

# **Globally Harmonized Systems: Chemical Labeling & Safety Data Sheets**

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(Course name in SLMS: “GHS: Chemical Labeling and Safety Data Sheets”)

## **Module 1: Introduction to GHS**

### **Welcome**

Hello, my name is Lisa and I'm a health and safety instructor for New York State. I'm here today to discuss chemical labeling and safety data sheets. You may already be familiar with these documents but the format and information they provide are changing. For the next 20 minutes or so, we'll talk about how to read and use the information provided on the new labels and data sheets.

### **Introduction to GHS: Module Overview**

In Module 1: Introduction to GHS, we'll discuss why New York is adopting a new system for chemical labeling and safety data sheets, when the system will be implemented, and how it will affect you in the workplace.

### **Why GHS?**

Consistent with the efforts of the federal government, New York state is adopting the Globally Harmonized System of Classification and Labeling of Chemicals, or GHS. The name sounds complicated but GHS will actually make chemical labels and safety data sheets easier to read and understand.

Join me as we visit Dave, a supervisor in one of our garages, to introduce GHS.

### **VIDEO: At the Worksite (Script)**

Lisa: How are we doing Dave?

Dave: Oh hi Lisa. What's the training office doing down here?

Lisa: I'm just stopping by for a quick visit.

Dave: This doesn't have anything to do with something called the GHS, does it? Lot of the staff down here have been asking about it.

Lisa: Actually, that's why I came down here to talk to you.

Dave: Does it have anything to do with safety?

Lisa: As a matter of fact, it does. It covers chemical labeling and Safety Data Sheets.

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Dave: What's wrong with the safety practices we have in place down here already? We haven't had an accident down here in a long time.

Lisa: Dave, from what I hear, you and your team do an excellent job of keeping safe within this garage and out at the worksite. But with this new initiative, you'll be even safer around these chemicals.

Dave: We already keep our dangerous chemicals and other toxic materials in a safe place.

Lisa: Does everyone working in this garage understand the specific dangers in working with these chemicals?

Dave: Pretty sure they do. But I know that Material Safety Data Sheets are available to everyone.

Lisa: Do you think that these Material Safety Data Sheets are easy to understand? And what about the product labels? In an emergency, would you be able to identify the type of chemical, the danger it poses, and what safety measures to take?

Dave: Like I said, it's all on the MSDS and on the product label.

Lisa: And that's my point. The information is there, but the labeling is inconsistent from one product to the next. Which can make them confusing to read, and that's why implementing the GHS is so important.

Dave: Are we the only agency involved in this change? What about the staff that doesn't work in this garage...Will this affect them as well?

Lisa: Absolutely. This isn't just about the garage Dave. On my floor I've seen plenty of aerosol cans, cleaning supplies, and most have hazardous chemicals in them.

Dave: But why now?

Lisa: Because up until now, there hasn't been a universal standard for classifying and labeling groups of chemicals.

Dave: So it's meant to simplify things. When is this supposed to take effect?

Lisa: It's going to be implemented in phases. The goal of this phase 1 is to have all employees trained on the new label elements, as well as the safety data sheet format by December 2013.

Dave: So, what do these new safety data sheets and labels look like?

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Lisa: It just so happens that I have something with me right now to help you better understand it. Here's a GHS Safety label for a chemical we're calling Dizolve-Away. It includes Pictograms to classify the Chemical, along with Hazard Statements, Precautionary Statements and Emergency contact information. It's simplified, easier to read, and consistent. And the Safety Data Sheet for this product will include the same elements found on the label.

Dave: Looks good.

Lisa: I thought you'd say that. I'll have more information on the upcoming training, real soon.

Dave: Thanks a lot Lisa, I'll let everyone know.

Lisa: I know we don't think about it often if at all, but today, chemicals are a part of everyone's life. Including NYS employees. Did you know that there are between and million different chemicals that have been identified worldwide, with at least 1,200 new chemicals under development every year in North America alone?

Let's face it; chemicals have become an essential ingredient in our food, our health, our lifestyle.

Take this can of penetrating oil for example. It's one of the most common products you'll find in a garage like this, and clearly states on the can itself that the product is extremely flammable and can be harmful or fatal if swallowed.

But other products aren't so obvious. How about a bottle of nail polish? Do you think it's toxic? Probably. Why? Because most nail polish contains highly toxic ingredients.

Like I said, chemicals have become an essential part of our lives. And understanding how to read the warnings that come with many of these chemicals is crucial.

And for that very reason, we're going to spend some time today discussing a new universal chemical classification and labeling initiative known as (GHS) The Globally Harmonized System.

### **Introduction to GHS: Module Summary**

Chemical labels and safety data sheets provide important information about the chemicals you may encounter in the workplace. In Module 1 we learned the new GHS labels and data sheets use a simpler format that is consistent from one product to another. Locating information about a chemical, such as its composition or what to do if you spill it, is easier under GHS.

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In Module 2 we'll take a closer look at the label elements required under GHS.

### **Module 2: Chemical Labeling**

In Module 2: Chemical Labeling, we'll discuss the standard elements found on chemical labels:

- Product name or identifier
- Pictograms
- Signal words
- Hazard statements
- Precautionary statements
- Manufacturer or supplier contact information

### **VIDEO: What's on the Label? (*Script*)**

Lisa speaking:

When most people think about chemicals, one of the first images that pops into their head is a laboratory.

And although a lot of Research & Development that goes into developing a new chemical may begin in a setting like this. It's the products containing these chemicals that we need to be concerned about. Some of which are highly toxic.

As I mentioned in the first module, the Globally Harmonized System is designed to create a universal chemical classification and labeling system that is the same from country to country and from one sector to the next; including consumer, transportation and the workplace.

In the United States alone more than 40 million workers will be trained in GHS. The core of GHS involves workplace labels; which includes both standardized headings and phrasing.

Let's take a closer look at the required elements found in all GHS workplace labels.

At the top of label is the Product Name or Identifier. The product identifier used on a GHS label should be identical to the one printed on the Safety Data Sheet.

Below the identifier are pictograms. A pictogram is a symbol plus another graphic element, such as a border, background pattern, or a color that's intended to give a person specific information about the hazards of a chemical.

Next to the pictogram is a signal word; which lets you know how hazardous a chemical is.

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The signal words used in GHS are either: Danger for the more severe hazards, and Warning for the less severe hazards. Under the signal word you find the Hazard Statement. These statements tell you exactly what to watch out for when handling the product.

The next part of the label includes precautionary statements. This is a phrase describing what to do in order to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or the improper storage or handling of a hazardous chemical.

Under the precautionary statement, you'll find the first aid statement which explains what you should do immediately, if an individual is exposed to the chemical. At the bottom of the label; the name, address and phone number of the manufacturer.

Okay, now that we know what's included on a GHS workplace label, I want to spend a moment discussing one of our newest label elements; the pictogram.

As I mentioned earlier, a pictogram is a symbol plus other graphic elements, such as a border, background pattern, or a color that gives you specific information about the hazards of a chemical.

Each pictogram consists of a different symbol on a white background within a red diamond frame. There are nine pictograms under the GHS, and here they are. Explosive, Flammable, Oxidizing, Compressed Gas, Corrosive, Toxic, Skin and Eye Irritant, Health Hazard, and Environmentally Damaging.

I know, that's a lot of information to absorb in under a minute. So take the time to carefully study these pictograms. By doing so, you'll be creating a safer work environment for yourself and your co-workers as well.

### **Chemical Labeling: Module Summary**

Under GHS, manufacturers are required to use standardized elements and a common layout to make it easier to find the information you need when you need it.

The next screen shows a sample GHS chemical label. Pay close attention to the required elements. At the end of this module we'll complete an activity to test your knowledge of GHS label elements.

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## Sample GHS Chemical Label

Sample GHS Chemical Label	
<b>PRODUCT IDENTIFIER</b> CODE Product Name	<b>HAZARD PICTOGRAMS</b>  <b>SIGNAL WORD</b> Danger
<b>SUPPLIER IDENTIFICATION</b> Company Name Street Address City State Postal Code Country Emergency Phone Number	<b>HAZARD STATEMENT</b> Highly flammable liquid and vapor. May cause liver and kidney damage.
<b>PRECAUTIONARY STATEMENTS</b> Keep container tightly closed. Store in cool, well ventilated place that is locked. Keep away from heat/sparks/open flame. No smoking. Only use non-sparking tools. Use explosion-proof electrical equipment. Take precautionary measure against static discharge. Ground and bond container and receiving equipment. Do not breathe vapors. Wear Protective gloves. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Dispose of in accordance with local, regional, national, international regulations as specified. In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO <sub>2</sub> ) fire extinguisher to extinguish. First Aid If exposed call Poison Center. If on skin (on hair): Take off immediately any contaminated clothing. Rinse skin with water.	<b>SUPPLEMENTAL INFORMATION</b> Directions for use Fill weight:                      Lot Number Gross weight:                    Fill Date Expiration Date:

## GHS Pictograms and Hazards

The new GHS pictograms and hazards are shown below. These elements are included in the activity so you may want to print this page also.

The hazards shown on the diagram are some of the hazards indicated by the pictograms. A complete list of hazards associated with GHS pictograms can be found on the [OSHA Pictogram Quick Card](#).

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### GHS Pictograms and Hazards

<b>Health Hazard</b>  May cause cancer or reproductive problems.	<b>Flammable</b>  May burn at low temperatures or if exposed to air or water.	<b>Skin/Eye Irritant</b>  May cause drowsiness or irritate skin, eyes or respiratory tract.	<b>Compressed Gas</b>  Gasses under pressure.	<b>Corrosive</b>  Possible burns to the skin. May cause eye damage.
<b>Explosive</b>  May explode if exposed to heat, light, sound or gas or on impact.	<b>Oxidizing</b>  May cause other materials to burn.	<b>Toxic</b>  Poisonous, exposure may result in death.	<b>Environment</b>  May harm fish and other organisms living in the water.	<a href="#">Print</a>

### Module 3: Safety Data Sheets

GHS labels provide the information that most people need to safely use a chemical. However there may be times when more detailed information is needed firefighters, medical personnel or other professionals concerned with chemical use. A poison control center, for example, may require specific information to treat someone who has been exposed to a hazardous chemical.

In these instances, Safety Data Sheets, or SDSs, provide comprehensive information on the properties of hazardous chemicals and how they affect worker health and safety.

In Module 3: Safety Data Sheets, we'll discuss why the information contained in a Safety Data Sheet is important and when you may need to use it.

#### **VIDEO: What's on a Safety Data Sheet? (Script)**

Lisa speaking:

In Module 2 we learned about the required elements found on all GHS workplace labels. In this module, we'll take a closer look at the Safety Data Sheets associated with GHS.

For decades, workers have depended on Material Safety Data Sheets to provide safety information for chemicals that they work with.

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These fact sheets, which are normally many pages long, contain information about things like the products chemical hazards, fire potential, and the need to wear personal protective equipment such as safety goggles and gloves, when working with them.

But sometimes it was difficult to find the information you were looking for. Why? Because each company used different formats for these sheets.

Under the GHS, we're dropping the M; so they'll be called Safety Data Sheets or SDSs. These sheets will use a single format, featuring 16 sections, which all companies must follow.

Meaning that the language and ratings used in these Safety Data sheets will be the same, from one company to the next. As a result, SDSs will more consistent and user-friendly.

Let's take a look at all 16 sections. Keep in mind that each of these sections will be in the same order on all SDSs, and the information on them will compliment what you'll see on GHS labels.

- **Section 1:** Identification This includes the product name and all of the contact information for the manufacturer, as well as how the product should be used, along with restrictions, and emergency contact information.
- **Section 2:** Hazard(s) Identification Lists hazardous information about the product.
- **Section 3:** Composition/Information on ingredients Gives you detailed information on the chemical ingredients.
- **Section 4:** First-aid Measures This section lets you know about the symptoms and effects that a person experiences if they are exposed to the product; along with how to treat them.
- **Section 5:** Fire-fighting Measures Talks about how to put out a chemical fire. This information is especially important for firefighters.
- **Section 6:** Accidental Release Measures Explains what to do in the case of a chemical spill.
- **Section 7:** Handling and Storage Provides information on how to safely handle and store the chemical product. Including information on whether the product needs to refrigerated or stored in a special storage room.
- **Section 8:** Exposure Controls/Personal Protection Includes information on the Personal Protective Equipment you should wear when handling the product, such as safety goggles, gloves, respirators and aprons.

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- **Section 9:** Physical and Chemical Properties Lists the chemical's characteristics. It also will help you identify the chemical product by letting you know if its bright red, smells like bananas, or gently bubbles when you open the container.
- **Section 10:** Stability and Reactivity Let's you know how stable the chemical is, and any possibility of hazardous reactions with other chemicals. For instance, it would tell you if the product would burst into flames if exposed to air, or needed to be kept away from products containing bleach.
- **Section 11:** Toxicological Information Describes how the chemical typically gets into your body, along with the symptoms related to exposure. Remember, chemicals can only cause illness or injury when they come into contact with your body. This can occur through skin contact, if it's inhaled, ingested, or injected. With that said, this is an extremely important section.
- **Section 12:** Ecological Information Provides information on the dangers a chemical poses to the environment.
- **Section 13:** Disposal Consideration Describes how to safely handle and dispose of the chemical.
- **Section 14:** Transport Information Lists information on the proper shipping name, along with how the product is classified while being transported; along with any special precautions.
- **Section 15:** Regulatory Information Provides information on any health and environmental regulations associated with the product.
- And rounding out our list is **Section 16:** Other Information, which lets the reader know the last time the information was updated.

So, what about all the MSDSs currently in circulation?

During the transition to GHS, we can all expect to see a mix of non-GHS formatted and GHS formatted safety data sheets until the transition is complete. At that point, all outdated MSDSs will be updated to reflect the new SDS format.

When it's all said and done, the purpose of a safety data sheet is to make it easier for someone to understand the possible hazards associated with using chemical products, so they can make better decisions about protecting themselves and others in the workplace. The new SDS will make that task a little easier.

### A Closer Look

Safety Data Sheets (SDSs) provide detailed and specific information about the hazards and safety precautions we should take when using chemicals. An SDS is a source of information for not only employers and workers but emergency responders and health and safety officers as

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well.

Let's take a closer look at 3 sections of the SDS that are especially helpful to these professionals.

### **Section 5 Firefighting Measures:**

Firefighters don't just put out fires. This section helps firefighters and health and safety professionals plan a safer work environment by providing information on fire extinguisher placement, fire suppression systems and ventilation.

### **Section 8 Exposure Controls/Personal Protection:**

Engineering controls are ways that the work environment is designed to reduce exposure to hazardous chemicals. This section discusses what type of engineering controls should be used. *Do you need extra ventilation to use the chemical? What are the allowable airborne workplace limits (such as the Permissible Exposure Limit)?*

## **A Closer Look – Toxicological Information**

### **Section 11 Toxicological Information**

The effects of chemicals on your health may go beyond, for example, the skin irritation you feel when using a certain chemical product. This section discusses the different ways a chemical may come in contact with your body and how it may affect your health.

**Acute effects** are the effects of short term exposure. They usually last for only a short time.

**Chronic** effects are from longer term exposures- over weeks, months or years. Some of these effects may be serious and may last long after the contact with the chemical ends.

### **Routes of Entry**

Chemicals can only cause injury or illness when they come in contact with your body. There are only a few ways that happens and they are often called routes of entry. These routes include skin contact, inhalation, ingestion and injection.

Different chemicals affect bodies in different ways depending on the route of entry. For example, if I inhale asbestos, it may cause lung cancer. If I rub asbestos on my skin, I might get asbestos warts.

This is an important section. It might help you and your doctor determine if the rash you have every time you use ABC cleaner might be caused by the product, or if you should be screened for more serious health issues because you've been overexposed to a more dangerous chemical.

### Safety Data Sheets: Module Summary

#### Let's Review...

Under GHS, SDSs will consist of 16 sections. Each section will be in the same order on all SDSs, making these sheets a more consistent and user-friendly source of information. You don't have to memorize the list. Just be aware the information you may need to safely handle a chemical is on the SDS.

#### Sections 1 through 8

These sections contain general information about the chemical, identification, hazards, composition, safe handling practices, and emergency control measures (e.g., fire fighting). The section titles are:

- Section 1: Identification
- Section 2: Hazard(s) identification
- Section 3: Composition/information on ingredients
- Section 4: First-aid measures
- Section 5: Fire-fighting measures
- Section 6: Accidental release measures
- Section 7: Handling and storage
- Section 8: Exposure controls/personal protection

#### Sections 9 through 16

These sections contain other technical and scientific information, such as physical and chemical properties, toxicological information, and exposure control information, as well as transport and regulatory information. The section titles are:

- Section 9: Physical and Chemical Properties
- Section 10: Stability and reactivity
- Section 11: Toxicological information
- Section 12: Ecological information
- Section 13: Disposal considerations
- Section 14: Transport information
- Section 15: Regulatory Information
- Section 16: Other information

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### Where Would I Find...?

The 7-page Safety Data Sheet (SDS) provided following page 13 is for a fictitious product named **“Chemical Stuff.”**

The following statements are taken from the Chemical Stuff Safety Data Sheet. Identify the SDS section in which each of these statements can be found.

1. If ingested (swallowed), do not induce vomiting unless directed by medical personnel.
  - Section 6 Accidental Release Measures
  - Section 4 First Aid Measures
  - Section 15 Regulatory Information
2. Chemical Stuff should be stored in tightly closed containers in cool, dry, well-ventilated area away from heat, sources of ignition and incompatibles.
  - Section 7 Handling and Storage
  - Section 1 Identification
  - Section 12 Ecological Information
3. While putting out a fire involving Chemical Stuff, firefighters must wear NIOSH-approved positive pressure self-contained breathing apparatus with full-face mask and full protective clothing.
  - Section 2 Hazards Identification
  - Section 15 Regulatory Information
  - Section 5 Fire Fighting Measures
4. The signs and symptoms of overexposure to Chemical Stuff are eye and nasal irritation, headache, dizziness, nausea, vomiting, heart palpitations, difficulty breathing, cyanosis, tremors, weakness, itching or burning of the skin.
  - Section 16 Other Information
  - Section 11 Toxicological Information
  - Section 9 Physical & Chemical Properties
5. If Chemical Stuff is accidentally spilled or released, keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas.
  - Section 6 Accidental Release Measures
  - Section 8 Exposure Controls / Personal Protection
  - Section 3 Composition/ Information on Ingredients

### Resources

#### **US Department of Labor – Occupational Safety and Health Administration (OSHA)**

*Please note: The federal Hazard Communication Standard (HCS) is now aligned with the GHS. The abbreviation HCS is often used in place of GHS on the OSHA website.*

#### **[Hazard Communication Standard \(HCS\)](https://www.osha.gov/dsg/hazcom/index.html)**

<https://www.osha.gov/dsg/hazcom/index.html>

*Home page for HCS, includes recent changes to the law.*

#### **[OSHA Quick Cards](https://www.osha.gov/dsg/hazcom/ghsquickcards.html)**

<https://www.osha.gov/dsg/hazcom/ghsquickcards.html>

*Chemical labeling, pictogram and SDS reference cards formatted for printing.*

#### **[Downloadable Pictograms](https://www.osha.gov/dsg/hazcom/pictograms/index.html)**

<https://www.osha.gov/dsg/hazcom/pictograms/index.html>

*Various formats for use in print or on the web.*

#### **United Nations Economic Commission for Europe (UNECE)**

#### **[About the GHS](http://www.unece.org)**

<http://www.unece.org>

*Brief history of the international effort.*

# Chemical Stuff

## 1. Identification

**Product Name:** Chemical Stuff  
**Synonyms:** Methyltoxy Solution  
**CAS Number:** 000-00-0  
**Product Use:** Organic Synthesis  
**Manufacturer/Supplier:** My Company  
**Address:** My Street, Mytown, TX 00000

**General Information:** 713-000-0000  
**Transportation Emergency Number:** CHEMTREC: 800-424-9300

## 2. Hazards Identification

### GHS Classification:

Health	Environmental	Physical
Acute Toxicity - Category 2 (inhalation), Category 3 (oral/dermal) Eye Corrosion - Category 1 Skin Corrosion - Category 1 Skin Sensitization - Category 1 Mutagenicity - Category 2 Carcinogenicity - Category 1B Reproductive/Developmental - Category 2 Target Organ Toxicity (Repeated) - Category 2	Aquatic Toxicity - Acute 2	Flammable Liquid - Category 2

### GHS Label



**SIGNAL WORD**  
**DANGER!**

Hazard Statements	Precautionary Statements
Highly Flammable Liquid and Vapor. Fatal if inhaled. Causes severe skin burns and eye damage. May cause allergic skin reaction. Toxic if swallowed and in contact with skin May cause cancer. Suspected of damaging the unborn child. Suspected of causing genetic defects. May cause damage to cardiovascular, respiratory, nervous, and gastrointestinal systems and liver and blood through prolonged or repeated exposure.	Do not eat, drink or use tobacco when using this product. Do not breathe mist/vapors. Keep container tightly closed. Keep away from heat/sparks/open flame. - No smoking. Wear respiratory protection, protective gloves and eye/face protection. Use only in a well-ventilated area. Take precautionary measures against static discharge. Use only non-sparking tools.

Toxic to aquatic life.	Store container tightly closed in cool/well-ventilated place. Wash thoroughly after handling.
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### 3. Composition / Information on Ingredients

Component	CAS Number	Weight %
Methyltoxy	000-00-0	80

(See Section 8 for Exposure Limits)

### 4. First Aid Measures

**Eye:** Eye irritation. Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get immediate medical attention.

**Skin:** Itching or burning of the skin. Immediately flush the skin with plenty of water while removing contaminated clothing and shoes. Get immediate medical attention. Wash contaminated clothing before reuse.

**Inhalation:** Nasal irritation, headache, dizziness, nausea, vomiting, heart palpitations, breathing difficulty, cyanosis, tremors, weakness, red flushing of face, irritability. Remove exposed person from source of exposure to fresh air. If not breathing, clear airway and start cardiopulmonary resuscitation (CPR). Avoid mouth-to-mouth resuscitation.

**Ingestion:** Get immediate medical attention. Do not induce vomiting unless directed by medical personnel.

### 5. Fire Fighting Measures

**Suitable Extinguishing Media:** Use dry chemical, foam, or carbon dioxide to extinguish fire. Water may be ineffective but should be used to cool fire-exposed containers, structures and to protect personnel. Use water to dilute spills and to flush them away from sources of ignition.

**Fire Fighting Procedures:** Do not flush down sewers or other drainage systems. Exposed firefighters must wear NIOSH-approved positive pressure self-contained breathing apparatus with full-face mask and full protective clothing.

**Unusual Fire and Explosion Hazards:** Dangerous when exposed to heat or flame. Will form flammable or explosive mixtures with air at room temperature. Vapor or gas may spread to distant ignition sources and flash back. Vapors or gas may accumulate in low areas. Runoff to sewer may cause fire or explosion hazard. Containers may explode in heat of fire. Vapors may concentrate in confined areas. Liquid will float and may reignite on the surface of water.

**Combustion Products:** Irritating or toxic substances may be emitted upon thermal decomposition. Thermal decomposition products may include oxides of carbon and nitrogen.

### 6. Accidental Release Measures

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. (Also see Section 8).

Vapor protective clothing should be worn for spills and leaks. Shut off ignition sources; no flares, smoking or flames in hazard area. Small spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal. Large spills: Dike far ahead of liquid spill for later disposal.

Do not flush to sewer or waterways. Prevent release to the environment if possible. Refer to Section 15 for spill/release reporting information.

## 7. Handling and Storage

### Handling

Do not get in eyes, on skin or on clothing. Do not breathe vapors or mists. Keep container closed. Use only with adequate ventilation. Use good personal hygiene practices. Wash hands before eating, drinking, smoking. Remove contaminated clothing and clean before re-use. Destroy contaminated belts and shoes and other items that cannot be decontaminated.

Keep away from heat and flame. Keep operating temperatures below ignition temperatures at all times. Use non-sparking tools.

### Storage

Store in tightly closed containers in cool, dry, well-ventilated area away from heat, sources of ignition and incompatibles. Ground lines and equipment used during transfer to reduce the possibility of static spark-initiated fire or explosion. Store at ambient or lower temperature. Store out of direct sunlight. Keep containers tightly closed and upright when not in use. Protect against physical damage.

Empty containers may contain toxic, flammable and explosive residue or vapors. Do not cut, grind, drill, or weld on or near containers unless precautions are taken against these hazards.

## 8. Exposure Controls / Personal Protection

### Exposure Limits

**Component, Methyltoxy - TWA:** 3 ppm (skin) - **STEL:** C 15 ppm (15 min.)

**Engineering Controls:** Local exhaust ventilation may be necessary to control air contaminants to their exposure limits. The use of local ventilation is recommended to control emissions near the source. Provide mechanical ventilation for confined spaces. Use explosion-proof ventilation equipment.

### Personal Protective Equipment (PPE)

**Eye Protection:** Wear chemical safety goggles and face shield. Have eye-wash stations available where eye contact can occur.

**Skin Protection:** Avoid skin contact. Wear gloves impervious to conditions of use. Additional protection may be necessary to prevent skin contact including use of apron, face shield, boots or full body protection. A safety shower should be located in the work area. Recommended protective materials include: Butyl rubber and for limited contact Teflon.

**Respiratory Protection:** If exposure limits are exceeded, NIOSH approved respiratory protection should be worn. A NIOSH approved respirator for organic vapors is generally acceptable for concentrations up to 10 times the PEL. For higher concentrations, unknown concentrations and for oxygen deficient atmospheres, use a NIOSH approved air-supplied respirator. Engineering controls are the preferred means for controlling chemical exposures. Respiratory protection may be needed for non-routine or emergency situations. Respiratory protection must be provided in accordance with OSHA 29 CFR 1910.134.

## 9. Physical and Chemical Properties

**Flashpoint:** 20C (35oF)

**Autoignition Temperature:** 480oC (896oF)

**Boiling Point:** 77oC (170.6oF) @ 760 mm Hg

**Melting Point:** -82oC

**Vapor Pressure:** 100.0 mm Hg @ 23oC

**Vapor Density(Air=1):** 1.7; air = 1

**% Solubility in Water:** 10 @ 20°C

**Pour Point:** NA

**Molecular Formula:** Mixture

**Odor/Appearance:** Clear, colorless liquid with mild, pungent odor.

**Lower Flammability Limit:** >3.00%

**Upper Flammability Limit:** <15.00%

**Specific Gravity:** 0.82g/ml @ 20oC

**% Volatile:** 100

**Evaporation Rate (Water=1):** 5(Butyl Acetate =1)

**Viscosity:** 0.3 cP @ 25oC

**Octanol/Water Partition Coefficient:** log Kow: 0.5

**pH:** 7, 8% aqueous solution

**Molecular Weight:** Mixture

## 10. Stability and Reactivity

**Stability/Incompatibility:** Incompatible with ammonia, amines, bromine, strong bases and strong acids.

**Hazardous Reactions/Decomposition Products:** Thermal decomposition products may include oxides of carbon and nitrogen.

## 11. Toxicological Information

**Signs and Symptoms of Overexposure:** Eye and nasal irritation, headache, dizziness, nausea, vomiting, heart palpitations, difficulty breathing, cyanosis, tremors, weakness, itching or burning of the skin.

**Acute Effects:**

**Eye Contact:** may cause severe conjunctival irritation and corneal damage.

**Skin Contact:** may cause reddening, blistering or burns with permanent damage. Harmful if absorbed through the skin. May cause allergic skin reaction.

**Inhalation:** may cause severe irritation with possible lung damage (pulmonary edema).

**Ingestion:** may cause severe gastrointestinal burns.

**Target Organ Effects:** May cause gastrointestinal (oral), respiratory tract, nervous system and blood effects based on experimental animal data. May cause cardiovascular system and liver effects.

**Chronic Effects:** based on experimental animal data, may cause changes to genetic material; adverse effects on the developing fetus or on reproduction at doses that were toxic to the mother.

Methyltoxy is classified by IARC as group 2B and by NTP as reasonably anticipated to be a human carcinogen. OSHA regulates Methyltoxy as a potential carcinogen.

**Medical Conditions Aggravated by Exposure:** preexisting diseases of the respiratory tract, nervous system, cardiovascular system, liver or gastrointestinal tract.

#### **Acute Toxicity Values**

Oral LD50 (Rat) = 100 mg/kg

Dermal LD50 (Rabbit) = 225-300 mg/kg

Inhalation LC50 (Rat) = 200 ppm/4 hr., 1100 ppm vapor/1 hr

## **12. Ecological Information**

LC50 (Fathead Minnows) = 9 mg/L/96 hr.

EC50 (Daphnia) = 8.6 mg/L/48 hr.

Bioaccumulation is not expected to be significant. This product is readily biodegradable.

## **13. Disposal Considerations**

As sold, this product, when discarded or disposed of, is a hazardous waste according to Federal regulations (40 CFR 261). It is listed as Hazardous Waste Number Z000, listed due to its toxicity. The transportation, storage, treatment and disposal of this waste material must be conducted in compliance with 40 CFR 262, 263, 264, 268 and 270. Disposal can occur only in properly permitted facilities. Refer to state and local requirements for any additional requirements, as these may be different from Federal laws and regulations. Chemical additions, processing or otherwise altering this material may make waste management information presented in the MSDS incomplete, inaccurate or otherwise inappropriate.

## **14. Transport Information**

**U.S. Department of Transportation (DOT)**

**Proper Shipping Name:** Methyltoxy

**Hazard Class:** 3, 6.1

**UN/NA Number:** UN0000

**Packing Group:** PG 2

**Labels Required:** Flammable Liquid and Toxic

**International Maritime Organization (IMDG)**

**Proper Shipping Name:** Methyltoxy

**Hazard Class:** 3 Subsidiary 6.1

**UN/NA Number:** UN0000

**Packing Group:** PG 2

**Labels Required:** Flammable Liquid and Toxic

**15. Regulatory Information**

**U.S. Federal Regulations**

**Comprehensive Environmental Response and Liability Act of 1980 (CERCLA):**

The reportable quantity (RQ) for this material is 1000 pounds. If appropriate, immediately report to the National Response Center (800/424-8802) as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies.

**Toxic Substances Control Act (TSCA):** All components of this product are included on the TSCA inventory.

**Clean Water Act (CWA):** Methyltoxy is a hazardous substance under the Clean Water Act. Consult Federal, State and local regulations for specific requirements.

**Clean Air Act (CAA):** Methyltoxy is a hazardous substance under the Clean Air Act. Consult Federal, State and local regulations for specific requirements.

**Superfund Amendments and Reauthorization Act (SARA) Title III Information:**

**SARA Section 311/312 (40 CFR 370) Hazard Categories:**

Immediate Hazard: X

Delayed Hazard: X

Fire Hazard: X

Pressure Hazard:

Reactivity Hazard:

**This product contains the following toxic chemical(s) subject to reporting requirements of SARA Section 313 (40 CFR 372)**

<b>Component</b>	<b>CAS Number</b>	<b>Weight %</b>
Methyltoxy	000-00-0	80

**State Regulations**

**California:** This product contains the following chemicals(s) known to the State of California to cause cancer, birth defects or reproductive harm:

<b>Component</b>	<b>CAS Number</b>	<b>Maximum %</b>
Methyltoxy	000-00-0	80

**International Regulations**

**Canadian Environmental Protection Act:** All of the components of this product are included on the Canadian Domestic Substances list (DSL).

**Canadian Workplace Hazardous Materials Information System (WHMIS):**

Class B-2 Flammable Liquid

Class D-1-B Toxic

Class D-2-A Carcinogen

Class D-2-B Chronic Toxin

Class E Corrosive

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

**European Inventory of Existing Chemicals (EINECS):** All of the components of this product are included on EINECS.

**EU Classification:** F Highly Flammable; T Toxic; N Dangerous to the Environment

**EU Risk (R) and Safety (S) Phrases:**

R11: Highly flammable.

R23/24/25: Toxic by inhalation, in contact with skin and if swallowed.

R37/38: Irritating to respiratory system and skin.

R41: Risk of serious damage to eyes.

R43: May cause sensitization by skin contact.

R45: May cause cancer.

R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S53: Avoid exposure - obtain special instructions before use.

S16: Keep away from sources of ignition - No Smoking.

S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S9: Keep container in a well-ventilated place.

S36/37: Wear suitable protective clothing and gloves.

S57: Use appropriate container to avoid environmental contamination.

## 16. Other Information

**National Fire Protection Association (NFPA) Ratings:** This information is intended solely for the use of individuals trained in the NFPA system.

**Health:** 3

**Flammability:** 3

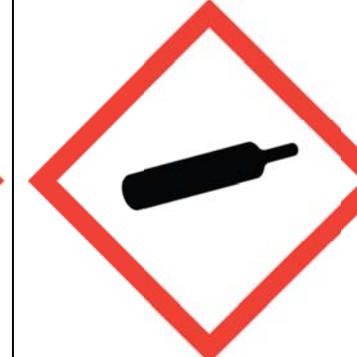
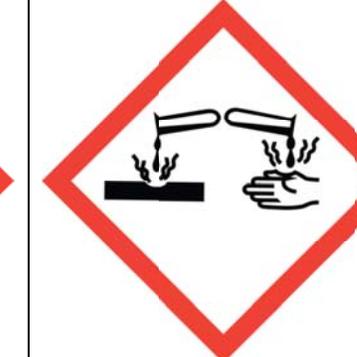
**Reactivity:** 0

**Revision Indicator:** New MSDS

**Disclaimer:** The information contained herein is accurate to the best of our knowledge. My Company makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances.

*The Globally Harmonized System: Chemical Labeling and Safety Data Sheets*

**GHS Pictograms and Hazards**

<p><b>Health Hazard</b></p>  <p>May cause cancer or reproductive problems.</p>	<p><b>Flammable</b></p>  <p>May burn at low temperatures or if exposed to air or water.</p>	<p><b>Skin &amp; Eye Irritant</b></p>  <p>May cause drowsiness or irritate skin, eyes or respiratory tract.</p>	<p><b>Compressed Gas</b></p>  <p>Gasses under pressure.</p>	<p><b>Corrosive</b></p>  <p>Possible burns to the skin. May cause eye damage.</p>
<p><b>Explosive</b></p>  <p>May explode if exposed to heat, light, sound or gas or on impact.</p>	<p><b>Oxidizing</b></p>  <p>May cause other materials to burn.</p>	<p><b>Toxic</b></p>  <p>Poisonous, exposure may result in death.</p>	<p><b>Environmental</b></p>  <p>May harm fish and other organisms living in the water.</p>	

# The Globally Harmonized System: Chemical Labeling and Safety Data Sheets

## SAMPLE GHS LABEL

### PRODUCT IDENTIFIER

**CODE**  
**Product Name**

### SUPPLIER IDENTIFICATION

**Company Name**  
Street Address  
City State  
Postal Code Country  
Emergency Phone Number

### PRECAUTIONARY STATEMENTS

Keep container tightly closed. Store in cool, well ventilated place that is locked.  
Keep away from heat/sparks/open flame. No smoking.  
Only use non-sparking tools.  
Use explosion-proof electrical equipment.  
Take precautionary measure against static discharge.  
Ground and bond container and receiving equipment.  
Do not breathe vapors.  
Wear Protective gloves.  
Do not eat, drink or smoke when using this product.  
Wash hands thoroughly after handling.  
Dispose of in accordance with local, regional, national, international regulations as specified.

**In Case of Fire:** use dry chemical (BC) or Carbon dioxide (CO<sub>2</sub>) fire extinguisher to extinguish.

### First Aid

If exposed call Poison Center.  
If on skin (on hair): Take off immediately any contaminated clothing. Rinse skin with water.

### HAZARD PICTOGRAMS



**SIGNAL WORD**  
**Danger**

### HAZARD STATEMENT

**Highly flammable liquid and vapor.**  
**May cause liver and kidney damage.**

### SUPPLEMENTAL INFORMATION

#### Directions for use

Fill weight: Lot Number  
Gross weight: Fill Date:  
Expiration Date: