



# **HAZARD COMMUNICATION PLAN**

**February 2013**

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## **1.0 Objective**

The Hazard Communication Standard, also known as the Employee Right-to-Know law, establishes methods by which Touro University (TUC) communicates information about hazardous materials to employees. This written Hazard Communication Plan (Plan) provides the foundation for hazardous materials training classes, hazard warning labels and postings, and Material Safety Data Sheets (MSDSs) throughout the campus.

This Plan complies with federal and state Occupational Safety and Health Administration (OSHA) requirements for educating employees in identifying the hazards of chemicals and working safely with them.

## **2.0 Regulatory Basis**

This Plan complies with the Cal/ OSHA Hazard Communication Standard (Title 8, Section 5194) and applies to all employees who work with hazardous materials, as well as employees who might frequent hazardous materials handling areas.

It is important to note that many of the warning symbols and iconography historically associated with the OSHA standard has undergone revision to consolidate with the international hazard warning system called the Global Harmonized System (GHS). OSHA will require compliance with the GHS starting in June 2015. GHS warnings are presented in Appendix C in anticipation of the changes to these rules.

Hazard-warning requirements are also written into the Fire Code, as required under National Fire Protection Association rules. These are typically administered by local jurisdictions and can vary from one to another. These are discussed in this plan in terms of complying with all applicable requirements associated with chemical hazard warning systems.

The state Environmental Protection Agency (Cal/ EPA) and Health and Safety Code require posting signs at the entrance to hazardous materials and hazardous waste storage locations, and are enforced by local jurisdictions.

## **3.0 Hazard Communication Plan**

Hazard communication is a function of furnishing information employees and the public of chemical hazards present in the workplace. The OSHA standard, also known as the employee Right-to-Know law, states that employees have a right to hazard information of the chemicals used in the workplace to which they could potentially be exposed, and the right to ask for safety information about the chemicals they handle without recrimination or reprisal.

The components of the plan are fulfilled by the following methods.

- Providing employees with access to this Plan.
- Conducting training in TUC's Hazard Communication program to affected employees.
- Establishing a set of Material Safety Data Sheets for all chemicals in the university's chemical inventory.
- Labeling chemical containers.
- Posting hazard-warning signs, where appropriate.

By providing the information necessary for employees to understand the risks of the chemicals in their work areas, helps to instill good laboratory practices, and encourages safe work habits. Employees are expected to know the contents of this, and all other written plans applicable to their job, so are provided with access to a copy of this Plan.

The Hazard Communication Plan will be reviewed periodically and updated to reflect changes in the program, changes to the hazardous materials inventory, and changes to the regulations.

### **3.1 Training**

Employees are trained in reading MSDSs, chemical labeling requirements, recognizing hazard warning signs and symbols, and other pertinent information necessary for employees to safely work in TUC labs. Safety training is one of the most effective ways to impart hazard information to employees about the chemicals used in the workplace, so it is provided on several levels.

- According to OSHA, new employees are required to be trained in the use and locations of Material Safety Data Sheets before they begin handling hazardous materials. A short introduction is provided during new employee orientation, with further training provided shortly thereafter.
- Classroom training is provided by staff or outside experts to large groups.
- Video-based training and computer-based training is also used to for those unable to attend training classes.
- Supervisors train staff on the hazards and safe handling practices for the following.
  - New chemicals in the workplace
  - New processes involving hazardous materials
  - Equipment that involves the use of chemicals
- Changes to the program and its policies.

Training consists of an overview of MSDSs, hazard warning signs and symbols posted at the facility, and container labeling requirements.

### **3.2 Material Safety Data Sheets (MSDSs)**

MSDSs are documents produced by chemical manufacturers and distributors that state the physical and chemical properties of the product, the physical and health hazards, and practices for safe handling and use. Each chemical handled or used in the workplace is required to have a corresponding MSDS, and employees must have access to the MSDSs at all times of the work day.

OSHA rules state that developing a chemical inventory is the precursor to a compliant MSDS system, thus providing a baseline of data on which to build, as new products are brought into the workplace and new MSDSs are obtained and entered into the inventory.

One of the primary reasons for maintaining MSDSs, is for employees to become informed of the hazardous properties of the chemicals they handle. This is an important step in preventing accidents and workplace exposures. Employees are expected to be familiar with the hazardous properties of the chemicals they handle and are instructed to handle them in a manner that prevents releases, spills, or exposures.

A master file of MSDSs for the campus is kept in the Library, and employees have access to the university's MSDSs located in wall racks in all buildings. Individual work areas may maintain copies of MSDS for the chemicals used in these areas, and are encouraged to train employees in their location and use.

Chemicals purchased and received on campus must have an accompanying MSDS, or have a current MSDS on file. If a chemical does not have an MSDS, the workplace supervisor is responsible for obtaining a copy. Most can be obtained from a manufacturer's website, or by fax.

In the event of an emergency involving a hazardous material where the MSDS cannot be found, employees should contact CHEMTREC at 1-800-424-9300 to obtain safety information about that chemical.

### **3.3 Hazard Warning Labels**

Identifying hazardous chemicals is one of the key elements of the Hazard Communication Standard, and the violation most often cited in OSHA enforcement actions. Labels, signs, placards, and other forms of warning provide visual reminders of specific hazards to employees working directly with the chemical, and also to visitors, service representatives, housekeeping personnel, and emergency personnel who may encounter these chemicals when entering the facility.

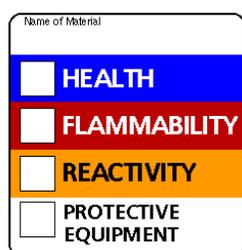
Under this standard chemical containers must provide be labeled with both the chemical name and the appropriate hazard warnings. For the most part, manufacturer's containers are already labeled according to this standard, so while the material is in use OSHA requires the following.

- Existing labels on incoming containers of hazardous substances must not be removed or intentionally defaced.
- Hazard warning labels must be legible, in English, and prominently displayed on the container.
- Chemical containers that are reused to store other chemicals must be relabeled according to the new contents.

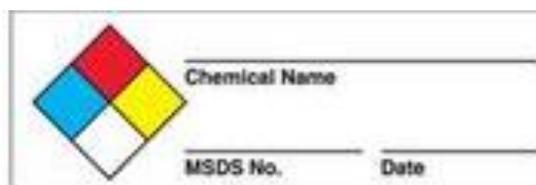
Containers of chemicals dispensed from a parent container into an unlabeled container are common in the lab and often contain formulations or dilutions from that in the parent container. These transfer containers must contain the following information.

1. The identity of the hazardous chemical. The name should appear as it does on the original label or have adequate identification to be recognized by employees. For example, if all employees know that NaOH refers to sodium hydroxide, then the abbreviation may be appropriate.
2. The appropriate hazard warnings signifying the primary physical and health hazards of the chemical (i.e. flammable, corrosive, toxic, oxidizer, reactive).

Hazard warning labels are commercially available and use a combination of color-coded panels and a numerical ranking of chemical hazards. Two predominant systems are currently used, and discussions of both hazard-labeling systems are presented in Appendix A; examples are shown below.



**HMIS Label**



**NFPA Label**

OSHA allows the hazard warning to include text, pictograms, or labels such as those presented. One can also write the name of the chemical on a transfer vessel and write the name of the hazard class next to it. Labels such as those below also comply.



**Corrosive**



**Flammable**



**Oxidizer**



**Toxic**

### 3.4 Hazard Warning Signs

Entrances to hazardous materials and hazardous waste storage areas are required to be posted with signs bearing specific language and symbols to alert the public and to inform emergency responders of the materials stored inside. For example, the Fire Department requires that the NFPA four-part diamond, as displayed in the previous section, must be posted on buildings containing hazardous materials. This is true for the Research lab and buildings storing fuels and toxic pesticides, among other materials.

It is advisable to post lab doors to labs with signs indicating general hazards and emergency contact names and numbers, to warn employees, students and emergency responders of what may be encountered inside.

### 3.5 Proposition 65 Postings

Proposition 65, also known as the Safe Drinking Water and Toxic Enforcement Act of 1986, requires that facilities handling hazardous chemicals on the Prop 65 list post all entrances with signs similar to that displayed below. This public warning is to inform anyone entering the facility under community right-to-know laws.



*Prop 65 Sign*

### 3.6 Select Carcinogens

Select carcinogens are defined as chemicals that have clearly been shown in toxicological and epidemiological studies to cause cancer in humans or are suspected of causing cancer. TUC handles three chemicals listed as Select Carcinogens: Formaldehyde and Methylene chloride. OSHA requires that employees who work with these chemicals must be informed of the hazards and trained in safe handling practices. Each of these is discussed below.

#### 3.6.1 Formaldehyde

TUC uses Formaldehyde, either in formulation, or present in embalming fluid in the anatomy lab. Formaldehyde is regulated as a “Select carcinogen” regulated by OSHA. TUC informs new employees in which labs Formaldehyde is used and posts these areas with warning signs.

Paraformaldehyde is the crystallized polymer of formaldehyde (97%) that is weighed out and dissolved in solution, often in concentrations of 2% formalin to fix cells or tissues, up to 37% paraformaldehyde solutions are used for perfusions. Formaldehyde is carcinogenic, an irritant, corrosive, and acutely toxic and can be absorbed through skin with other routes of exposure including eye contact and inhalation.

### **Safe Work Practices**

- Only trained person is allowed to handle this chemical. If untrained, then ask your supervisor for training.
- Work under a fume hood at all times when handling any concentration of formaldehyde and paraformaldehyde.
- Store in a cool, well-ventilated area, and kept tightly closed and sealed until ready for use. Open containers of paraformaldehyde crystals or powder dissolved in solution give off formaldehyde vapors.
- Avoid all possible sources of ignition (spark or flame) and separate from oxidizers.
- Diluted chemical solution (4%) is stored in a lab freezer where only trained researchers have access
- Users should minimize exposures to paraformaldehyde and avoid the weighing and dissolving steps and using these solutions in chemical fume hoods.
- Use pre-weighed packets for immunostaining as a substitute for more concentrated formaldehyde. In certain experimental settings, methanol can be used as a substitution.

### **3.6.2 Methylene Chloride**

Methylene Chloride (DCM) is a combustible liquid. It reacts violently with oxidizing agents (e.g. perchlorates, peroxides, permanganates, chlorates, nitrates, chlorine, bromine and fluorine), chemically active metals, such as potassium, sodium, magnesium and aluminum, and strong bases, such as sodium hydroxide and potassium hydroxide.

TUC uses DCM for extractions and as a general solvent in organic chemistry experiments.

Methylene Chloride is a combustible material and known as a carcinogen and mutagen, showing adverse effects on the heart, central nervous system, liver, skin and eyes. Exposure can occur through inhalation, absorption, or skin contact. Methylene Chloride can severely irritate and burn the skin and eyes with possible eye damage, while inhaling Methylene Chloride can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath. Higher

exposure can cause headache, nausea, fatigue, dizziness, lightheadedness, weakness and unconsciousness.

### **Safe Work Practices**

- Only trained person is allowed to handle this chemical. If untrained, then ask your supervisor for training.
- Designate an area for working with Methylene Chloride, and label it as such as required by the OSHA Methylene Chloride Standard.
- Work under a fume hood at all times when handling any concentration of DCM.
- Store in a cool, well-ventilated area, and kept tightly closed and sealed until ready for use. Typically a flammable storage cabinet is used because of its combustible characteristics.
- Avoid all possible sources of ignition (spark or flame) and separate from oxidizers.
- Work should be planned so that glove and physical contact will not occur. Keep containers closed as much as possible. Handle open containers only in a chemical fume hood.
- Use in the smallest practical quantities for the experiment being performed.
- Once work with Methylene Chloride is complete, wipe down work area with and soap and water solution.

## **4.0 Department Specific Chemical Handling**

This section addresses chemical handling by employees working in departments outside the laboratory environment. Support staff in Food Service, Facilities, and other departments who handle chemicals must also be aware of the hazards of the materials and be provided information on working with the materials safely.

### **4.1 Food Service**

Employees working in food service handle chemical formulations that may include hazardous chemicals. Dishwashing detergents may contain corrosive chemicals, as well as chemicals used for cleaning and sanitizing surfaces.

Employees are provided training in the hazards of these chemicals and safe handling practices appropriate to handling them. Information provided in the MSDS and on the container label should help guide employees in using the proper personal protective equipment (PPE) and other controls to ensure their safe handling.

## 4.2 Facilities and Maintenance

Facilities personnel may handle a number of different classes of hazardous chemicals in different tasks and assignments. Gasoline is stored in bulk, and is stored and dispensed for use in vehicles and equipment. Included among the chemicals used by this group are:

- Solvents – Includes the use of products containing solvents such as cleaning and maintenance products. These can pose a risk of explosion and flammability to the physical work environment, but also adverse health risks from overexposure.
- Paints – Some paints may be solvent-based, meaning they present potential health risks, and while latex and acrylic paints are less hazardous, they are still environmental contaminants and thus must be handled according to state and local laws.
- Aerosols – Spray cans contain propellants that can be harmful if inhaled, and may be a fire or explosion risk to the work environment under some conditions.
- Corrosive drain cleaners – Some drain cleaners contain harsh chemicals, such as sodium hydroxide, and other toxic chemicals.
- Corrosive detergents – Also applies to employees in Food Service, employees working in the Vivarium, and personnel who maintain boilers on campus.

In all cases, supervisors are expected to inform staff of the materials they handle and ensure that they attend training on the safe use of these materials. Unlike lab staff, employees in these departments handle only a limited number of chemicals and under the OSHA standard must be trained on the hazards of the specific chemicals they handle. Information on chemical hazard classes is provided in Appendix A of the Chemical Hygiene Plan.

## APPENDIX A –HAZARD WARNING LABELS

The Hazardous Materials Identification System, **HMIS®** utilizes colored bars, numbers and symbols to convey the hazards of chemicals used in the workplace.

### Health

The Health section conveys the health hazards of the material. In the latest version of HMIS®, the blue Health bar has two spaces, one for an asterisk and one for a numeric hazard rating.

If present, the asterisk signifies a chronic health hazard. On a qualitative level, the numbering systems are more or less identical, with a 0 to 4 scale where 0 indicates minimal hazard and 4 indicates an extreme hazard.

### Flammability

The criteria used to assign numeric values (0 = low hazard to 4 = high hazard) are identical to those used by NFPA.

### Reactivity

This version is now obsolete. The yellow section has been replaced with an orange section titled **Physical Hazards** - see the next section for more information.

### Physical Hazard (HMIS® III)

Reactivity hazard are assessed using the OSHA criterion of physical hazard. Seven such hazard classes are recognized:

- Water Reactive
- Organic Peroxides
- Explosives
- Compressed gases
- Pyrophoric materials
- Oxidizers
- Unstable Reactive

HMIS® uses the white section to indicate what personal protective equipment (PPE) should be used when working with the material. The following icons represent PPE in the HMIS.



Safety Glasses



Protective  
Gloves



Face  
Shield



Dust/ Mist  
Mask



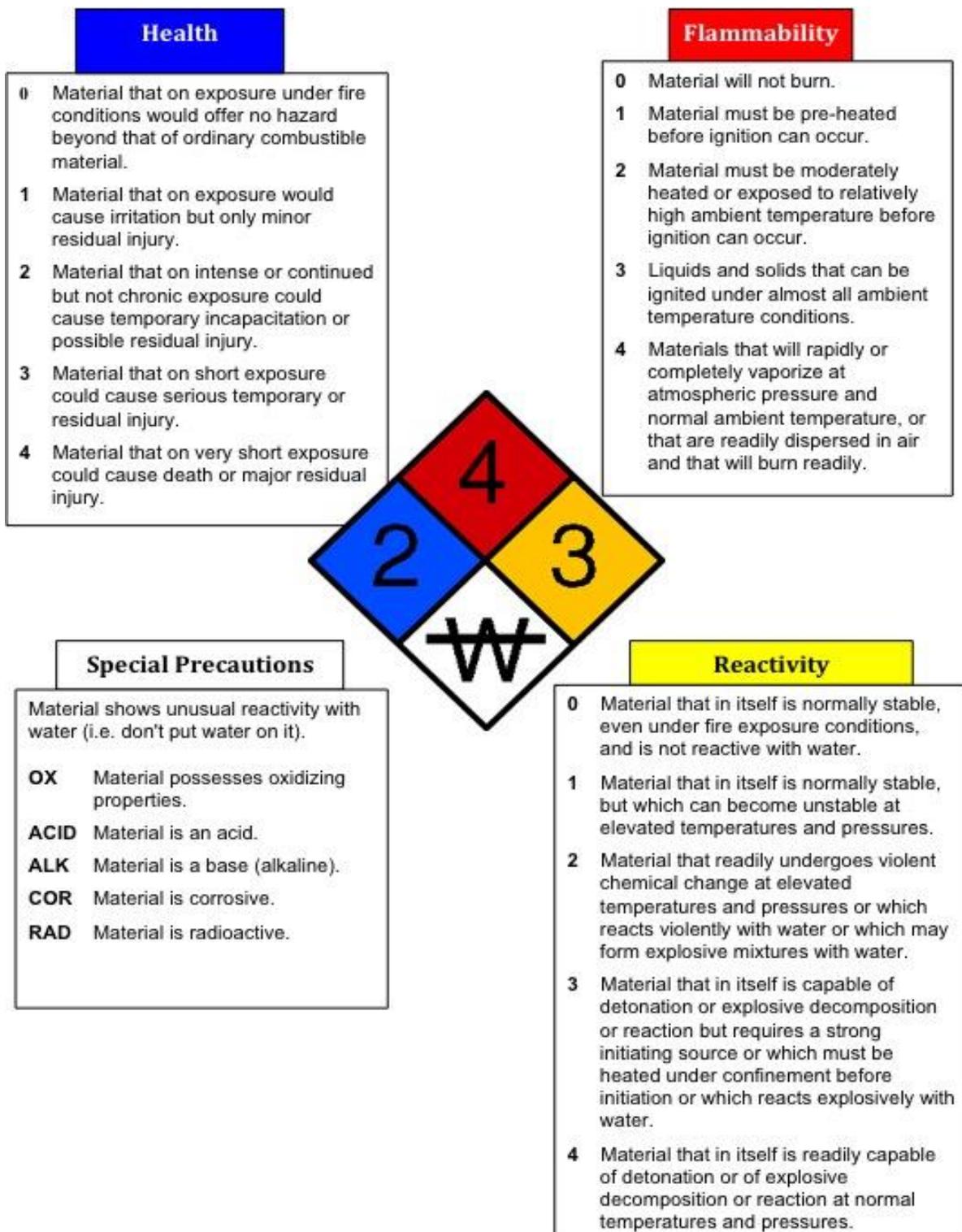
Protective  
Apron

Page A.1



Sample HMIS  
Label

The National Fire Protection Association four-part diamond is a standard hazard identification system identifying the hazards of a chemical. Each inner diamond signifies hazardous properties and which are used as guidance for safe handling practices.



## APPENDIX B - HOW TO READ AN MSDS

Material Safety Data Sheets (MSDS) are chemical information sheets, which give basic information about a product's content, potential hazards and physical characteristics as well as information necessary to use the product safely and how the chemical is managed. The following provides a brief overview of the type of information that can be found on a MSDS. The quality of information varies among the producers of MSDS, however, OSHA regulations require that each of the 16 sections is the same across all manufacturers, with some being more detailed than others.

### SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

- Product name and synonyms
- Name of manufacturer, address and emergency telephone number
- Date of MSDS preparation

### SECTION 2: HAZARDS IDENTIFICATION

- The hazard class of the material (e.g. Flammable, Toxic, Corrosive, etc.)
- Potential and type of health effects (e.g. Target organs, irritant, etc.)
- Warning statements and phrases, such as *Dangerous* or *Caution*. New GHS standards include internationally standardized codes that are presented in Appendix D.
- The possible routes of entry

### SECTION 3: COMPOSITION/ INFORMATION ON INGREDIENTS

- Chemical identity
- Chemical Abstract System (CAS) number for each ingredient at, or above 1.0% volume.
- Ingredients with unknown toxicological properties

All potentially hazardous ingredients of the material must be listed on the MSDS, with the approximate percentage or percentage range of each ingredient of the material also be provided.

### SECTION 4: FIRST AID MEASURES

The First Aid Measures section describes actions to be taken immediately in case you are exposed to the material. The purpose of first aid is to minimize injury and future disability. When medical treatment is necessary, send the MSDS, because medical personnel need to know what the material is and what first aid measures are recommended including the following.

## **SECTION 5: FIRE FIGHTING MEASURES**

The purpose of the Fire Fighting Measures section is to describe any fire hazards associated with the material. This information includes the following.

- Flash point
- Upper and lower flammable (explosive) limits in air
- Autoignition temperature
- Hazardous combustion products
- Conditions under which flammability could occur
- Extinguishing media
- Sensitivity to explosion by mechanical impact
- Sensitivity to explosion by static discharge
- Fire fighting procedures

## **SECTION 6: ACCIDENTAL RELEASE MEASURES**

General instructions for responding to an accidental release or cleaning up a spill or accidental release are provided in this section. Specific information includes:

- Personal precautions
- Vapor response
- Environmental precautions
- Methods and materials for containment and cleaning up

## **SECTION 7: HANDLING AND STORAGE**

In this section, you will find general precautions necessary for the safe handling and storage of the material.

- Handling practices and equipment
- Appropriate storage practices/requirements

## **SECTION 8: EXPOSURE CONTROLS/ PERSONAL PROTECTION**

This section provides information that is used to develop procedures and practices for working safely with the material, such as applicable control measures. Some MSDSs will discuss regulatory exposure limits here, whereas others may discuss only the following classic exposure control measures.

- Engineering controls
- Administrative/ Work Practice Controls
- Personal Protective Equipment

## **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

This section provides physical and chemical properties that can help establish proper storage, handling, and response practices including the following.

- Appearance
- Odor
- pH
- Vapor pressure and reference temperature
- Vapor density
- Boiling point
- Melting point
- Specific gravity or density
- Evaporation
- Odor threshold
- Viscosity
- Solubility in water

## **SECTION 10: STABILITY AND REACTIVITY**

This section of the MSDS indicates how stable the material is and describes any conditions under which it is unstable or can react dangerously. This information also helps identify storage practices based on the following factors.

- Chemical stability
- Conditions to avoid
- Incompatibility with other materials
- Hazardous decomposition products
- Hazardous polymerization

## **SECTION 11: TOXICOLOGICAL INFORMATION**

This section of the MSDS can be quite technical and it is important to remember that the toxicological effects require interpretation and an understanding of toxicological principles. The endpoints discussed include:

- Effects of short-term exposure
- Effects of long-term exposure
- Irritancy
- Sensitization

- Carcinogenicity
- Reproductive toxicity
- Teratogenicity
- Mutagenicity
- Name of toxicologically synergistic products

## **SECTION 12: ECOLOGICAL INFORMATION**

You will normally find data that is useful in evaluating the environmental impact of the material if it is released to the environment (e.g. toxicity to fish, birds, plants and microorganisms). This information may include the following.

- Toxicity
- Persistence and degradability
- Bioaccumulative potential
- Mobility in soil
- Other adverse effects

## **SECTION 13: DISPOSAL CONSIDERATIONS**

This section of the MSDS is intended mainly to address waste disposal based on U.S. Environmental Protection Agency waste rules and international standards.

## **SECTION 14: TRANSPORT INFORMATION**

This section of the MSDS is intended for those responsible for shipping the material. Shipping classifications under the U.S. Department of Transportation and other international standards, such as the following.

- Department of Transportation (US DOT)
  - UN number Hazard Class Packing group
  - Proper shipping name
  - Reportable Quantity
  - Marine pollutant
  - Poison Inhalation Hazard
- International Maritime Dangerous Goods (IMDG)
- International Air Transportation Association (IATA)

## **SECTION 15: REGULATORY INFORMATION**

Information in this section is aimed at regulatory standards applicable to US and international health, safety and environmental laws and regulations, such as the following.

## **SECTION 16: OTHER INFORMATION**

The other information section is used to provide supplementary information, which the writer of the data sheet considers important for the safe use of the material. Reference sources used in preparing the data sheet are sometimes listed. You can use this reference list to obtain additional information on the material.

## **CONCLUSION**

It is important to remember that an MSDS is not a complete source of health and safety information on its own. This is because MSDSs are usually written for many different work sites and, therefore, cannot be specific in the advice they offer. They are an essential starting point for developing a complete health and safety program for a material.

## APPENDIX C – GLOBAL HARMONIZED SYSTEM HAZARD WARNING

The Global Harmonized System (GHS) is an international agreement that standardizes the way safety and risk information is presented in MSDSs and chemical labeling. The GHS is taking effect in the USA in June of 2015, which is now commonly used in Material Safety Data Sheets. The system uses pictograms, Safety Phrases and Risk Phrases to identify a wider range of hazards than are presently used under OSHA rules.

### Pictograms

	<ul style="list-style-type: none"> <li>Explosive</li> <li>Self Reactive Organic Peroxide</li> </ul>		Oxidizer
	<ul style="list-style-type: none"> <li>Flammable Materials</li> <li>Non explosive self reactive</li> <li>Pyrophoric,</li> <li>Self-heating,</li> <li>Emits Flammable Gas</li> <li>Non explosive Organic Peroxide</li> </ul>		<ul style="list-style-type: none"> <li>Corrosive to human issue</li> <li>Corrosive to metals.</li> </ul>
	Compressed Gases		Acute toxicity
	<ul style="list-style-type: none"> <li>Irritant to Skin and Eye Irritation</li> <li>Dermal Sensitizer</li> <li>Low Acute Toxicity</li> <li>Low Target Organ Toxicity/</li> <li>Narcotic effects,</li> <li>Respiratory irritation</li> </ul>		<ul style="list-style-type: none"> <li>Carcinogen</li> <li>Respiratory Sensitizer</li> <li>Reproductive Toxicity</li> <li>Chronic Target Organ Toxicity</li> <li>Mutagenicity</li> <li>Aspiration Toxicity</li> </ul>
	Acute & Chronic Aquatic Toxicity		

<b>H Phrases (Physical Hazards)</b>	
<b>H200</b>	Unstable explosive
<b>H201</b>	Explosive; mass explosion hazard
<b>H202</b>	Explosive; severe projection hazard
<b>H203</b>	Explosive; fire, blast or projection hazard
<b>H204</b>	Fire or projection hazard
<b>H205</b>	May mass explode in fire
<b>H220</b>	Extremely flammable gas
<b>H221</b>	Flammable gas
<b>H222</b>	Extremely flammable material
<b>H223</b>	Flammable material
<b>H224</b>	Extremely flammable liquid and vapour
<b>H225</b>	Highly flammable liquid and vapour
<b>H226</b>	Flammable liquid and vapour
<b>H228</b>	Flammable solid
<b>H240</b>	Heating may cause an explosion
<b>H241</b>	Heating may cause a fire or explosion
<b>H242</b>	Heating may cause a fire
<b>H250</b>	Catches fire spontaneously if exposed to air
<b>H251</b>	Self-heating; may catch fire
<b>H252</b>	Self-heating in large quantities; may catch fire
<b>H260</b>	In contact with water releases flammable gases which may ignite spontaneously
<b>H261</b>	In contact with water releases flammable gas
<b>H270</b>	May cause or intensify fire; oxidizer
<b>H271</b>	May cause fire or explosion; strong oxidizer
<b>H272</b>	May intensify fire; oxidizer
<b>H280</b>	Contains gas under pressure; may explode if heated
<b>H281</b>	Contains refrigerated gas; may cause cryogenic burns or injury
<b>H290</b>	May be corrosive to metals
<b>H301</b>	Toxic if swallowed
<b>H302</b>	Harmful if swallowed
<b>H304</b>	May be fatal if swallowed and enters airways
<b>H310</b>	Fatal in contact with skin
<b>H311</b>	Toxic in contact with skin
<b>H312</b>	Harmful in contact with skin
<b>H314</b>	Causes severe skin burns and eye damage
<b>H315</b>	Causes skin irritation
<b>H317</b>	May cause an allergic skin reaction
<b>H318</b>	Causes serious eye damage
<b>H319</b>	Causes serious eye irritation
<b>H330</b>	Fatal if inhaled
<b>H331</b>	Toxic if inhaled
<b>H332</b>	Harmful if inhaled

<b>H Phrases (Health Hazards)</b>	
<b>H334</b>	May cause allergy or asthma symptoms or breathing difficulties if inhaled
<b>H335</b>	May cause respiratory irritation
<b>H336</b>	May cause drowsiness or dizziness
<b>H340</b>	May cause genetic defects, (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
<b>H341</b>	Suspected of causing genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
<b>H350</b>	May cause cancer May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
<b>H350i</b>	May cause cancer by inhalation
<b>H351</b>	Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
<b>H360</b>	May damage fertility or the unborn child (state specific effect if known)(state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
<b>H360F</b>	May damage fertility
<b>H360D</b>	May damage the unborn child
<b>H360FD</b>	May damage fertility. May damage the unborn child
<b>H360Fd</b>	May damage fertility. Suspected of damaging the unborn child
<b>H362</b>	May cause harm to breast-fed children
<b>H370</b>	Causes damage to organs (or state all organs affected, if known) (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
<b>H371</b>	May cause damage to organs (or state all organs affected, if known) (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
<b>H372</b>	Causes damage to organs through prolonged or repeated exposure (state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
<b>H373</b>	May cause damage to organs through prolonged or repeated exposure (state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
<b>H Phrases (Environmental Hazards)</b>	
<b>H400</b>	Very toxic to aquatic life
<b>H410</b>	Very toxic to aquatic life with long lasting effects
<b>H411</b>	Toxic to aquatic life with long lasting effects
<b>H412</b>	Harmful to aquatic life with long lasting effects
<b>H413</b>	May cause long lasting harmful effects to aquatic life

S

<b>EUH Phrases (European Union Statements)</b>	
<b>EUH001</b>	Explosive when dry.
<b>EUH006</b>	Explosive with or without contact with air.
<b>EUH014</b>	Reacts violently with water.
<b>EUH018</b>	In use may form flammable/explosive vapour-air mixture.
<b>EUH019</b>	May form explosive peroxides.
<b>EUH044</b>	Risk of explosion if heated under confinement.
<b>EUH029</b>	Contact with water liberates toxic gas.
<b>EUH031</b>	Contact with acids liberates toxic gas.
<b>EUH032</b>	Contact with acids liberates very toxic gas.
<b>EUH066</b>	Repeated exposure may cause skin dryness or cracking.
<b>EUH070</b>	Toxic by eye contact.
<b>EUH071</b>	Corrosive to the respiratory tract.
<b>EUH059</b>	Hazardous to the ozone layer.
<b>EUH201</b>	Contains lead. Should not be used on surfaces liable to be chewed or sucked
<b>EUH201A</b>	Warning! Contains lead.
<b>EUH202</b>	Cyanoacrylate. Danger. Bonds skin and eyes in seconds. Keep out of the reach of children.
<b>EUH203</b>	Contains chromium (VI). May produce an allergic reaction.
<b>EUH204</b>	Contains isocyanates. May produce an allergic reaction.
<b>EUH205</b>	Contains epoxy constituents. May produce an allergic reaction.
<b>EUH206</b>	Warning! Do not use together with other products. May release dangerous gases (chlorine).
<b>EUH207</b>	Warning! Contains cadmium. Dangerous fumes are formed during use. See information supplied by the manufacturer. Comply with the safety instructions
<b>EUH208</b>	Contains <name of sensitising substance>. May produce an allergic reaction
<b>EUH209</b>	Can become highly flammable in use.
<b>EUH209A</b>	Can become flammable in use.
<b>EUH210</b>	Safety data sheet available on request.
<b>EUH401</b>	To avoid risks to human health and the environment, comply with the instructions for use.

<b>P Phrases (Precautionary Hazards)</b>	
<b>General Precautionary Statement Codes - P100 Series</b>	
<b>P101</b>	If medical advice is needed, have product container or label at hand.
<b>P102</b>	Keep out of reach of children.
<b>P103</b>	Read label before use.
<b>Prevention Precautionary Statement Codes - P200 Series</b>	
<b>P201</b>	Obtain special instructions before use.
<b>P202</b>	Do not handle until all safety precautions have been read and understood.
<b>P210</b>	Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
<b>P211</b>	Do not spray on an open flame or other ignition source.
<b>P220</b>	Keep/Store away from clothing/.../combustible materials.
<b>P221</b>	Take any precaution to avoid mixing with combustibles/..
<b>P222</b>	Do not allow contact with air.
<b>P230</b>	Keep wetted with ...
<b>P231</b>	Handle under inert gas.
<b>P232</b>	Protect from moisture.
<b>P233</b>	Keep container tightly closed.
<b>P234</b>	Keep only in original container.
<b>P235</b>	Keep cool.
<b>P240</b>	Ground/bond container and receiving equipment.
<b>P241</b>	Use explosion-proof electrical/ventilating/lighting/.../equipment.
<b>P242</b>	Use only non-sparking tools.
<b>P243</b>	Take precautionary measures against static discharge.
<b>P250</b>	Do not subject to grinding/shock/.../friction.
<b>P251</b>	Pressurized container: Do not pierce or burn, even after use.
<b>P260</b>	Do not breathe dust/fume/gas/mist/vapours/spray.
<b>P261</b>	Avoid breathing dust/fume/gas/mist/vapours/spray.
<b>P262</b>	Do not get in eyes, on skin, or on clothing.
<b>P263</b>	Avoid contact during pregnancy/while nursing.
<b>P264</b>	Wash...thoroughly after handling
<b>P270</b>	Do not eat, drink or smoke when using this product.
<b>P271</b>	Use only outdoors or in a well-ventilated area
<b>P272</b>	Contaminated work clothing should not be allowed out of the workplace.
<b>P273</b>	Avoid release to the environment.
<b>P280</b>	Wash...thoroughly after handling
<b>P281</b>	Use personal protective equipment as required.
<b>P282</b>	Wear cold insulating gloves/face shield/eye protection.
<b>P283</b>	Wear fire/flame resistant/retardant clothing
<b>P210</b>	Wear respiratory protection.

<b>P Phrases (Precautionary Hazards - Continued)</b>	
<b>P284</b>	Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
<b>P285</b>	In case of inadequate ventilation wear respiratory protection.
<b>P231 + P232</b>	Handle under inert gas. Protect from moisture.
<b>P235 + P410</b>	Keep cool. Protect from sunlight.
<b>Response Precautionary Statement Codes - P300 Series</b>	
<b>P301</b>	IF SWALLOWED:
<b>P302</b>	IF ON SKIN:
<b>P303</b>	IF ON SKIN (or hair):
<b>P304</b>	IF INHALED:
<b>P305</b>	IF IN EYES:
<b>P306</b>	IF ON CLOTHING:
<b>P307</b>	IF exposed:
<b>P308</b>	IF exposed or concerned:
<b>P309</b>	IF exposed or if you feel unwell:
<b>P310</b>	Immediately call a POISON CENTER or doctor/physician.
<b>P311</b>	Call a POISON CENTER or doctor/physician.
<b>P312</b>	Call a POISON CENTER or doctor/physician if you feel unwell.
<b>P313</b>	Get medical advice/attention.
<b>P314</b>	Get medical advice/attention if you feel unwell.
<b>P315</b>	Get immediate medical advice/attention.
<b>P320</b>	Specific treatment is urgent (see ... on this label).
<b>P321</b>	Specific treatment (see ... on this label).
<b>P322</b>	Specific measures (see ... on this label).
<b>P330</b>	Rinse mouth.
<b>P331</b>	Do NOT induce vomiting.
<b>P332</b>	If skin irritation occurs:
<b>P333</b>	If skin irritation or rash occurs:
<b>P334</b>	Immerse in cool water/wrap in wet bandages.
<b>P335</b>	Brush off loose particles from skin.
<b>P336</b>	Thaw frosted parts with lukewarm water. Do not rub affected area.
<b>P337</b>	If eye irritation persists:
<b>P338</b>	Remove contact lenses, if present and easy to do. Continue rinsing.
<b>P340</b>	Remove victim to fresh air and keep at rest in a position comfortable for breathing.
<b>P341</b>	If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
<b>P342</b>	If experiencing respiratory symptoms:
<b>P350</b>	Gently wash with plenty of soap and water.
<b>P351</b>	Rinse cautiously with water for several minutes.
<b>P352</b>	Wash with plenty of soap and water.
<b>P353</b>	Rinse skin with water/shower.

<b>P Phrases (Precautionary Hazards - Continued)</b>	
<b>P360</b>	Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
<b>P361</b>	Remove/Take off immediately all contaminated clothing.
<b>P362</b>	Take off contaminated clothing and wash before reuse.
<b>P363</b>	Wash contaminated clothing before reuse.
<b>P370</b>	In case of fire:
<b>P371</b>	In case of major fire and large quantities:
<b>P372</b>	Explosion risk in case of fire.
<b>P373</b>	DO NOT fight fire when fire reaches explosives.
<b>P374</b>	Fight fire with normal precautions from a reasonable distance.
<b>P375</b>	Fight fire remotely due to the risk of explosion
<b>P376</b>	Stop leak if safe to do so.
<b>P377</b>	Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
<b>P378</b>	Use ... for extinction.
<b>P380</b>	Evacuate area.
<b>P381</b>	Eliminate all ignition sources if safe to do so.
<b>P390</b>	Absorb spillage to prevent material damage.
<b>P391</b>	Collect spillage.
<b>P Phrases (Precautionary Hazards Combinations)</b>	
<b>P301 + P310</b>	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
<b>P301 + P312</b>	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
<b>P301 + P330 + P331</b>	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
<b>P302 + P334</b>	IF ON SKIN: Immerse in cool water/wrap in wet bandages.
<b>P302 + P350</b>	IF ON SKIN: Gently wash with plenty of soap and water.
<b>P302 + P352</b>	IF ON SKIN: Wash with plenty of soap and water.
<b>P303 + P361 + P353</b>	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
<b>P304 + P312</b>	IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell.
<b>P304 + P340</b>	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
<b>P304 + P341</b>	IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
<b>P305 + P351 + P338</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
<b>P306 + P360</b>	IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
<b>P307 + P311</b>	IF exposed: Call a POISON CENTER or doctor/physician.
<b>P308 + P313</b>	IF exposed or concerned: Get medical advice/attention.

<b>P Phrases (Precautionary Hazards - Continued)</b>	
<b>P309 + P311</b>	IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.
<b>P332 + P313</b>	If skin irritation occurs: Get medical advice/ attention.
<b>P333 + P313</b>	If skin irritation or rash occurs: Get medical advice/attention.
<b>P335 + P334</b>	Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.
<b>P337 + P313</b>	If eye irritation persists: Get medical advice/attention.
<b>P342 + P311</b>	If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
<b>P370 + P376</b>	In case of fire: Stop leak if safe to do so.
<b>P370 + P378</b>	In case of fire: Use ... for extinction.
<b>P370 + P380</b>	In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.
<b>P370 + P380 + P375</b>	In case of fire: Evacuate area.
<b>P371 + P380 + P375</b>	In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
<b>P376</b>	Stop leak if safe to do so.
<b>P377</b>	Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
<b>P378</b>	Use ... for extinction.
<b>P380</b>	Evacuate area.
<b>P381</b>	Eliminate all ignition sources if safe to do so.
<b>P390</b>	Absorb spillage to prevent material damage.
<b>P391</b>	Collect spillage.
<b>Storage Precautionary Statement Codes - P400 Series</b>	
<b>P401</b>	Store ...
<b>P402</b>	Store in a dry place.
<b>P404</b>	Store in a closed container.
<b>P405</b>	Store locked up.
<b>P406</b>	Store in corrosive resistant/... container with a resistant inner liner.
<b>P407</b>	Maintain air gap between stacks/pallets.
<b>P410</b>	Protect from sunlight.
<b>P411</b>	Store at temperatures not exceeding ...°C/...°F.
<b>P412</b>	Do not expose to temperatures exceeding 50 °C/ 122 °F.
<b>P413</b>	Store bulk masses greater than ... kg/... lbs at temperatures not exceeding ...°C/...°F.
<b>P420</b>	Store away from other materials or.... Store contents under ...
<b>P402 + P404</b>	Store in a dry place. Store in a closed container.
<b>P404 + P233</b>	Store in a well-ventilated place. Keep container tightly closed.
<b>P403 + P235</b>	Store in a well-ventilated place. Keep cool.
<b>P410 + P2403</b>	Protect from sunlight. Store in a well-ventilated place.

<b>P Phrases (Precautionary Hazards)</b>	
<b>P410 + P412</b>	Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F.
<b>P411 + P235</b>	Store at temperatures not exceeding ... °C/... °F. Keep cool.
<b>P501</b>	Dispose of contents/container to ...
<b>P332 + P313</b>	If skin irritation occurs: Get medical advice/ attention.
<b>P333 + P313</b>	If skin irritation or rash occurs: Get medical advice/attention.
<b>P335 + P334</b>	Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.
<b>P337 + P313</b>	If eye irritation persists: Get medical advice/attention.
<b>P342 + P311</b>	If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
<b>P370 + P376</b>	In case of fire: Stop leak if safe to do so.
<b>P370 + P378</b>	In case of fire: Use ... for extinction.
<b>P370 + P380</b>	In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.
<b>P370 + P380 + P375</b>	In case of fire: Evacuate area.
<b>P371 + P380 + P375</b>	In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.