University of South Alabama Hazard Communication Program

(Questions regarding the implementation and preparation of the USA Hazardous Communication Program should be directed to the Safety and Environmental Compliance Department; 251-460-7070)

University of South Alabama is firmly committed to providing a safe and healthy work environment for each of its employees. It is recognized that some job-related procedures and other essential scholastic activities frequently required the use of chemicals which have hazardous properties. When using these chemicals, it is important that employees are aware of the identity and hazardous properties of such chemicals, since an informed is more likely to be a careful employee. Therefore, a written Hazard Communication Program should be implemented in each department and work area at the University of South Alabama.

The purpose of this Hazard Communication Manual is to provide employees with the information they need to work safely with chemicals. The manual explains the responsibilities of both supervisors and employees regarding: chemical safety, modes of exposures, Globally Harmonized System (GHS) of Classification and the labeling of chemicals.

"Hazard Communication" also known as "Right-to-Know".

Hazard Communication Standard

The hazard communication rule 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.

The phrase "**known to be present**" is essential to the scope of the standard. If a hazardous chemical is known to be present by the chemical manufacturer or the Department Manager/Supervisors, it is covered by the standard. This includes chemicals to which employees may be exposed during normal operations or in an emergency. Even though a Department Manager/Supervisors was not responsible for the manufacture of the hazardous chemical, they have the responsibility for conveying hazards to his/her employees.

The Hazardous Communication Standard (HCS) [29 CFR 1910.1200(g)], revised in 2012, requires that the chemical manufacturer, distributor or importer to provide Safety Data Sheets (SDS's) (formerly Material Safety Data Sheets—MSDS) for each hazardous chemical to users to communicate information on these hazards. The information contained in the SDS's are largely the same as the MSDS's except now the SDS's are required to be presented in a consistent user-friendly 16-section format. SDS's include information such as the properties of each chemical; the physical, health and environmental health hazards, protective measures and safety precautions for handling, storing and transporting the chemical. The information contained in the SDS must be in English, although it may be in other languages as well.

Supervisors' Responsibilities

Supervisors must ensure that SDS's are readily accessible to employees for all hazardous chemicals in their workplace. This may be done in many ways. For example, supervisors may keep the SDS's in a binder or on a computer as long as the employees have immediate access to the information without having to leave their work area and a back-up is available for rapid access to the SDS in the event of a power outage or other emergency. Furthermore, supervisors may designate a person(s) responsible for obtaining and maintaining the SDS's. SDS's can be obtained from the SDS link on the Safety & Environmental Compliance (SEC) Department's Web page, the manufacturer's web page, product packing inserts and many SDS web site via the internet. To access the University SDS Online account using the USA Homepage; access the SEC's home page at http://www.southalabama.edu/environmental/ : then click on the word "SDS" which will then bring up a page that will direct you to click on the link "MSDS ONLINE" to access the site.

Supervisors must determine which workplace materials are hazardous and provide employees with the information, training and equipment they need to protect them and others. An inventory of hazardous materials know to be present in their work areas is compiled, reviewed and updated (yearly) and is made available to all departmental employees. The Department of Safety and Environmental Compliance maintains a copy of the departmental chemical inventory. Employees working for independent contractors must also be educated to the hazardous materials in the workplace.

Employees Responsibilities

Employees are required to take part in safety training provided by the University and use this training, as well as, safety procedures and protective equipment to work safely. Employees, working for independent contractors that bring hazardous materials onto any USA campus, are responsible for providing SDS's upon request of University Personnel. In the event of long term projects, contractors must maintain copies of all the SDS's for the materials being used and make them available for review by University Personnel upon request.

An SDS comes with every purchase. Each department will have a designated area where SDS's are located or can be obtained. If you cannot locate a SDS, contact the supervisor/department manager so the needed SDS can be located and made readily available. SDS's can be obtained from the SDS link on the Safety & Environmental Compliance (SEC) Department's web page, the manufacturer's web page, product packing inserts and many SDS web sites via the internet.

Employee Information and Training

Prior to starting work, each new employee should receive safety training to include the following:

1. Overview of hazard communication program requirements

2. Hazardous chemicals present in the workplace.

3. Location and availability of the written hazard communication program.

4. Physical and health effects of hazardous chemicals.

5. Methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area.

6. How to reduce or prevent exposure to these hazardous chemicals through use of control/work practices and personal protective equipment.

7. Steps the company has taken to reduce or prevent exposure to these chemicals.

8. Safety emergency procedures to follow if the employee is exposed to these chemicals.

9. How to read labels and review SDSs to obtain appropriate hazard information.

After receiving training, each employee will certify that they have received training, that they understand the information and will comply with appropriate safe work practices, and that they understand that doing so is a condition of employment.

Chemical Safety

Chemicals are a vital part of our daily life in the products we use at work, in our homes and in a wide variety of industrial processes. Each person should become familiar with chemical in the workplace and learn to recognize their associated hazards before using them.

What is considered a hazard?

Physical Hazards	Health Hazards
Corrosive to metal	Carcinogens
Compressed gas	Acute toxicity
Explosive	Reproductive toxicity
Flammable	Serious eye irritation or damage
Organic Peroxide	Skin irritation or corrosion
Pyrophoric	Respiratory or skin sensitization
Self-heating	Germ Cell mutagenicity
Self-reactive	Specif c organ toxicity
Contact with water resulting in f ammable gas	Aspiration hazard

The following are just some of the hazardous material that can be found on campus:

Asbestos	Chlorine
Cleaning Products	Freon
Paints & Paint related products	Solvents
Acids	Caustics

Physical Hazards

Physical state is one of the factors in determining how hazardous a material is and in deciding what precautions, such as personal protective equipment is necessary. The physical state affects the hazard.

Materials whose physical state can be hazardous include:

Flammable	Compressed gas	Explosives	Oxidizers
Gases	Gas in containers under pressure	Substances that react rapidly & violently	Materials that give off oxygen & simulate combustion
Aerosols			
Liquids			
Solids			

Acids have pH readings between 1 and 6. Bases (caustics) have a pH between 8 and 14. Acids and bases will burn the skin. Corrosiveness is the ability of a chemical to eat into materials. The farther the pH is from 7, the more corrosive a material is. Corrosive materials are hazardous and anyone working with a corrosive material must handle them with caution and wear the proper protective gear.

Flammable Liquids/Vapors: Flammable Liquids/Vapors include:

- Flammables that Ignite at Normal Temperatures
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- How to reduce/prevent overexposure to hazardous chemicals
- Steps that the department takes to reduce/prevent exposure to hazardous chemicals
- Procedures to follow in the event of an exposure to a hazardous chemical
- Procedures to follow when a spill/leak occurs
- How and when to use PPE

The workplace area supervisor or his/her designee should be asked for help if the employee is unsure about the use and handling of a chemical.

Protective Measures

To prevent harmful health effects, take steps to eliminate or reduce the hazard. Control at the source, such as substitution with a less hazardous material or industrial process, is the best method.

Bear in mind the specific hazards of the material and the extent and pattern of exposure

<table>
<tr><th colspan="3">Workplace Control Measures</th></tr>
<tr><th>Route of Exposure</th><th>Controls /Practices (apply to all routes of exposure)</th><th>Personal Protective Equipment (PPE)</th></tr>
<tr><td>Inhalation</td><td rowspan="4">Engineering Controls (isolating or removing the hazard):
Enclose process
Provide local exhaust ventilation

Administrative Practices
Time work so fewer workers are exposed,
Work upwind of mixing operations,
Shower after shift
Change clothes
No food in work areas</td><td>Respirators and protective clothing suitable for the chemical</td></tr>
<tr><td>Skin Contact</td><td>Chemical protective clothing suitable for the chemical - gloves to full suits</td></tr>
<tr><td>Eye Contact</td><td>Chemical safety goggles, face shield</td></tr>
<tr><td>Ingestion</td><td>Chemical protective clothing suitable for the chemical
gloves to full suits</td></tr>
<tr><td colspan="3">*Personal Protective Equipment (PPE) can be unreliable. If it fails, it can leave a person unprotected.</td></tr>
</table>

Globally Harmonized System of Classification and Labeling of Chemicals or GHS is an internationally agreed-upon system, created by the United Nations. It is designed to replace the various classification and labeling standards used in different countries by using consistent criteria for classification and labeling on a global level.

Before the GHS was created and implemented by the United Nations, there were many different regulations on hazard classification in use in different countries. While those systems may have been similar in content and approach, they resulted in multiple standards and classifications and labels for the same hazard in different countries. Given the extent of international trade in chemicals, and the potential impact on neighboring countries when controls are not implemented, it was determined that a worldwide approach was necessary.

The GHS was designed to replace all the diverse classification systems and creates one universal standard which all countries should follow (however, the GHS is not compulsory under UN law). The system provides the infrastructure for participating countries to implement a hazard classification and communication system, which many less economically developed countries would not have had the money to create themselves. In the longer term, the GHS is expected to improve knowledge of the chronic health hazards of chemicals and encourage a move towards the elimination of hazardous chemicals, especially carcinogens, mutagens and reproductive toxins, or their replacement with less hazardous ones.

Hazard classification

The GHS classification system is a complex system with data obtained from tests, literature, and practical experience.

The main elements of the hazard classification criteria are summarized below:

Physical hazards

Physical hazards are largely based on those of the United Nations Dangerous Goods System. These regulations and UN test methods can be found at the United Nations website. Some additions and changes were necessary since the scope of the GHS includes all target audiences:

- **Oxidizing Gases** are any gas that may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. Substances and mixtures of this hazard class are assigned to a single hazard category on the basis that, generally by providing oxygen, they cause or contribute to the combustion of other material more than air does.

- **Gases under Pressure** are gases contained in a receptacle at a pressure not less than 280 Pa at 20 °C or as a refrigerated liquid. Usq m M A ɺ l D

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- **Respiratory Sensitizer** means a substance that induces hypersensitivity of the airways following inhalation of the substance. Substances and mixtures in this hazard class are assigned to one hazard category.

- **Skin Sensitizer** means a substance that will induce an allergic response following skin contact. The definition for "skin sensitizer" is equivalent to "contact sensitizer". Substances and mixtures in this hazard class are assigned to one hazard category.

- **Germ Cell Mutagenicity** means an agent giving rise to an increased occurrence of mutations in populations of cells and/or organisms. Substances and mixtures in this hazard class are assigned to one of two hazard categories. Category 1 has two subcategories.

- **Carcinogenicity** means a chemical substance or a mixture of chemical substances that induce cancer or increase its incidence. Substances and mixtures in this hazard class are assigned to one of two hazard categories. Category 1 has two subcategories.

- **Reproductive Toxicity** includes adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in offspring. Substances and mixtures with reproductive and/or developmental effects are assigned to one of two hazard categories, 'known or presumed' and 'suspected'. Category 1 has two subcategories for reproductive and developmental effects. Materials, which cause concern for the health of breastfed children, have a separate category, effects on or via Lactation.

- **Specific Target Organ Toxicity (STOT)** category distinguishes between single and repeated exposure for Target Organ Effects. All significant health effects, not otherwise specifically included in the GHS, which can impair function, reversible and irreversible, immediate and/or delayed are included in the non-lethal target organ/systemic toxicity class (TOST). Narcotic effects and respiratory tract irritation are considered to be target organ systemic effects following a single exposure. Substances and mixtures of the single exposure target organ toxicity hazard class are assigned to one of three hazard categories. Substances and mixtures of the repeated exposure target organ toxicity hazard class are assigned to one of two hazard categories.

- **Aspiration Hazard** includes severe acute effects such as chemical pneumonia, varying degrees of pulmonary injury or death following aspiration. Aspiration is the entry of a liquid or solid directly through the oral or nasal cavity, or indirectly from vomiting, into the trachea and lower respiratory system. Substances and mixtures of this hazard class are assigned to one of two hazard categories this hazard class on the basis of viscosity.

Environmental hazards

- **Acute Aquatic Toxicity** means the intrinsic property of a material to cause injury to an aquatic organism in a short-term exposure. Substances and mixtures of this hazard class are assigned to one of three toxicity categories on the basis of acute toxicity data: LC_{50} (fish) or EC_{50} (crustacean) or ErC_{50} (for algae or other aquatic plants). In some regulatory systems these acute toxicity categories may be subdivided or extended for certain sectors.

- **Chronic Aquatic Toxicity** means the potential or actual properties of a material to cause adverse effects to aquatic organisms during exposures that are determined in relation to the lifecycle of the organism. Substances and mixtures in this hazard class are assigned to one of four toxicity categories on the basis of acute data and environmental fate data: LC_{50} (fish) or EC_{50} (crustacean) or ErC_{50} (for algae or other aquatic plants) and degradation or bioaccumulation.

Classification of mixtures

The GHS approach to the classification of mixtures for health and environmental hazards is also complex. It uses a tiered approach and is dependent upon the amount of information available for the mixture itself and for its components. Principles that have been developed for the classification of mixtures, drawing on existing systems such as the European Union (EU) system for classification of preparations laid down in Directive 1999/45/EC. The process for the classification of mixtures is based on the following steps:

1. Where toxicological or eco-toxicological test data are available for the mixture itself, the classification of the mixture will be based on that data;
2. Where test data are not available for the mixture itself, then the appropriate bridging principles should be applied, which uses test data for components and/or similar mixtures;
3. If (1) test data is not available for the mixture itself, and (2) the bridging principles cannot be applied, then use the calculation or cutoff values described in the specific endpoint to classify the mixture.

Hazard communication

After the substance or mixture has been classified according to the GHS criteria, the hazards need to be communicated. As with many existing systems, the communication methods incorporated in GHS include labels and SDS's. The GHS attempts to standardize hazard communication so that the intended audience can better understand the hazards of the chemicals in use. The GHS has established guiding principles:

- The problem of trade secret or confidential business information has not been addressed within the GHS, except in general terms. For example, non-disclosure of confidential business information should not compromise the health and safety of users.
- Hazard communication should be available in more than one form (for example, placards, labels or SDS's).
- Hazard communication should include hazard statements and precautionary statements.
- Hazard communication information should be easy to understand and standardized.
- Hazard communication phrases should be consistent with each other to reduce confusion.
- Hazard communication should take into account all existing research and any new evidence.

Comprehensibility is challenging for a single culture and language. Global harmonization has numerous complexities. Some factors that affected the work include:

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Transport "Pictograms"	Transport pictograms are different in appearance than the GHS pictograms.	
Flammable Liquid Flammable Gas Flammable Aerosol	Flammable solid Self-Reactive Substances	Pyrophoric (Spontaneously Combustible) Self-Heating Substances
Substances, which in contact with water, emit flammable gases		

ACUTE ORAL TOXICITY - Annex 1					
	Category 1	**Category 2**	**Category 3**	**Category 4**	**Category 5**
LD_{50}	5 mg/kg	> 5 < 50 mg/kg	50 < 300 mg/kg	300 < 2000 mg/kg	2000 < 5000 mg/kg
Pictogram				-	No symbol
Signal word	Danger	Danger	Danger	Warning	Warning
Hazard statement	Fatal if swallowed	Fatal if swallowed	Toxic if swallowed	Harmful if swallowed	May be harmful if swallowed

GHS material safety data sheet or safety data sheet

The GHS has dropped the word “material” from material safety data sheet.

3.	Composition/information on ingredients	Substance • Chemical identity • Common name, synonyms, etc. • CAS number, EC number, etc. • Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance Mixture • The chemical identity and concentration or concentration ranges of all ingredients which are hazardous within the meaning of the GHS and are present above their cutoff levels NOTE: For information on ingredients, the competent authority rules for CBI take priority over the rules for product identification.
4.	First aid measures	• Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion • Most important symptoms/effects, acute and delayed • Indication of immediate medical attention and special treatment needed, if necessary
5.	Firefighting measures	• Suitable (and unsuitable) extinguishing media • Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products) • Special protective equipment and precautions for firefighters
6.	Accidental release measures	• Personal precautions, protective equipment and emergency procedures • Environmental precautions • Methods and materials for containment and cleaning up
7.	Handling and storage	• Precautions for safe handling • Conditions for safe storage, including any incompatibilities
8.	Exposure controls/ personal protection.	• Control parameters, e.g., occupational exposure limit values or biological limit values • Appropriate engineering controls • Individual protection measures, such as personal protective equipment

14.	Transport information	• UN Number • UN Proper shipping name • Transport Hazard classes • Packing group, if applicable • Marine pollutant (Yes/No) • Special precautions which a user needs to be aware of or needs to comply with in connection with transport or conveyance either within or outside their premises.
15.	Regulatory information	• Safety, health and environmental

White/Personal Protection

This is by far the largest area of difference between the NFPA and HMIS systems. In the NFPA system, the white area is used to convey special hazards whereas HMIS uses the white section to indicate what personal protective equipment (PPE) should be used when working with the material. HMIS uses a letter coding system or variant for this section. Below is the lettering scheme along with a series of graphics meant to reinforce the meaning of each letter.

Chemical Container Labeling

Labels are useless unless they accurately communicate the hazards of their associated chemicals. It's important to keep labels in good condition at all times. The supervisor must not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

The supervisor must ensure that labels or other forms of warning are:

legible, in English,

prominently displayed on the container, or

readily available in the work area throughout each work shift

Supervisors 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.

defeats the purpose of providing an immediate hazard warning. Mailing labels directly to the purchaser by-passes employees involved in transporting and handling the hazardous chemical.

Secondary container labeling

Most workplaces use the primary containers they purchase to store and use chemicals. However, containers such as drums, plastic jugs, spray bottles, etc. used to store smaller quantities of chemicals are called Secondary Containers.

The supervisor must make sure that each secondary container of hazardous chemicals in the workplace is labeled, tagged or marked with at least the following information:

Identity of the hazardous chemical(s) contained

Appropriate hazard warnings, or words, pictures, and/or symbols which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information (an SDS) will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical

Stationary Process Containers

Labeling is also important to stationary process containers. These are containers that normally stay in place and are not moved or carried around by employees. There are certain rules regarding chemical labeling for these special types of containers.

Some of the more common chemical labeling that you see with stationary process containers include:

Sign

Placard

Process sheet

Operating procedures

Instead of labeling individual stationary process containers, alternative methods may be used as long as they convey the required information including:

Identity of the hazardous material that is contained within the container must be posted in such a way that it is easily read by those working in the area.

The appropriate hazard warnings associated with the product must be posted and easy to read by those working in the area.

Signs can be posted in a room that has a number of chemical storage tanks. The piping from each tank could be painted a different color, and the signs would show that each color represents a different chemical, for example.

Placards are often placed on tanks. These usually include NFPA placards. NFPA labels are primarily found on stationary tanks and bulk storage systems. They consist of color- and number-coded diamonds.

Process sheets stored near a process would also include the names and hazards of the chemicals used in that process.

Operating procedures might tell you more than just what, when, and how much chemical needs adding – they would also tell you the identity and hazards of those chemicals.

Supervisors should ensure that all at-risk employees are trained on the use of any dangerous chemicals that they may be exposed to during the performance of their work. Supervisors and employees should inspect chemical containers to ensure that the labels, signs, placards, etc. are intact and legible. Employees who are unsure about labeling stationary containers should seek guidance from their manager or supervisor. It is much better to be prepared should an accident occur than to be searching for vital information when it is actually needed

Portable container labeling

Portable containers are used to transfer hazardous chemicals from labeled containers, and are intended only for the immediate use of the employee who performs the transfer. The supervisor is not required to label portable containers.

EMERGENCY TELEPHONE NUMBERS FOR USA FACILITIES

(Area code is 251 unless otherwise indicated)

USA MAIN CAMPUS		
USA Main Campus	Main Number	460-6101
USA University Police	Non-emergency	460-6312
USA Central Plant	24-hr operator	460-7047
USA Maintenance	(M-F 7 am-3: 30 pm)	460-7111
	(After 3:30 pm)	460-7047
Safety & Environmental Compliance		460-7070
Radiation Safety		460-7063
USA Weather Line		460-6999
USA HOSPITALS		
USA Medical Center	Main Number	471-7000
	Emergency (In-House Only)	511
	Security	471-7525 or 471-7195
USA CHILDREN'S & WOMEN'S	Main Number	415-1000
	Emergency (In-House Only)	511
	Security	415-1135
USA MITCHELL CANCER	Main Number	665-8000
	Front Desk	445-9878
	24-hr emergency (USACW Main)	415-1000
USA MITCHELL CANCER KILBORN CLINIC	Main Number	990-1850
USA STRADA PROFESSIONAL BUILDING	24-hr Emergency (USACW Main)	415-1000
	Emergency (In-House Only)	511
USA SPRINGHILL		
USA University Police	Emergency (24-hr)	460-6312
USA Springhill Allied Security Service	Emergency (24-hr)	433-0109
USA Springhill Maintenance	Business hours	434-3585
USA BALDWIN COUNTY	Main Number	928-8133
USA University Police		460-6312
Fairhope Volunteer Fire	Emergency	911
	Non-emergency	990-0143 or 233-5181
Fairhope Police	Emergency	911
	Non-emergency	928-2385
OTHER EMERGENCY TELEPHONE NUMBERS		
Mobile City Fire/Rescue	Emergency	911
	Non-emergency	208-7311
Mobile Police Department	Emergency	911
	Non-emergency	208-7211
Mobile County Emergency Management	460-8000	
Baldwin County Emergency Management	(Eastern Shore)	990-4605
Coast Guard National Response Center		1-800-424-8802
Alabama Department of Environmental Management		1-334-271-7700
Alabama State Troopers		1-251-660-2300

Reviewed & Revised: October, 2017

NOTES

ACKNOWLEDGEMENT

DATE: _____

This is to certify that I have read and understand the materials in the University of South Alabama Hazard Communication Program Manual. I also understand that further information is available to me within my department/division.

It is understood the Safety Data Sheets (SDS's) which cover hazardous chemicals in my work area are available in my department or may be acquired through the Safety & Environmental Compliance Department upon request.

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(Printed Name)

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