary any information which this section requires the chemical manufacturer, importer, or
employer to make available. Where there is a trade secret claim, such claim shall be made no later than at the time the
information is provided to the Assistant Secretary so that suitable determinations of trade secret status can be made and the
necessary protections can be implemented.

(i)(13)
Nothing in this paragraph shall be construed as requiring the disclosure under any circumstances of process or percentage of
mixture information which is a trade secret.

(j)
"Effective dates." Chemical manufacturers, importers, distributors, and employers shall be in compliance with all provisions of
this section by March 11, 1994.

Note: The effective date of the clarification that the exemption of wood and wood products from the Hazard Communication
standard in paragraph (b)(6)(iv) only applies to wood and wood products including lumber which will not be processed, where
the manufacturer or importer can establish that the only hazard they pose to employees is the potential for flammability or
combustibility, and that the exemption does not apply to wood or wood products which have been treated with a hazardous
chemical covered by this standard, and wood which may be subsequently sawed or cut generating dust has been stayed from

## CHEMICAL INVENTORY

<table>
<thead>
<tr>
<th>NAME OF CHEMICAL</th>
<th>MANUFACTURER &amp; ADDRESS</th>
<th>STORAGE LOCATION</th>
<th>HAS MSDS BEEN RECEIVED? YES/NO *</th>
<th>PPE REQUIRED FOR USE**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Person conducting inventory:__________________________        DATE:______________

* IF MSDS NOT AVAILABLE, OBTAIN FROM MANUFACTURER / SUPPLIER
** LIST ALL THE PPE REQUIRED FOR USE

List chemical whenever a new is introduced in the workplace
Appendix 4
Personal Protective Equipment Job Hazard Assessment
For Chemical Hazards

Please refer to the Off-Site Locations Safety Information web page for the Job Hazard Assessment form

http://www.safety.rochester.edu/offsite/jhaform.pdf
# Appendix 5

**Material Safety Data Sheet**


**U.S. Dept. of Labor OSHA**

(Non-Mandatory Form)

Form Approved

OMB No. 1218-0072

<table>
<thead>
<tr>
<th>IDENTIFY (As Used on Label and List)</th>
<th>Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.</th>
</tr>
</thead>
</table>

## Section I

<table>
<thead>
<tr>
<th>Manufacturer's Name</th>
<th>Emergency Telephone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address (Number, Street, City, State, and ZIP Code)</td>
<td>Telephone Number for Information</td>
</tr>
<tr>
<td>Date Prepared</td>
<td>Signature of Preparer (optional)</td>
</tr>
</tbody>
</table>

## Section II - Hazard Ingredients/Identity Information

<table>
<thead>
<tr>
<th>Hazardous Components (Specific Chemical Identity; Common Name(s))</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>Other Limits Recommended</th>
<th>% (optional)</th>
</tr>
</thead>
</table>

## Section III - Physical/Chemical Characteristics

<table>
<thead>
<tr>
<th>Boiling Point</th>
<th>Specific Gravity ($H_2O = 1$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapor Pressure (mm Hg.)</td>
<td>Melting Point</td>
</tr>
<tr>
<td>Vapor Density (AIR = 1)</td>
<td>Evaporation Rate (Butyl Acetate = 1)</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td></td>
</tr>
<tr>
<td>Appearance and Odor</td>
<td></td>
</tr>
</tbody>
</table>

## Section IV - Fire and Explosion Hazard Data

<table>
<thead>
<tr>
<th>Flash Point (Method Used)</th>
<th>Flammable Limits</th>
<th>LEL</th>
<th>UEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extinguishing Media</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Special Fire Fighting Procedures | |

| Unusual Fire and Explosion Hazards | |

## Section V - Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>Unstable</th>
<th>Conditions to Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stable</td>
<td></td>
</tr>
</tbody>
</table>

| Incompatibility (Materials to Avoid) | |


Hazardous Decomposition or Byproducts

| Hazardous Polymerization | May Occur | | Conditions to Avoid | Will Not Occur |

Section VI - Health Hazard Data

| Route(s) of Entry: | Inhalation? | Skin? | Ingestion? |

Health Hazards (Acute and Chronic)

| Carcinogenicity: | NTP? | IARC Monographs? | OSHA Regulated? |

Signs and Symptoms of Exposure

Medical Conditions Generally Aggravated by Exposure

Emergency and First Aid Procedures

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

Waste Disposal Method

Precautions to Be taken in Handling and Storing

Other Precautions

Section VIII - Control Measures

<table>
<thead>
<tr>
<th>Respiratory Protection (Specify Type)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ventilation</td>
<td>Local Exhaust</td>
</tr>
<tr>
<td></td>
<td>Mechanical (General)</td>
</tr>
</tbody>
</table>

| Protective Gloves | Eye Protection |

Other Protective Clothing or Equipment

Work/Hygienic Practices
Appendix 6

MERCURY SPILL CLEAN-UP PROCEDURES

Mercury can be found in patient care location, mostly in thermometers and manometers. The following guideline was established to prevent mercury exposures to personnel and prevent the release of mercury into the environment.

Exposure to mercury is possible through inhalation of mercury vapors. Health effects can include kidney damage and central nervous system disorders. The small quantity of mercury in a thermometer does not present a health hazard to personnel if immediate action is taken. Mercury vapors generated immediately after a spill is very low. However, the use of gloves is still needed to prevent exposure dermal exposures.

**Broken Thermometers**

Only a small quantity of mercury can be found in a thermometer. When it breaks, some or all of the mercury may be released. Using a 3” x 5” index card, push the mercury into a pile. Make sure peripheral areas are checked for mercury. If any is found, push the mercury into the pile. Gather the mercury droplets onto one of the 3“x5” cards and transfer the mercury into a small plastic bottle. A special mercury sponge can also be used to absorb the mercury. For those droplets that can not be picked up using either of these methods, use a syringe (no needle) to suck up the mercury.one of the following actions:

Place all collected mercury into a sealable non-metallic container. Place any part of the thermometer that still contains mercury into the container. Label the container “Hazardous Waste” and dispose of the waste as hazardous waste.

A flashlight can be used to check for any beads of mercury that may remain. Turn off the room lights and shine a flashlight at the spill area. Any mercury that still is present will be visible when the light shines on the mercury at a glancing angle.

**Barometers and Manometers**

These devices contain a large quantity of mercury. A trained responder must be called for clean up should a mercury spill occur from one of these devices. To reduce the possibility of airborne exposures or tracking the mercury into other areas, personnel should not be permitted to enter the area

**Special Circumstances**

Occasionally, mercury is spilled onto carpeting. The only remedy for these spills is to remove the carpeting and dispose of it as hazardous waste.
Appendix 7

ATENDANCE SHEET - HAZARD COMMUNICATION STANDARD

Employees are to review the Hazard Communication Program (Haz Comm) document before completing the quiz listed below. Once the quiz is completed, the supervisor is to correct the quiz and discuss with the employee and questions missed.

1. True  False  OSHA’s Hazard Communication Standard requires your employer to inform you of potential exposures in your workplace.

2. True  False  Under the Haz Comm, your employer must inform you of ways to protect yourself from hazardous chemicals using work practices, emergency procedures and personal protective equipment.

3. True  False  The PEL and TLV are maximum exposure limits you can be safely exposed to for a 15-minute period.

4. True  False  Acute health hazards from chemical exposures occur gradually over time.

5. True  False  MSDSs provide information for handling and storage of chemicals.

6. True  False  MSDS will be provided for every hazardous chemical you will work with.

7. True  False  A container’s label can be removed after you have read it.

8. True  False  Once you are told about hazardous chemicals, your employer does not have to explain how to detect their presence or release.

9. True  False  MSDSs contain five main categories of information.

10. True  False  The product information section of the MSDS contains the specific ingredients of the material.

ACKNOWLEDGMENT OF TRAINING

I have read and understand the Hazard Communication Program document and have passed the quiz. My supervisor reviewed those questions missed to help me better understand the safe use of chemicals in my workplace.

Employee’s Signature:______________________________ Date:________________

Supervisor’s Signature:______________________________ Date:________________

NOTE: This record is to be included in the employee’s personnel or training file.