University of Hawaii
GHS Updates for Manoa-Based Lab Personnel

Mandatory Training on the Changes to the OSHA Hazard Communication Standard - Globally Harmonized System (GHS)

UNIVERSITY of HAWAI'I® MĀNOA

Environmental Health & Safety Office

Special Training Note

- This module is to be used by UH Manoa-based personnel who work with hazardous chemicals in a lab setting and who have already completed general lab safety training. It includes topics OSHA requires employees to be trained on by December, 2013.
- It is up to departments & supervisors to ensure that this training is completed and documented.
- **Upon completing a review of this module, complete the quiz (link provided on the last slide)**
- **You will receive an email verification that your training has been completed.**
- **Contact Hans O. Nielsen, EHSO Education Coordinator at hansn@hawaii.edu or by phone at 956-5180 with any questions.**

- **Note: Kakaako JABSOM and Cancer Research Center personnel should NOT take this course and quiz. Contact Tavia Shiroma at tavais@hawaii.edu for further information.**

What is Hazard Communication?

- Hazard Communication or “HazCom” or “HCS” is an OSHA required training program that covers hazardous chemicals used in your workplace. As laboratory researchers/workers, HazCom is covered in your initial EHSO provided general lab safety training, which is mandated by the OSHA Lab Standard (1910.1450) and the **UH Chemical Hygiene Plan**
- If you have not yet completed general Lab Safety Training, see http://www.hawaii.edu/ehso/lab/training.htm for a list of dates/times

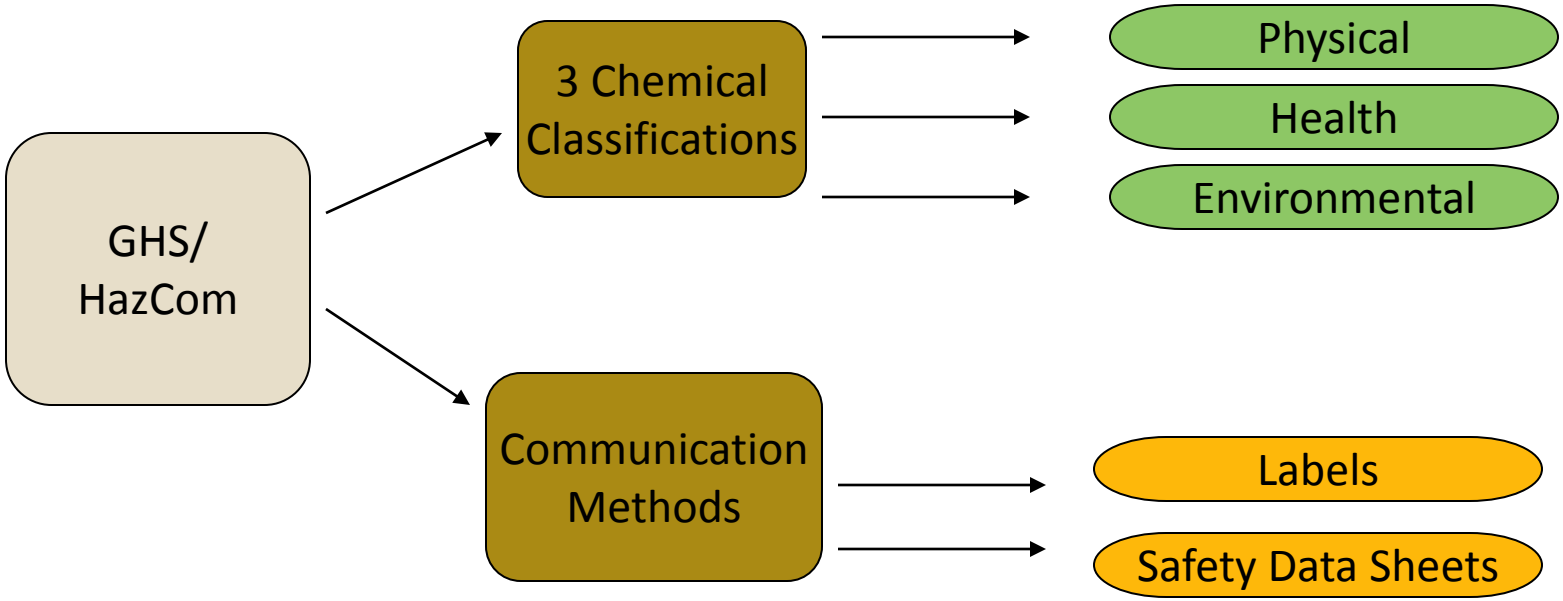
UH Chemical Hygiene Plan

- Provides uniform requirements for safe use and disposal of potentially hazardous substances in University laboratories.
- Maintaining a safe and healthy environment in the laboratory is ultimately the responsibility of the Supervisor or Principal Investigator. However, each individual is expected to conduct all operations and procedures involving chemicals in a safe and prudent manner.
- Compliance is mandatory for all employees working in campus laboratories due to requirements of the Hawaii Occupational Safety and Health (HIOSH) division of the Department of Labor and Industrial Relations standard on Hazardous Chemicals in Laboratories. While these regulations pertain specifically to employees, provisions of the CHP apply to students and visitors.
- Has been updated (2013) to reflect OSHA required changes (GHS, Labeling, SDS): http://www.hawaii.edu/ehso/lab/
- The UH HazCom program has also been updated to include OSHA required changes (GHS, Labeling, SDS): http://www.hawaii.edu/ehso/industrial/HAZCOM.pdf

Globally Harmonized System (GHS)

- The OSHA HazCom changes are being made to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). The GHS system provides a globally consistent manner of chemical hazard classification, labeling and communicating the hazards of chemicals via safety data sheets (SDS). It is a logical and comprehensive approach to:
  - Defining health, physical and environmental hazards of chemicals;
  - Creating classification processes that use available data on chemicals for comparison with the defined hazard criteria; and
  - **Communicating hazard information, as well as protective measures, on labels and Safety Data Sheets (SDS).**
- Chemical manufacturers in the US have until June 1, 2015 to convert to the new GHS labeling and SDS systems, though some manufacturers may already be using GHS labeling, pictograms, and the new SDS format.

Main Changes Affecting Laboratory Users of Hazardous Chemicals



Chemical Hazard Classifications

3 Chemical Hazard Classifications:

- The manner in which manufacturers evaluate chemicals is changing.
- Chemicals must be reclassified as **Health Hazards, Physical Hazards, and Environmental Hazards**.

Physical Hazards:

1. Explosives
2. Flammable Gasses
3. Flammable Aerosols
4. Oxidizing Gases
5. Gases Under Pressure
6. Flammable Liquids
7. Flammable Solids
8. Self-Reactive Substances
9. Pyrophoric Liquids
10. Pyrophoric Solids
11. Self-Heating Substances
12. Substances Which in Contact With Water Emit flammable Gases
13. Oxidizing Liquids
14. Oxidizing Solids
15. Organic Peroxides
16. Substances Corrosive to Metal

Health Hazards:

1. Acute Toxicity
2. Skin Corrosion
3. Skin Irritation
4. Eye Effects
5. Sensitization
6. Germ Cell Mutagenicity
7. Carcinogenicity
8. Reproductive Toxicity
9. Target Organ Systemic Toxicity
10. Aspiration Hazard

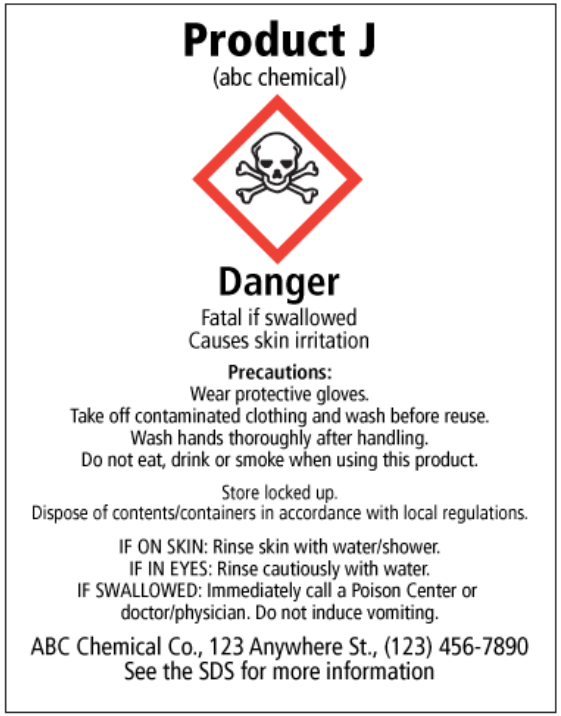
Environmental Hazards:

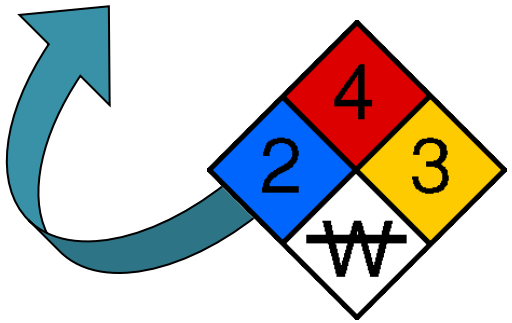
1. Acute Aquatic Toxicity
2. Chronic Aquatic Toxicity

Chemical Hazard Classifications Categories/Ranking

Chemical Hazard Classifications Categories:

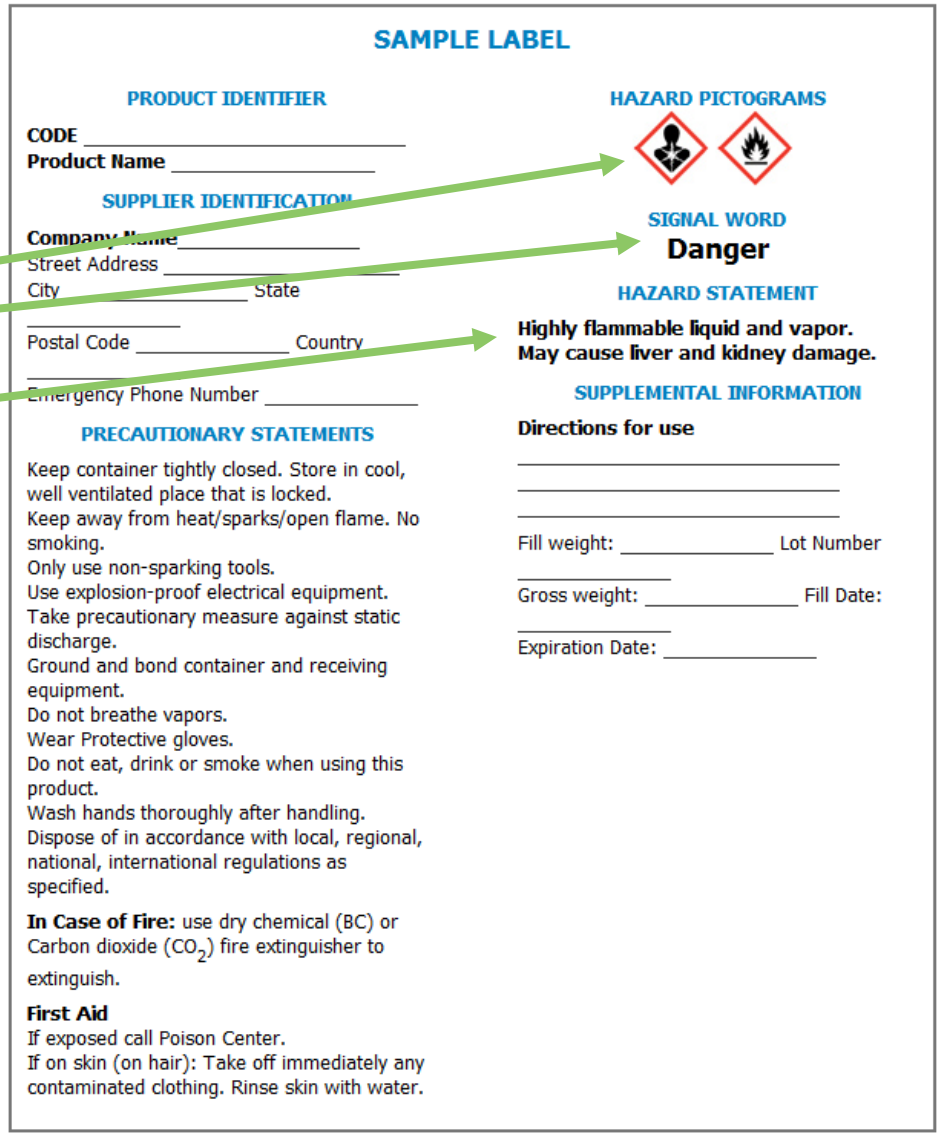
- Current NFPA 704 Diamond and HMIS hazard classification systems, which most of you may be familiar with, use a system of five numbers, ranging from 0 to 4, to indicate the severity of hazard, with 0 being the least and 4 being the most hazardous.
- **However, the new GHS uses a different classification system for hazards, with 1 being the most serious level of hazard – the <u>opposite</u> of the hazard rating scale used in the NFPA diamond and a source of potential confusion for users.**
- **You may still see NFPA diamonds on labels, but this is expected to change!**





Labels

- Three key label components will be standardized.
  - Symbols or Pictograms
  - Signal Words
  - Hazard Statements
- Use the following OSHA GHS pictogram link to assist with recognizing hazards on containers shipped in the next few years:



SAMPLE 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_2) 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: _____

Label Requirements (GHS) – Shipped Containers

- Part of the new HazCom Standard requires that labels have:
  - Product Identifier
  - Signal word
  - Hazard statement(s)
  - Pictogram(s)
  - Precautionary statement(s)
  - Name, address, and phone number of the responsible party
- **Do your best to leave these labels on!**

GHS Pictograms and Hazards

Health Hazard	Flame	Exclamation Mark
		
▪ Carcinogen ▪ Mutagenicity ▪ Reproductive Toxicity ▪ Respiratory Sensitizer ▪ Target Organ Toxicity ▪ Aspiration Toxicity	▪ Flammables ▪ Pyrophorics ▪ Self-Heating ▪ Emits Flammable Gas ▪ Self-Reactives ▪ Organic Peroxides	▪ Irritant (skin and eye) ▪ Skin Sensitizer ▪ Acute Toxicity ▪ Narcotic Effects ▪ Respiratory Tract Irritant ▪ Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder	**Corrosion**	**Exploding Bomb**
		
▪ Gases Under Pressure	▪ Skin Corrosion/Burns ▪ Eye Damage ▪ Corrosive to Metals	▪ Explosives ▪ Self-Reactives ▪ Organic Peroxides
Flame Over Circle	**Environment** (Non-Mandatory)	**Skull and Crossbones**
		
▪ Oxidizers	▪ Aquatic Toxicity	▪ Acute Toxicity (fatal or toxic)

Signal Words!!!

- Labels are required to use a signal word indicating relative hazard severity.
- Must be either **DANGER** or **WARNING**
  - “Danger” for more severe hazards
  - “Warning” for less severe hazards

Safety Data Sheets

Safety Data Sheet (SDS):

- Soon, these will be no longer called Material Safety Data Sheets or MSDS.
- New SDS is now standardized in 16 sections.
- All manufacturers are required to use the same standardized 16-section format by June 1, 2015.

Safety Data Sheets – 16 Standardized Sections

1. Identification
2. Hazards
3. Info on ingredients
4. First aid measures
5. Fire fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure controls
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological considerations*
13. Disposal considerations*
14. Transport info.*
15. Regulatory info.*
16. Other information, including date of preparation or last revision*

* Sections 12-15 may be included in the SDS but are not required by OSHA

Safety Data Sheets – Sample

Several chemical manufacturers are already using the new SDS 16 section format. See the Sigma-Aldrich SDS for Acetone to review the sections and become familiar with the new layout.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Acetone
Product Number	:	320110
Brand	:	Sigma-Aldrich
Supplier	:	Sigma-Aldrich 3050 Spruce Street SAINT LOUIS MO 63103 USA
Telephone	:	+1 800-325-5832
Fax	:	+1 800-325-5052
Emergency Phone # (For both supplier and manufacturer)	:	(314) 776-6555
Preparation Information	:	Sigma-Aldrich Corporation Product Safety - Americas Region 1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Flammable liquid, Target Organ Effect, Irritant

Target Organs

Liver, Kidney

GHS Classification
Flammable liquids (Category 2)
Skin irritation (Category 3)
Eye irritation (Category 2A)
Specific target organ toxicity - single exposure (Category 3)

GHS Label elements, including precautionary statements

Pictogram 

Signal word Danger

Hazard statement(s)

For More Information

- Refer to the Environmental Health & Safety Office Website: www.hawaii.edu/ehso/
- OSHA Hazard Communication & GHS: https://www.osha.gov/dsg/hazcom/ghs.html
- EHSO Lab Safety Training: http://www.hawaii.edu/ehso/lab/training.htm

- **Contact Hans O. Nielsen, EHSO Education Coordinator at hansn@hawaii.edu or by phone at 956-5180 with any questions.**

- **Continue to next slide for link to quiz…..**

Training Module Complete

To receive credit for completing this training:

1) Go to the following GHS/SDS quiz link to provide employee information and take the quiz.
2) Upon passing the quiz (70% or above) you will receive an email verification that your training is completed. Please allow approximately one week for this email.
3) Don’t forget to do this by December, 2013! If you cannot make this deadline, do so as soon as possible!