



POLICIES AND PROCEDURES

DEPARTMENT: Environmental Health and Safety

SUBJECT: Right to Know / HAZCOM PROGRAM

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**SUNY New Paltz
HAZARD COMMUNICATION/RIGHT TO KNOW LAW (RTK) POLICY**

PURPOSE:

SUNY New Paltz and related facilities recognize that employees have a right and need to know the properties and potential safety and health hazards of substances to which they may be exposed in the course of performing their duties, and that such knowledge is essential for maintaining the general health and welfare of faculty, staff, and students and reducing the incidence and cost of occupational illness and injury.

It shall be the policy of SUNY New Paltz to provide employees with appropriate training and information on the safe handling and work practices associated with hazardous chemicals, materials, and conditions to which employees may be exposed in the work place. This shall be accomplished by complying with the State of New York Right to Know Law, and OSHA 1910.120 Hazard Communication Standard which is incorporated into this policy. Any amendments to this Standard will be considered to be incorporated into this Policy on the date they become effective. Implementation of this Policy shall be accomplished through this written SUNY New Paltz Hazard Communication Program.

Please See the new Global Harmonization Standard section at the end of this document for a 2013 update!!!!

Effective: December 2008

Hazard Communication Program / Right to know Law policy

I. SCOPE:

This program affects all persons who are employed by SUNY New Paltz who may, during the course of their employment, be exposed to hazardous chemicals, materials and/or conditions.

II. DEFINITIONS of HAZARDS

A. Hazardous chemical means any chemical which is a physical hazard or a health hazard.

B. Physical hazard means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive material, flammable material, an organic peroxide, an oxidizer, pyrophoric material, unstable (reactive), or water reactive.

C. Health hazard means chemicals, which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic systems, and agents which damage the lungs, skin, eyes or mucous membranes.

III. EXCLUSIONS

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

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

C. Tobacco or tobacco products;

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

E. Articles, defined as manufactured items other than a fluid or particle which are formed to a specific shape or design during manufacture, which have end use function(s) dependent in whole or in part upon its shape or design during end use, and which under normal conditions of use do not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical and do not pose a physical hazard or health risk to employees;

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

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

H. Cosmetics which are packaged for sale to consumers in a retail establishment, and cosmetics intended for personal consumption by employees while in the workplace;

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

J. Nuisance particulates where the chemical manufacturer or importer can establish that they do not pose any physical or health hazard covered under this section;

K. Ionizing and non-ionizing radiation, except that ionizing radiation should be included in the pleading requirements of this standard; and

L. Biological hazards.

IV. LABORATORIES

A. All SUNY New Paltz laboratories must comply with this Hazard Communication Policy and RTK Program; however, in instances where hazardous substances, i.e., chemical intermediates, are being developed and used exclusively in SUNY New Paltz laboratories, material safety data sheets (MSDSs) are not required.

B. Laboratory personnel must adhere to all applicable occupational and environmental health regulations including, but not limited to, the OSHA Occupational Exposure to Hazardous Chemicals in Laboratories Standard (29 CFR 1910.1450)

C. Laboratories that ship hazardous chemicals developed by that laboratory to another employer are considered to be either a chemical manufacturer or a distributor under the Federal Hazard Communication rule, and thus must ensure that:

1. a hazard determination following the procedures in 29 CFR 1910.1200(d)(1) - (6) has been performed;
2. an MSDS is provided which complies with the requirements of 29 CFR 1910.1200(g)(1)-(6); and
3. any containers of hazardous chemicals leaving the laboratory are labeled with:
 - a. identity of the hazardous chemical(s);
 - b. appropriate hazard warnings; and
 - c. name and address of SUNY NEW PALTZ as the chemical manufacturer.

V. RESPONSIBILITY

A. **The President** for SUNY New Paltz is responsible for:

1. assuring compliance with the Hazard Communication Standard and enforcing this *Hazard Communication Policy and Program*, and
2. providing continuing support for institutional safety and health.

B. **The Environmental Safety and Health Office (EH&S)** is responsible for:

1. coordinating the development of policies and programs for the SUNY NEW PALTZ to attain institutional compliance with environmental and occupational health and safety rules and regulations;
2. auditing compliance and reporting compliance status to the appropriate administrative head;
3. communicating with faculty, staff, students, contractors, vendors, and regulatory agencies on institutional compliance matters;
4. providing a means for conducting initial and refresher training, documenting such training, Maintaining program training files and assisting with departmental training programs;
5. providing technical assistance to personnel and departments;
6. providing MSDSs resources as requested by departments for training, employee right-to-know requests, and other institutional purposes;
7. developing and maintaining a master chemical inventory file (from department data) this will identify, by location, all hazardous chemicals present;
8. updating the master chemical inventory file annually;
9. maintaining and storing any employee personal air monitoring data for at least forty (40) years;
10. providing information to the local fire departments;

C. **Department Heads and Directors** are responsible for:

1. complying with and enforcing the SUNY New Paltz Hazard Communication Policy and Program for their respective areas;

D. **Immediate Supervisors – Managers** (or their designated coordinators) are responsible for complying with the following for all employees and work areas to which they have been assigned:

1. complying with and enforcing the SUNY New Paltz *Hazard Communication Policy and Program*;
2. ensure all employees have received the required annual training and have documented that training with name, life number and date of training. These records shall be kept in auditable files, copies of training records are to be forwarded to EH&S.
3. assuring that chemical inventory lists for all hazardous chemicals present are completed and maintained; These records shall be kept in auditable files, copies of chemical inventory lists are to be forwarded to EH&S, upon request or at least annually.
4. assuring the availability and maintenance of relevant MSDSs for all hazardous chemicals present in work area. Ensure all MSDS's for chemicals used in their department are current and complete.
5. assuring the availability, accuracy, and placement of all required labels, signs or placards;
6. assuring that all employees receive appropriate training as required by this Policy and Program and other Federal/ State Department of Labor occupational safety and health regulations;
7. reporting any known potentially hazardous exposure to employees, taking appropriate action to ensure employees receive appropriate medical attention, and ensuring that appropriate documentation is completed and forwarded as described in Section VII;
8. assuring that employee job descriptions include statements requiring that the employees perform his/her duties in a safe and healthful manner;
9. assuring that performance reviews of employees include an evaluation of employee behavior toward safety; and
10. assuring that appropriate disciplinary action is taken when any employee does not comply with precautionary safety measures.

E. Each **employee** is responsible for:

1. complying with the SUNY New Paltz *Hazard Communication Policy and RTK Program*;
2. knowing how to obtain and read the MSDS for any chemical they work with.
3. receive Hazard Communication (RTK) training annually and other training as required;
4. performing his/her job in accordance with safety precautions communicated to them during training sessions and other educational programs; and
5. notifying his/her supervisor immediately in the event of exposure to any potentially hazardous chemical or agent.

VI. CHEMICAL INVENTORY LIST (CIL) (see appendix B)

A. All Immediate Supervisors (or their designated coordinators) should ensure that an inventory is prepared for each workplace in their assigned departments or work areas in which hazardous materials are used or stored.

1. This CIL inventory should be completed using a RTK/HAZCOM Inventory form (see appendix B) or equivalent. The original should be maintained in the individual work area for employee access and the copy should be forwarded to the EH&S.

2. All new hazardous substances introduced into the assigned departments or work areas should be added to the RTK/HAZCOM *Inventory* form or equivalent within fifteen (15) days after receipt of the new material, and a copy of the updated information should be forwarded to the EH&S.
3. The inventory list should be updated and revised at least annually. The EH&S will, from individual department's workplace inventories, maintain a master chemical inventories file containing the names of hazardous substances chemicals present on the SUNY New Paltz . The master list shall should be updated at least annually. Records for previous years should not be deleted and will be maintained by the EH&S.

VII. RECORD OF EXPOSURE

A. If an employee receives a potentially hazardous exposure or develops signs or symptoms of overexposure to a hazardous substance, the employee should notify his/her supervisor immediately. If a supervisor or designated coordinator becomes aware that an employee has received a potentially hazardous exposure to any hazardous substance, agent, or condition, the supervisor or designated coordinator should immediately notify the employee of the exposure and take such steps as may be necessary to send them for medical evaluation, monitoring, treatment, and documentation of such exposure.

B. When an employee has an accident or an injury on the job the employee is responsible for taking the following steps:

1. Notify your supervisor immediately.
2. Complete the accident report, (Form CS-13), (available from HR Dept.), and submit to the Benefits Office in Human Resource Office (HAB 202) within 24 hours of the accident, and / or ASAP!
3. Employees should call the Accident Reporting System at 1-888-800-0029 under one of the following circumstances:

- you go to the doctor
- you go to the hospital
- you lose time from work

If you call the Accident Reporting System to report an accident, they will give you an incident number that you must give to the Benefits Office.

C. Form and records are maintained and stored for at least 40 years in Human Resource Department.

VIII. MATERIAL SAFETY DATA SHEETS (MSDSs)

A. Each immediate supervisor or their designated coordinator should maintain an MSDS for each hazardous chemical identified on the inventory lists for their area, and should ensure that they are readily accessible during each work shift to employees when they are in their work area(s). (Electronic access, microfiche, and other alternatives to maintaining paper copies of the material safety data sheets are permitted as long as no barriers to immediate employee access in each workplace are created by such options.)

1. Where employees must travel between workplaces during a work shift, i.e., their work is carried out at more than one geographical location, the MSDSs may be kept at the primary workplace facility. In this situation, the designated coordinator should ensure that employees can obtain the required information in an emergency.
2. When any new hazardous chemical is to be introduced into the workplace, the MSDS sheets should be available to employees prior to beginning use of the chemical.

*EH&S maintains an on line service for supervisors to obtain MSDS's. The link is available from EHS This is a searchable database of over 5 million MSDS's. The search results are in PDF format for printing hardcopies.

IX. ACCESS TO WRITTEN RECORDS: AVAILABILITY

A. Upon request by an affected employee or the employee's designated representative, the designated coordinator should assure access to copies of the chemical inventory list for the employee's work area and associated MSDSs, and should ensure they are readily accessible in a reasonable time, place and manner, and in no event later than one (1) working day after the request for access is made. The EH&S may be contacted for assistance in this matter.

B. Whenever any affected employee or employee's designated representative requests a copy of the chemical inventory list for the employee's work area or associated MSDSs, the designated coordinator should, within fifteen (15) days assure that either a copy or a mechanical means to copy is provided. In case of a medical emergency, the information should be provided immediately. The EH&S may be contacted for assistance in this matter.

C. If any employee has requested information pursuant to this section of this policy, and has not received the information within the specified time period, the employee may then refuse to work with the substances or at the location for which the request was made. A supervisor may not discharge or initiate any adverse personnel action against any employee because the employee has exercised his/her right under this provision.

D. A supervisor may not request or require any employee to waive any rights under this policy and, in any event, if such waivers are executed they shall be null and void.

X. LABELING

A. All containers of hazardous chemicals provided to and used in any SUNY NEW PALTZ dept. must bear appropriate labels as described in this section.

B. All chemical containers should be labeled in accordance with the federal Hazard Communication Standard (29 CFR 1910.1200) at the time of receipt.

C. Designated coordinators should ensure that every hazardous chemical container in their assigned departments or work areas bears a label indicating the chemical or product name, including the identity of the hazardous chemicals contained therein and an appropriate hazard warning.

1. The EH&S may be contacted for assistance with such information.
2. Research laboratories may use identification systems which provide content and hazard information to laboratory personnel in any manner understandable to all persons potentially exposed to the chemical.

D. Labels required by this section should not be defaced or removed.

E. Piping systems carrying hazardous chemicals should be labeled by Facilities Management at the valve or valves located at the point at which a chemical enters the workplace's piping system, and at other valves, outlets, vents, drains, or connections which would allow the release of a substance from the piping system.

F. Portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for immediate use by the employee who performs the transfer, are not required to be labeled. This is a rare exception to the rule, for if the employee leaves the immediate area even for a few seconds the container must be labeled.

G. Labeling requirements in this section are not required for:

1. Any chemical substance or mixture as such terms are defined in the Toxic Substances Control Act (15 U.S.C. 2601 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;
2. Any food, food additive, color additive, drug, cosmetic, or medical or veterinary device or product, including materials intended for use as ingredients in such products (e.g., flavors and fragrances), as such terms are defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) or the Virus-Serum-Toxin Act of 1913 (21 U.S.C. 151 et seq.), and regulations issued under those Acts, when they are subject to the labeling requirements under those Acts by either the Food and Drug Administration or the Department of Agriculture;
3. Any distilled spirits (beverage alcohols), wine, or malt beverage intended for non-industrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. 201 et seq.) and regulations issued under that Act, when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol, Tobacco, and Firearms;

XI. TRAINING

A. All SUNY New Paltz employees are required to participate in training and information programs designed to communicate information about the hazardous chemicals to which they may be exposed.

Note: Complete training includes:

- Review of MSDS's that employees work with
- Slide presentation on line at <http://www.goer.state.ny.us/train/onlinelearning/HAZ/intro.html>
- Reading of this program document.

Training will be documented by each Dept (original records retained by dept in auditable records copies to be sent to EH&S). Training can be found on line at <http://www.goer.state.ny.us/train/onlinelearning/HAZ/intro.html> A certificate of completion is available after successful completion of the online test, this certificate shall be kept by the supervisor in employees files and copies sent to Human Resources and the Environmental Health and Safety Dept.

B. Training includes at least:

1. methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area; (review of MSDS's)
2. physical and health hazards of chemicals in the work area; (review of MSDS's)
3. measures employees can take to protect themselves from these hazards, including appropriate work practices, emergency procedures, and personal protective equipment to be used; and (MSDS Review or Department procedures.)
4. the details of the this hazard communication program, including an explanation of the labeling system and the material safety data sheets, and how employees can obtain and use the appropriate hazard information.

C. Information shall include, but not be limited to:

1. the requirements of the Hazard Communication Standard and RTK law;
2. known operations in their work area where hazardous chemicals are present; and
3. the location and availability of the written SUNY New Paltz Hazard

Communication Policy and Program, inventory lists, and MSDSs.

D. Immediate Supervisors (or their designated coordinators) are responsible for ensuring that all employees in their assigned departments or areas receive all appropriate training as required by this Policy and Program. Designated departmental or area coordinators shall ensure employees have taken the training provided by the EH&S initially and annually thereafter.

E. All Immediate Supervisors (or their designated coordinators) who provide internal employee training are responsible for documenting training and a providing a copy of training records to EH&S.

F. Employee training and education should be provided within the first thirty (30) days of employment and/or transfer (but prior to being placed in the area where exposure might take place) and at least annually thereafter.

G. The Immediate Supervisors (or their designated coordinator) should ensure that additional instruction is provided whenever the employee may be routinely exposed to additional hazardous chemicals, whenever the employee's potential for exposure is increased due to changes in the work practices, or whenever new toxic or hazardous chemicals or equipment are introduced into the work area.

H. Service contractors whose work or materials pose a health hazard to SUNY NEW PALTZ employees in their department or work area must show proof of compliance with the applicable federal or state Hazard Communication Regulation, including proof of employee training. Assistance in these matters may be obtained from EH&S.



How to Read MSDS INFORMATION:

Material Safety Data Sheets – MSDS – are chemical information sheets. They give basic information about a product’s content, potential hazards and physical characteristics as well as providing information necessary to allow the product to be used safely.

The Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200) requires manufacturers or distributors of hazardous materials to assess the physical and health hazards of chemicals or products and provide that information in a MSDS. The MSDS must be forwarded to the purchaser with the initial shipment of each product free of charge. MSDS are not required to have a specific format but must contain the same basic information.

OSHA requires that MSDS be available for every chemical used in the workplace for employees to view during their work shift. MSDS are available from your supervisor or lab manager.



The following example is based upon the OSHA recommended MSDS format and explains each section of the MSDS. It may be helpful to refer to one of the MSDS in your area as you review this information.

Identity:

This line will give the name of the product as it is listed on the product label to allow you to easily match the appropriate MSDS to the product.

Section I Manufacturer Information

This section provides the name and address of the manufacturer as well as a telephone number to be used to obtain product information and a telephone number to be used for emergency information.

A date of preparation appears on each sheet to allow the user to be sure they have the most current information.

Section II: Hazardous Ingredients/Identity Information

This section contains:

- the chemical name of hazardous ingredients or
- if a mixture, the chemical names of the hazardous ingredients that make up at least 1% or the mixture (0.1% if the ingredient is a carcinogen (cancer causing) agent.)
- CAS Number: a unique number assigned to chemicals or materials by the Chemical Abstracts Service
- Synonyms and/or chemical formulas

- Exposure Limits (if available). This table indicates the main limits.

<p><u>Exposure Limits</u> (Sources of safe limits for individual exposure.)</p> <p>PEL Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit.</p> <p>The regulated maximum concentration an employee may safely be exposed to in any 8-hour working day as measured by a time-weighted average.</p> <p>Ceiling limits (C) indicate an exposure level that may not be exceeded for any length of time during the working day.</p> <p>STEL or Short Term Exposure Limit indicates the average exposure level that may not be exceeded for a specified, short length of time (normally 15 minutes).</p> <p>A “Skin” notation indicates that the chemical may be absorbed through the skin.</p> <p>See the OSHA Air Contaminants Standard <u>29 CFR 1910.1000</u> for a more detailed explanation or to view the PELs.</p>
<p>TLV American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values.</p> <p>These values are not legal limits but are industry standard. TLVs are more current than regulatory limits. They are one source of industry standards used in creation of new regulations.</p>
<p>REL National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limits.</p> <p>This is a government funded, non-regulatory source of current exposure limit recommendations. They are one source of industry standards used in creation of new regulations.</p>
<p>Corporate Exposure Limit A recommended exposure limit based upon information gathered by the manufacturer or distributor.</p>

Section III: Physical/Chemical Characteristics

This section outlines the physical properties of the material. This information may be used to determine conditions that may enhance exposure potential.

Boiling Point: (BP)	Temperature at which liquid changes to vapor state.
Vapor pressure (mm Hg)	As a rule of thumb, higher vapor pressure materials evaporate more quickly.
Vapor density (Air = 1)	The weight of a gas or vapor compared to weight of an equal volume of air. Density greater than 1 indicates it is heavier than air. Vapors heavier than air can flow along or hover just above ground, where they may pose a fire or explosion hazard.
Solubility in Water	The percentage of material that will dissolve in water.
Appearance and Odor/odor threshold	What should the product look like and or smell like. Often a odor threshold is included indicating the smallest amount of the material that can be detected by the human nose.
Specific Gravity (H ₂ O =1)	The weight of a volume of liquid or solid compared to the weight of an equal volume of water. Materials with a specific gravity of greater than 1 will sink in water; less than 1 will float.
Melting Point	Temperature at which a solid begins to change to liquid state
Evaporation Rate (Butyl Acetate =1)	The rate at which a material evaporates when compared to a known material's evaporation rate
Other physical information will be given as appropriate.	

Section IV: Fire and Explosion Hazard Data

This section includes information concerning the flammability of the material and information for fighting fires involving the product.

LEL - Lower Explosive Limit or LFL – Lower Flammability Limit (Terms are synonymous.)	The minimum concentration (percent by volume) of flammable vapor in air that will allow ignition. A product's flammable range is between the LEL and the UEL.
UEL - Upper Explosive Limit UFL – Upper Flammability Limit (Terms are synonymous.)	The maximum concentration of flammable vapor (percent by volume) in air above which ignition cannot occur. (The mixture above the UEL becomes "too rich" to support combustion.)
Flashpoint	The lowest temperature at which a liquid gives off enough vapor to ignite when a source of ignition is present
Autoignition Temperature	The lowest temperature at which a flammable gas-air mixture will ignite spontaneously.
Extinguishing Media	The appropriate fire extinguishing agent(s) for the material.
Fire-fighting Procedures	Appropriate equipment and methods to be used in limiting hazards encountered in fire situations.
Fire or Explosion Hazards	Unusual conditions which may cause or lead to fire or explosions.

Section V: Reactivity Data

This section includes information regarding the stability of the material and special storage or use recommendations.

Stability	"Unstable" indicates that a chemical may react violently, decompose spontaneously under normal temperatures, pressures, or mechanical shocks, or rapid decomposition may produce heat, cause fire or explosion. Conditions to avoid are listed in this section.
Incompatibility	Indicates chemicals or chemical families that may react violently or unpredictably in contact with the product. Incompatible chemicals should be separated during storage.
Hazardous Decomposition or Byproducts	Hazardous substances that may be created when the chemical decomposes or burns.

Hazardous Polymerization	Indicates if the product is prone to rapid polymerization causing potential for explosion. Conditions to avoid are listed in this section.
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Section VI: Health Hazard Data

This section indicates the medical signs and symptoms that may be encountered with overexposure to this product or its components. Health hazard information may also distinguish the effects of acute (short term) and chronic (long-term) exposure.

Routes of Entry	<ul style="list-style-type: none"> • Inhalation: through the respiratory tract. • Ingestion: through the gastrointestinal tract. (i.e., by eating contaminated foods or by touching the mouth with contaminated fingers.) • Absorption: transference through the skin. • Injection: direct contact with the blood stream (i.e., through needle stick or glass cut.)
Health Hazards	Identification of target organs or systems that may be adversely affected by overexposure
Carcinogenicity	Substances which are suspected or known to cause cancer in humans. See the <u>carcinogen</u> listing on the EHS web page.
Signs and Symptoms of Exposure	Identification of the outward appearance or feel of overexposure.
Medical conditions generally aggravated by exposure	Medical conditions that may be aggravated by normal exposure or overexposure.
Emergency and First Aid Procedures	Recommended emergency and first aid procedures based on the toxicity of the product, degree of exposure and route of contact.

Section VII: Precautions for Safe Handling and Use

This section provides general information for safe handling and use. Local regulations must also be taken into consideration in dealing with spills and waste disposal.

Spill or Release Data	Materials and methods to use in a small, moderate or large spill situation.
Waste Disposal Method	Indicates if the product must be disposed of as a hazardous waste. Utilize University guidelines in determining disposal methods and procedures.

Precautions to be taken in Handling and Storage	This section may contain incompatibility information as well as special precautions for use or storage.
Other Precautions	Other hazards or precautions not elsewhere listed.

Section VIII: Control Measures

This section includes general information about appropriate personal protective equipment for handling this material. Many times, this section is written for large scale use of the material. Consider the amount and use of a material in choosing the right personal protective equipment.

Respiratory Protection	Indicates the type of respirator recommended. Some respirators supply air while others filter room air. Use of a respirator requires a medical exam, training and fit testing. Contact EHS prior to any <u>respirator use</u> .
Protective Gloves	Use compatible glove materials based upon the chemical used. See glove <u>compatibility charts</u> on the EHS web page or ask the glove supplier or manufacturer for more information.
Eye Protection	Safety glasses or Splash goggles must be ANSI approved for the intended use. Look for the ANSI imprint on the lens. Standard prescription glasses are not suitable safety glasses
Protective Clothing	Recommended clothing may not be appropriate for lab use.
Ventilation	Recommendations for general room ventilation and/or point source local exhaust ventilation.
Work/Hygienic Practices	Special recommendations for use.

Additional Information can be requested from the EH&S dept at 3310

What is the GHS and Who Developed It?

GHS stands for the Globally Harmonized System of Classification and Labeling of Chemicals.

Developed by the United Nations, the premise of the GHS is that existing chemical classification and labelling systems (such as OSHA's Hazard Communication Standard (HCS)) "should be harmonized in order to develop a single, globally harmonized system to address classification of chemicals, labels and safety data sheets."

Born out of the 1992 Earth Summit – the UN Conference on Environment and Development (UNCED) – in Rio de Janeiro, the GHS was expressly called for in the UNCED's 'International Mandate,':

"A globally harmonized classification and compatible labelling system, including material safety data sheets and easily understandable symbols, should be available, if feasible, by the year 2000."

Work on the GHS was carried out on behalf of the U.N. by several agencies and committees until 2001 when oversight was given to the **United Nations Committee of Experts on the Transport of Dangerous Goods and the Globally Harmonized System of Classification and Labelling of Chemicals (UNCETDG/GHS)**.

Why Have the GHS?

Given the large number of hazardous chemicals in the world, the ability of one agency to effectively regulate them all is impractical if not impossible. In essence, each country or organization is on its own.

Many countries and organizations have established laws and regulations requiring information to be prepared and transmitted through labels and/or safety data sheets to those people using or handling hazardous chemicals.

While most of the laws and regulations put in place by local, state, national and international agencies are similar – their differences can be significant enough to require different labels and SDSs to be produced for the same chemical depending upon where it is used or who is using it.

Inconsistencies between national and international laws create a regulatory and compliance nightmare that at best disrupts commerce and at worst compromises safety.

More alarming, some countries have no system at all.

These facts combined with the growth in global trade of chemicals form the need for an “internationally harmonized approach to the classification and labelling of chemicals.”

By standardizing the components of dissimilar systems, the GHS will protect workers, consumers, emergency responders, the environment and the public by creating a comprehensive system through which chemical hazards are identified and communicated to all who are potentially exposed.

Additionally, global adoption of GHS is expected to reduce costs and inefficiencies associated with the international trade of chemicals.

GHS is expected to:

- a. Enhance the protection of human health and the environment by providing an internationally comprehensible system for hazard communication
- b. Provide a recognized framework for those countries without an existing system
- c. Reduce the need for testing and evaluation of chemicals
- d. Facilitate international trade in chemicals whose hazards have been properly assessed and identified on an international basis

How Was the GHS Developed?

As a result of the 1992 “International Mandate,” work on the GHS was carried out on behalf of the U.N. by a multinational coordinating group called the Interorganization Programme for the Sound Management of Chemicals (IOMC) Coordinating Group for the Harmonization of Chemical Classification Systems (CG/HCCS).

The scope of the original mandate called for two elements: 1) Harmonized criteria for classifying substances and mixtures according to their health environmental and physical hazards; and 2) harmonized hazard communication elements, including requirements for labelling and safety data sheets.

United States Participation

An Interagency Working Group corralled by the U.S. State Department and comprised of four U.S. agencies represented the U.S. in the creation of the GHS, the four agencies were:

- OSHA
- The Department of Transportation (DOT)
- The Environmental Protection Agency (EPA)
- Consumer Product Safety Commission (CPSC)

OSHA served as the lead agency for the U.S. on the classification of chemicals and hazard communication.

Principles for Developing the GHS:

For those committees and agencies working on the GHS, their primary task was to take the best aspects of existing systems and develop a harmonized approach using the following principles.

- a. Level of protection should not be reduced in any system
- b. Hazard classification based on intrinsic properties of substances and mixtures, whether natural or synthetic
- c. All types of chemicals covered
- d. All systems will have to be changed
- e. Involvement of all stakeholders should be ensured
- f. Comprehensibility must be addressed
- g. Existing data about chemicals and methods for testing chemicals should be accepted and adapted
- h. Confidential Business Information (CBI) should be protected as prescribed by competent authorities

Four major systems were used as the primary basis of the GHS:

1. Requirement of systems in the United States for the workplace, consumers and pesticides
2. Requirements of Canada for the workplace, consumers and pesticides
3. European Union directives for classification and labeling of substances and preparations
4. United Nations recommendations on the Transport of Dangerous Goods

In developing the GHS, it was agreed that it would cover all hazardous chemicals and that various forms of testing would be accepted; it was also agreed that it would not establish uniform test methods or harmonize risk assessment procedures or decision (i.e. permissible exposure limit for employee exposure).

How is the GHS Applied?

According to the GHS R3, the goal of the GHS is to identify intrinsic hazards found in substances and mixtures and to convey hazard information about these hazards.

It is also designed to allow the hazard communication elements of the existing systems to converge.

To accomplish this, the criteria for hazard classification are harmonized and hazard statements, symbols, and signal words have been standardized and harmonized, forming an integrated hazard communication system.

This does not mean everything in the GHS is uniform; it does give competent authorities the ability to decide how to apply certain elements of the GHS – for instance, based upon the target audience.

Following are three examples.

- For transport, the GHS will be similar to current transport requirements. Containers will be marked with pictograms that address acute toxicity, physical hazards, and environmental hazards. Signal words and hazard statements are not expected to be adopted in the transport sector
- In the workplace, all GHS elements are expected to be adopted, including labels that have harmonized core information and safety data sheets, and it is expected such information will be supplemented by employee training
- For consumers, labels are expected to be the primary focus

Is it a Global Law?

A major concern many people have upon first learning about the GHS is that it is a global law encroaching upon the sovereignty of their own country. This common misconception is false.

The GHS is not a global law or regulation; it is a system or a set of recommendations.

The GHS uses a “building block” approach and no country is obligated to adopt all or even any part of the GHS.

Countries are free to determine which of the building blocks will be applied in different parts of their system. However, where a country’s system incorporates a GHS building block, that coverage should be consistent.

In other words, the GHS may be seen as a collection of building blocks from which to form a regulatory approach.

It is hoped that the application of GHS worldwide will eventually lead to a fully harmonized situation.

Building Block Approach Explained

We get a better understanding of the building block approach by looking at specific examples of its application.

One element of the GHS is the hazard class – which means the nature of the physical, health or environmental hazard, e.g. flammable solid, carcinogen, oral acute toxicity. In the GHS, hazard classes are building blocks. Competent authorities may choose which hazard classes they adopt.

Furthermore, within hazard classes are hazard categories – which compare hazard severity within a hazard class. These categories are also building blocks and competent authorities have the possibility not to adopt all categories.

However, if a hazard class or hazard category is adopted, then the GHS requests that certain aspects be followed within that class or category.

For instance, when a hazard category is adopted, all the categories for higher hazard levels in that hazard class should also be adopted. So if a hazard class has four categories, if the level three hazard category is chosen, then levels one and two should also be chosen.

With the harmonized classification criteria and hazard communication elements, the GHS is designed to accommodate self-classification and allow the uniform development of national policies, while remaining flexible enough to accommodate any special requirements that need to be met.

The GHS is intended to be user-friendly and help reduce administrative burdens.

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..

- **Explosives**, which are assigned to one of six subcategories depending on the type of hazard they present, as used in the UN Dangerous Goods System.
- A **Flammable Gas** is one that has a flammable range in air at 20 °C and a standard pressure of 101.3 kPa. Substances and mixtures of this hazard class are assigned to one of two hazard categories on the basis of the outcome of the test or calculation method.
- **Flammable Aerosols** should be considered for classification as Category 1 or Category 2 if they contain any component, which is classified as flammable according to the GHS criteria, that is, flammable liquids, flammable gases or flammable solids.
- **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. This endpoint covers four types of gases or

gaseous mixtures to address the effects of sudden release of pressure or freezing which may lead to serious damage to people, property, or the environment independent of other hazards the gases may pose.

- A **Flammable Liquid** is a liquid with a flash point of not more than 93 °C. Substances and mixtures of this hazard class are assigned to one of four hazard categories on the basis of the flash point and boiling point.
- A **Flammable Solid** is one that is readily combustible or may cause or contribute to fire through friction. Readily combustible solids are powdered, granular, or pasty substances which are dangerous if they can be easily ignited by brief contact with an ignition source, such as a burning match, and if the flame spreads rapidly.
- **Self-Reactive Substances** are thermally unstable liquids or solids liable to undergo a strongly exothermic thermal decomposition even without participation of oxygen (air). This definition excludes materials classified under the GHS as explosive, organic peroxides or as oxidizing.
- A **Pyrophoric Liquid** is a liquid that, even in small quantities, is liable to ignite within five minutes after coming into contact with air. Substances and mixtures of this hazard class are assigned to a single hazard category on the basis of the outcome of the UN Test N.3.
- A **Pyrophoric Solid** is a solid that, even in small quantities, is liable to ignite within five minutes after coming into contact with air. Substances and mixtures of this hazard class are assigned to a single hazard category on the basis of the outcome of the UN Test N.2.
- **Self-Heating Substances** are solids or liquids, other than a pyrophoric substance, which, by reaction with air and without energy supply, is liable to self-heat. Substances and mixtures of this hazard class are assigned to one of two hazard categories on the basis of the outcome of the UN Test N.4.
- **Substances which on Contact with Water Emit Flammable Gases** are substances that, in contact with water, emit flammable gases are solids or liquids which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities. Substances and mixtures of this hazard class are assigned to one of three hazard categories on the basis of the outcome of UN Test N.5, which measures gas evolution and speed of evolution.
- **Oxidizing Liquids** are liquids that, while in it is not necessarily combustible, may, generally by yielding oxygen, cause or contribute to the combustion of other material. Substances and mixtures of this hazard class are assigned to one of three hazard categories on the basis of the outcome of UN Test O.2.
- **Oxidizing Solids** are solids that, while it is not necessarily combustible, may, generally by yielding oxygen, cause or contribute to the combustion of other material. Substances and mixtures of this hazard class are assigned to one of three hazard categories on the basis of the outcome of UN Test O.1.
- **Organic Peroxides** are organic liquids or solids that contain the bivalent -O-O- structure and may be considered a derivative of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals. The term also includes organic peroxide formulations (mixtures). Substances and mixtures of this hazard class are assigned to one of seven 'Types', A to G, on the basis of the outcome of the UN Test Series A to H.
- **Substances Corrosive to Metal** are substances or a mixtures that by chemical action will materially damage, or even destroy metals. These substances or mixtures are

classified in a single hazard category on the basis of tests (Steel: ISO 9328 (II): 1991 - Steel type P235; Aluminum: ASTM G31-72 (1990) - non-clad types 7075-T6 or AZ5GU-T66). The GHS criteria are a corrosion rate on steel or aluminum surfaces exceeding 6.25 mm per year at a test temperature of 55 °C.

Health Hazards

- **Acute Toxicity** includes five GHS categories from which the appropriate elements relevant to transport, consumer, worker and environment protection can be selected. Substances are assigned to one of the five toxicity categories on the basis of LD₅₀ (oral, dermal) or LC₅₀ (inhalation).
- **Skin Corrosion** means the production of irreversible damage to the skin following the application of a test substance for up to 4 hours. Substances and mixtures in this hazard class are assigned to a single harmonized corrosion category.
- **Skin Irritation** means the production of reversible damage to the skin following the application of a test substance for up to 4 hours. Substances and mixtures in this hazard class are assigned to a single irritant category. For those authorities, such as pesticide regulators, wanting more than one designation for skin irritation, an additional mild irritant category is provided.
- **Serious Eye Damage** means the production of tissue damage in the eye, or serious physical decay of vision, following application of a test substance to the front surface of the eye, which is not fully reversible within 21 days of application. Substances and mixtures in this hazard class are assigned to a single harmonized category.
- **Eye Irritation** means changes in the eye following the application of a test substance to the front surface of the eye, which are fully reversible within 21 days of application. Substances and mixtures in this hazard class are assigned to a single harmonized hazard category. For authorities, such as pesticide regulators, wanting more than one designation for eye irritation, one of two subcategories can be selected, depending on whether the effects are reversible in 21 or 7 days.
- **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)** ^[2] category distinguishes between single and repeated exposure for Target Organ Effects. All significant health effects, not otherwise specifically included in the GHS, that can impair function, both 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: LC₅₀ (fish) or EC₅₀ (crustacean) or ErC₅₀ (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: LC₅₀ (fish) or EC₅₀ (crustacea) or ErC₅₀ (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 ecotox 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 are 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.

Testing requirements

The GHS document does not include testing requirements for substances or mixtures. In fact, one of the main goals of the GHS is to reduce the need for animal testing. The GHS criteria for determining health and environmental hazards are test method neutral, allowing different approaches as long as they are scientifically sound and validated according to international procedures and criteria already referred to in existing systems. Test data already generated for the classification of chemicals under existing systems should be accepted when classifying these chemicals under the GHS, thereby avoiding duplicative testing and the unnecessary use of test animals. The GHS physical hazard criteria are linked to specific UN test methods. It is assumed that mixtures will be tested for physical hazards.

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 MSDS'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 MSDS'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:

- Different philosophies in existing systems on how and what should be communicated;
- Language differences around the world;
- Ability to translate phrases meaningfully;
- Ability to understand and appropriately respond to symbols/pictograms.

These factors were considered in developing the GHS communication tools.

GHS Label Elements



One of the new symbols implemented by the GHS.

The standardized label elements included in the GHS are:

- **Symbols** (GHS hazard pictograms): Convey health, physical and environmental hazard information, assigned to a GHS hazard class and category. Pictograms include the harmonized hazard symbols plus other graphic elements, such as borders, background patterns or colors that are intended to convey specific information. The symbols are similar to current EU symbols, with a few exceptions. A new hazard symbol, shown (right), featuring a white sprawling mass within a bust of a human is introduced. It is used for carcinogens, mutagens, reproductive toxicity, aspiration hazards, respiratory sensitizers and substances which have target organ toxicity. Also, harmful chemicals and irritants are marked with an exclamation mark, replacing the European saltire. Pictograms will have a black symbol on a white background with a red diamond frame. For transport, pictograms will have the background, symbol and colors currently used in the *UN Recommendations on the Transport of Dangerous Goods*. Where a transport pictogram appears, the GHS pictogram for the same hazard should not appear.
- **Signal Words:** "Danger" or "Warning" will be used to emphasize hazards and indicate the relative level of severity of the hazard, assigned to a GHS hazard class and category. Some lower level hazard categories do not use signal words. Only one signal word corresponding to the class of the most severe hazard should be used on a label.
- **Hazard Statements:** Standard phrases assigned to a hazard class and category that describe the nature of the hazard. An appropriate statement for each GHS hazard should be included on the label for products possessing more than one hazard.

The additional label elements included in the GHS are:

- **Precautionary Statements:** Measures to minimize or prevent adverse effects. There are four types of precautionary statements covering: prevention, response in cases of

accidental spillage or exposure, storage, and disposal. The precautionary statements have been linked to each GHS hazard statement and type of hazard.

- **Product Identifier** (ingredient disclosure): Name or number used for a hazardous product on a label or in the MSDS. The GHS label for a substance should include the chemical identity of the substance. For mixtures, the label should include the chemical identities of all ingredients that contribute to acute toxicity, skin corrosion or serious eye damage, germ cell mutagenicity, carcinogenicity, reproductive toxicity, skin or respiratory sensitization, or Target Organ Systemic Toxicity (TOST), when these hazards appear on the label.
- **Supplier identification**: The name, address and telephone number should be provided on the label.
- **Supplemental information**: Non-harmonized information on the container of a hazardous product that is not required or specified under the GHS. Supplemental information may be used to provide further detail that does not contradict or cast doubt on the validity of the standardized hazard information.

GHS Label Format

The GHS includes directions for application of the hazard communication elements on the label. In particular, it specifies for each hazard, and for each class within the hazard, what signal word, pictogram, and hazard statement should be used. The GHS hazard pictograms, signal words and hazard statements should be located together on the label. The actual label format or layout is not specified in the GHS. National authorities may choose to specify where information should appear on the label or allow supplier discretion. There has been discussion about the size of GHS pictograms and that a GHS pictogram might be confused with a transport pictogram or "diamond". Transport pictograms are different in appearance than the GHS pictograms. Annex 7 of the Purple Book explains how the GHS pictograms are expected to be proportional to the size of the label text. So that generally the GHS pictograms would be smaller than the transport pictograms.

GHS Material Safety Data Sheet or Safety Data Sheet

The safety data sheet (The GHS has dropped the word "material" from material safety data sheet. It will now be called the safety data sheet or SDS) is specifically aimed at use in the workplace. It should provide comprehensive information about the chemical product that allows employers and workers to obtain concise, relevant and accurate information that can be put in perspective with regard to the hazards, uses and risk management of the chemical product in the workplace. The SDS should contain 16 sections. While there were some differences in existing industry recommendations, and requirements of countries, there was widespread agreement on a 16 section SDS that includes the following headings in the order specified:

1. Identification
2. Hazard(s) identification
3. Composition/ information on ingredients
4. First-aid measures
5. Fire-fighting measures

6. Accidental release measures
7. Handling and storage
8. Exposure control/ personal protection
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information.

The primary difference between the GHS requirements in terms of headings and sections and the international industry recommendations is that sections 2 and 3 have been reversed in order. The GHS SDS headings, sequence and content are similar to the ISO, EU and ANSI MSDS/SDS requirements. The SDS should provide a clear description of the data used to identify the hazards. There is a table comparing the content and format of a current MSDS/SDS versus the GHS SDS provided in Appendix A of the OSHA GHS guidance document available at OSHA's website.