
Hazard Communication Program

Honolulu Community College
University of Hawai'i

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Honolulu Community College - University of Hawai'i

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Hazard Communication Program

Honolulu Community College – University of Hawai'i

Purpose

Honolulu Community College (HCC) is committed to providing a safe and healthful workplace and learning environment to its personnel, students, and contractors working on campus. The Hazard Communication (HazCom) Program is designed to ensure employees and students their right to know and the right to protect themselves from exposure to hazardous chemicals; and to prevent injuries and illnesses caused by potential chemical exposures. The Program meets the Hazard Communication standard (29 CFR 1910.1200) as mandated by the Occupational Safety and Health Administration (OSHA) and adopted by Hawaii Division of Occupational Safety & Health (HIOSH).

To ensure that employees and students understand chemical hazards and are able to prevent or minimize exposures, the Program addresses the following:

- Inventory of hazardous materials
- Communication means including container labeling, Safety Data Sheets (SDS), and training
- Hazards of non-routine tasks and unlabeled pipes
- Independent contractors working on HCC's facilities
- Recordkeeping

The Program includes the provisions of the United Nations' **Globally Harmonized System** of Classification and Labeling of Chemicals (GHS). GHS provides a single set of harmonized criteria for classifying chemicals according to their health and physical hazards and specifies hazard communication elements for labeling and safety data sheet (SDS).

Program Administration

The Vice Chancellor for Administrative Services (VCAS), Deans, and Directors are responsible for ensuring that each department under their supervision is implementing the provisions of the HazCom Program. All training required shall be provided at no cost to the employees.

Faculty members shall ensure that students are adequately trained and able to perform a task safely before the students handle any hazardous materials. They must also ensure that students correctly use appropriate personal protective equipment, if needed.

The Health & Safety Coordinator is responsible for assisting administration and personnel in complying with the HazCom standard.

Program Overview

The HazCom Program consists of the following elements:

1. **Chemical Inventory:** Develop an inventory of all hazardous chemicals. The inventory is to be updated at least annually, with obsolete items removed and new items added as necessary.
2. **Safety Data Sheets (SDSs):** Obtain, file, update, and place SDS in appropriate work areas for each chemical in the inventory.
3. **Warning Labels:** Ensure that all containers are appropriately labeled as specified by GHS.
4. **Training:** Train employees and students on elements of the HazCom Program.

Chemical Inventory

Each department is responsible for compiling, maintaining and updating a list of all known hazardous materials used on site by employees and students. The name on the inventory form should correspond to the product identity found on the label and SDS. For details on what needs to be included on the inventory, see Appendix A.

Suggested inventory form is included in Appendix B.

Inventories are to be kept current. Update the inventory when any of these changes occurs:

- Products have been used up and will no longer be acquired
- New products have been added to the stocks

Labels

Original Containers

All containers of hazardous materials must be labeled with appropriate information. Manufacturers, distributors or importers are responsible for labeling their products prior to shipment to the customers. Under GHS, labels must include:

Pictograms/symbols. These are the harmonized hazard symbols plus other graphic elements, such as borders, background pattern of colors which are intended to convey specific information. (Refer to Appendix C.)

Signal Words. The term “Danger” is used for the more severe hazards, and the term “Warning” for the less severe hazards.

Hazard Statement. The statements include standardized and assigned phrases that describe the hazard(s) as determined by hazard classification. An appropriate statement for each GHS hazard should be included on the label for

products possessing more than one hazard.

Precautionary Statement. It supplements the hazard information by providing measures to be taken to minimize or prevent adverse effects from physical, health or environmental hazards. Information on first aid is also included.

Product Identifier. Ingredients disclosed should match those found in the SDS. For mixtures/alloys, this section should include the chemical identities of all ingredients that contribute to the acute toxicity, skin corrosion or serious eye damage, germ cell mutagenicity, carcinogenicity, reproductive toxicity, skin and respiratory sensitization, or target organ systemic toxicity (TOST), when these hazards appear on the label.

Supplier Information. The information includes the name, address and telephone number of the manufacturer or supplier.

Supplemental Information. Although not required under GHS, additional information may be listed at the discretion of the manufacturer/distributor. The information may be used to clarify and validate the hazard information.

Receiving departments should verify appropriate container labeling upon receipt of any chemical. If unsure, the department's Safety Liaison should contact the Health and Safety Coordinator.

Incomplete or Missing Labels

If a material is received with inadequate labeling, the department is responsible for notifying the supplier and acquiring an acceptable label. The department's supervisor or program's liaison is responsible for ensuring that chemicals within his/her department are appropriately labeled.

Secondary Containers

All containers on campus must be labeled with either the original containers' acceptable labels or an equivalent. The equivalent label must list product identifier and words, pictures, symbols or combination thereof, which provide general information on the hazard(s) of the chemicals, including specific information on the physical and health hazards.

Signs, placards, operating procedures or other such written materials in lieu of affixing labels to individual process containers may be used as long as the alternative method identifies the container to which it is applicable and conveys the appropriate hazard information.

Secondary or portable containers intended for immediate use are not required to be labeled. "Immediate use" means that the chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred. (<https://www.osha.gov/dsg/hazcom/HCSFinalRegTxt.html>)

Use of Labels

Labels are intended to be an immediate warning and a reminder of the information provided by the SDS and training program. The labels should be read before the chemicals are handled. If the precautions specified by the label are unfamiliar, users are encouraged to consult the SDS for further information or contact their supervisor or the Health and Safety Coordinator.

Safety Data Sheets (SDS)

Information Requirements

SDS are prepared by the manufacturer, distributor or importer of products containing hazardous materials. All chemical manufacturers and distributors of hazardous chemicals are required to supply an SDS with each initial shipment to each location, and to provide a new SDS should one becomes available. SDS must contain the following information:

- Section 1: Identification
- Section 2: Hazard(s) Identification
- Section 3: Composition/Information on ingredients
- Section 4: First-Aid Measures
- Section 5: Fire-fighting Measures
- Section 6: Accident Release Information
- Section 7: Handling and Storage
- Section 8: Exposure Controls/Personal Protection
- Section 9: Physical and chemical Properties
- Section 10: Stability and Reactivity
- Section 11: Toxicological Information
- Section 12: Ecological Information (optional)
- Section 13: Disposal Consideration (optional)
- Section 14: Transport Information (optional)
- Section 15: Regulatory Information (optional)
- Section 16: Other Information, including date of preparation or last revision

For detailed explanations of SDS, see Appendix D.

Location and Accessibility

Each supervisor/program's liaison is responsible for ensuring that SDS are maintained and readily accessible to employees and students during all hours of operation. Electronic access and other alternatives to maintaining paper copies of SDS are permitted as long as there is no barrier to the immediate access. SDS should also be available to medical personnel; and State and Federal Occupational Safety and Health officials.

Obtaining Safety Data Sheets

When purchasing a material without an SDS on file, include in the purchase order a statement requiring that an SDS be accompanied the shipment of the material. All SDS received must be reviewed for completeness and included into the department's SDS file. If an SDS is not available in the department file, a written request should be sent to the manufacturer or supplier.

A new material cannot be distributed or used until the department has received the SDS and communicated the SDS information to the employees and students.

Incomplete or Missing Safety Data Sheet

If an SDS is missing or incomplete, send a letter to the manufacturer requesting one. If no response is received within twenty five (25) working days of the request, send a copy of the request with a notation that no response has been received to the Dean.

The department shall keep copies of all correspondence and request letters on file.

Training

Employee and Student Training

Employees must be trained upon their assignment to a work area where hazardous materials are present. Faculty members must train students prior to allowing the students to work with hazardous materials. Training must include at least the following topics:

- The requirements of the HazCom standard, including all employee's rights to information and non-discrimination
- An explanation of the SDS and information it contains
- The location and availability of the written HazCom Program and SDS
- How to read labels and how to use the information they contain
- Operations in the work area where hazardous materials are present
- The physical and health hazards of the chemicals in the work area
- Methods and observation techniques used to detect the presence and release of hazardous substance in the work area
- Measures employees/students can take to protect themselves from and minimize exposure to hazardous materials
- An explanation of the labels received on shipped containers and the workplace labeling system used
- An explanation on SDS, including the order of information and how employees/students can obtain and use the appropriate hazard information.

For a list of training topics, see Appendix F.

Refresher/On-going Training

When new hazardous materials are introduced and/or new hazard information becomes available on the materials used in the work area, information must be provided to the employees and students in the work area.

Contact the Health & Safety Coordinator if assistance is needed.

Documentation

Each department must maintain a list of each employee who has completed the HazCom training. This list, along with the training date and contents of the training is kept on file in the department and in each employee's personnel file. The training form in Appendix G can be used to document the training.

Non-routine Tasks

Occasionally, employees may be required to do jobs which are not part of their everyday work schedule. These jobs are termed non-routine tasks.

Each supervisor is responsible for informing employees of the hazards associated with the specific task prior to performance of the assigned project. The information provided by the supervisor includes:

- Chemical and physical hazards of the job
- Precautionary measures to be taken
- Available control measures
- Personal protective equipment required
- Emergency procedures

Examples of non-routine tasks that may be performed by employees include cleanup of spills, asbestos removal and other tasks.

Chemicals in Unlabeled Pipes

Prior to starting work on unlabeled pipes, employees are required to contact their supervisor for information on:

- Chemicals in the pipe
- Potential hazards
- Safety precautions that must be taken

Contractors

Independent contractors may work at HCC areas where hazardous materials are used. To ensure that contractors work safely, they must be given the following information by the VCAS office:

- List of the hazardous materials to which they may be exposed while performing their work
- Explanation of the precautions their employees may take to lessen the risk of exposure

Additionally, HCC requires contractors to provide SDS for the chemicals they bring on site. The SDS must be submitted to the Facilities Manager and must be available for review by any employee as requested.

Appendix A: Chemical Inventory Listing

Determining hazards of a chemical under the GHS classification system is a complex system with data obtained from test, literature, and practical experience. Details on how hazardous materials are classified are described in the mandatory Appendix A (Health Hazard Criteria) and Appendix B (Physical Criteria) of the HazCom standard (29 CFR 1910.1200)

Determination of a chemical's hazard classification is the responsibility of the chemical manufacturer or importer of the chemical. Users of chemicals may rely on the evaluation received from these suppliers through container labels and SDS.

In addition, the HazCom standard's Appendix C (Table of Chemical Hazards) lists hazardous substances based on the following:

- Regulated by OSHA in 29 CFR Part 1910 Subpart Z
- Included in the American Conference of Governmental Industrial Hygienist (ACGIH) latest edition of Threshold Limit Values (TLVs) for Chemical Substances and Physical Agents in the Work Environment
- Listed in the National Toxicology Program's Annual Report on
- Carcinogens
- Listed in the International Agency for Research on Cancer
- (IARC) monographs

Mixtures

If a mixture is not evaluated specifically by the manufacturer or importer, assume it is hazardous if the mixture meets any of the following:

- Contains 1% or more of any chemical in the list
- Contains 0.1% or greater of a carcinogen
- Under conditions of use, the mixture could release concentrations that exceed recommended or legal exposure limits of any component.

Consumer Products

Consumer products purchased for employee use are considered hazardous if they fit the definition of hazardous chemical(s).

Chemical Inventory should include the following:

- List all hazardous chemicals known to be present in your workplace. Use a name that appears both on the SDS and the container label. A suggested inventory form is provided in Appendix B.
- The list is to be an inventory of everything for which a SDS must be obtained. It will be part of the written program, and must be available to employees or students upon request.
- In addition to obvious chemicals such as solvents, one should also include commercial products such as adhesives, aerosols, cleaning agents, detergents, glues, inks, janitorial supplies, paints and surfactants.

Appendix B: Suggested Inventory Form

Program/Department: _____ Bldg & Rm #: _____

Inventory conducted by: _____ Inventory date: _____

Page: _____ of _____

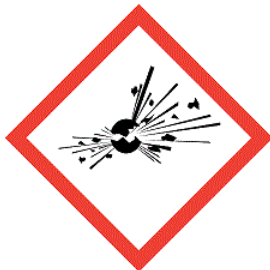
Product Name	Manufacturer	Quantity per Container	No. of Containers	Label (Y/N/I)*	SDS** (Y/N/I)*	Comments
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

- * Y (yes): *Label or SDS exist*
- N (no): *Label or SDS missing*
- I (inadequate): *Label or SDS does not meet GHS requirements*

** *Include the date on SDS in the inventory*

Appendix C: GHS Pictograms and GHS-compliant Label

GHS Pictograms



Explosion Bomb

May explode.



Flame

Catches fire easily and burst into flames.



Corrosion

Causes serious damage to the skin and eyes; eats away clothing, metal, and working surfaces.



Gas Cylinder

May explode, rocket or harm health if the cylinder is heated, ruptured or leaking.



Flame Over Circle

Oxidizing chemicals can react with other materials causing them to burn or explode.



Health Hazard

Prolonged exposure may cause health problems such as cancer or birth defects; may cause asthma or damage to specific organs.



Exclamation Point

May cause immediate health effects such as rashes or respiratory irritation; may damage the ozone layer.



Skull & Cross Bones

Can cause immediate and possibly serious health problems.



Environment

(non-mandatory)

This chemical can kill fish and other life that live in the water.

The Basic Parts of a GHS-compliant Label

1 → **n-Propyl Alcohol**

UN No. 1274
CAS No. 71-23-8

2 → **DANGER**

3 → Highly flammable liquid and vapor. Causes serious eye damage. May cause drowsiness and dizziness.

4 → Keep away from heat/sparks/open flames/hot surfaces. No smoking. Avoid breathing fumes/mist/vapours/spray. Wear protective gloves/protective clothing/eye protection/face protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present. Continue rinsing.

Fill Weight: 18.65 lbs. Lot Number: B56754434
Gross Weight: 20 lbs. Fill Date: 6/21/2013
Expiration Date: 6/21/2020

See SDS for further information.

5 → Acme Chemical Company • 711 Roadrunner St. • Chicago, IL 60601 USA • www.acmechem.com • 123-444-5567

6 → (Pictograms: Flame, Exclamation mark, and Hand/eye symbol)

<http://info.weberpackaging.com>

- | | |
|------------------------------------|---|
| 1. Product Identifier | Should match the product identifier on SDS. |
| 2. Signal Word | Either “Danger” (severe) or “Warning” (less severe). |
| 3. Hazard Statements | A phrase assigned to a hazard class that describes the nature of the product’s hazards. |
| 4. Precautionary Statements | Recommended measures to minimize or prevent adverse effects resulting from exposure. |
| 5. Supplier Identification | Name, address, and telephone number of the manufacturer or supplier. |
| 6. Pictograms | Graphical symbols conveying specific hazard information. |

Appendix D: SDS Description

SDS provides information on the product's hazards, safety precautions, and what to do in case of an emergency. To minimize the risk of chemical exposure to employees, it is important to review the SDS and know safe handling procedures prior to working with a chemical.

An explanation of each section of SDS is as follows:

Section 1: Identification

- a) Product identifier used on the label;
- b) Other means of identification;
- c) Recommended use of the chemical and restrictions on use;
- d) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party;
- e) Emergency phone number.

Section 2: Hazard(s) identification

- a) Classification of the chemical in accordance with paragraph (d) of §1910.1200;
- b) Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of §1910.1200. (Hazard symbols may be provided as graphical reproductions in black and white or the name of the symbol, e.g., flame, skull and crossbones);
- c) Describe any hazards not otherwise classified that have been identified during the classification process;
- d) Where an ingredient with unknown acute toxicity is used in a mixture at a concentration = 1% and the mixture is not classified based on testing of the mixture as a whole, a statement that X% of the mixture consists of ingredient(s) of unknown acute toxicity is required.

Section 3: Composition/ information on ingredients

Except as provided for in paragraph (i) of §1910.1200 on trade secrets:

For Substances

- a) Chemical name;
- b) Common name and synonyms;
- c) CAS number and other unique identifiers;
- d) Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance.

For Mixtures

In addition to the information required for substances:

- a) The chemical name and concentration (exact percentage) or concentration ranges of all ingredients which are classified as health hazards in accordance with paragraph (d) of §1910.1200 and
 - 1) are present above their cut-off/concentration limits; or
 - 2) present a health risk below the cut-off/concentration limits.
- b) The concentration (exact percentage) shall be specified unless a trade secret claim is made in accordance with paragraph (i) of §1910.1200, when there is batch-to-batch variability in the production of a mixture, or for a group of substantially similar mixtures (See A.0.5.1.2) with similar chemical composition. In these cases, concentration ranges may be used.

For All Chemicals Where a Trade Secret is Claimed

Where a trade secret is claimed in accordance with paragraph (i) of §1910.1200, a statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required.

Section 4: First-aid Measures

- a) Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion;
- b) Most important symptoms/effects, acute and delayed.
- c) Indication of immediate medical attention and special treatment needed, if necessary.

Section 5: Fire-fighting measures

- a) Suitable (and unsuitable) extinguishing media.
- b) Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products).
- c) Special protective equipment and precautions for fire-fighters.

Section 6: Accidental release measures

- a) Personal precautions, protective equipment, and emergency procedures.
- b) Methods and materials for containment and cleaning up.

Section 7: Handling and storage

- a) Precautions for safe handling.
- b) Conditions for safe storage, including any incompatibilities.

Section 8: Exposure controls/personal protection

- a) OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.
- b) Appropriate engineering controls.
- c) Individual protection measures, such as personal protective equipment.

Section 9: Physical and chemical properties

- a) Appearance (physical state, color, etc.);
- b) Odor;
- c) Odor threshold;
- d) pH;
- e) Melting point/freezing point;
- f) Initial boiling point and boiling range;
- g) Flash point;
- h) Evaporation rate;
- i) Flammability (solid, gas);
- j) Upper/lower flammability or explosive limits;
- k) Vapor pressure;
- l) Vapor density;
- m) Relative density;
- n) Solubility(ies);
- o) Partition coefficient: n-octanol/water;
- p) Auto-ignition temperature;
- q) Decomposition temperature;
- r) Viscosity.

Section 10: Stability and reactivity

- a) Reactivity;
- b) Chemical stability;
- c) Possibility of hazardous reactions;
- d) Conditions to avoid (e.g., static discharge, shock, or vibration);
- e) Incompatible materials;
- f) Hazardous decomposition products.

Section 11: Toxicological information

- a) Description of the various toxicological (health) effects and the available data used to identify those effects, including:
- b) Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact);
- c) Symptoms related to the physical, chemical and toxicological characteristics;
- d) Delayed and immediate effects and also chronic effects from short- and long-term exposure;
- e) Numerical measures of toxicity (such as acute toxicity estimates).
- f) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition), or by OSHA.

Section 12: Ecological information (Non-mandatory)

- a) Ecotoxicity (aquatic and terrestrial, where available);
- b) Persistence and degradability;
- c) Bioaccumulative potential;
- d) Mobility in soil;
- e) Other adverse effects (such as hazardous to the ozone layer).

Section 13: Disposal considerations (Non-mandatory)

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging.

Section 14: Transport information (Non-mandatory)

- a) UN number;
- b) UN proper shipping name;
- c) Transport hazard class(es);
- d) Packing group, if applicable;
- e) Environmental hazards (e.g., Marine pollutant (Yes/No));
- f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code);
- g) 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.

Section 15: Regulatory information (Non-mandatory)

Safety, health and environmental regulations specific for the product in question.

Section 16: Other information, including date of preparation or last revision

The date of preparation of the SDS or the last change to it.

Appendix E: Glossary

Aerosols: any non-refillable receptacles made of metal, glass or plastics and containing a gas compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state. Aerosol includes aerosol dispensers.

Alloy: a metallic material, homogeneous on a macroscopic scale, consisting of two or more elements so combined that they cannot be readily separated by mechanical means. Alloys are considered to be mixtures for the purpose of classification under the GHS.

Aspiration: entry of a liquid or solid chemical product into a trachea and lower respiratory system directly through the oral or nasal cavity, or indirectly from vomiting.

ASTM: American Society of Testing and Materials

BCF: Bioconcentration Factor”

BOD/COD: Biochemical Oxygen Demand/ Chemical Oxygen Demand

CA: Competent Authority

Carcinogen: a chemical substance or a mixture of chemical substances which induce cancer or increase its incidence.

CAS: Chemical Abstract Service

CBI: Confidential Business Information

Chemical: used broadly to include substances, products, mixture, preparations, or any other terms that may be used by existing systems.

Chemical Identity: means any name that will uniquely identify a chemical. This can be a name that is in accordance with the nomenclature systems of the International Union of Pure and Applied Chemistry (IUPAC) or the chemical Abstracts Service (CAS) or a technical name.

Competent Authority: any national body(ies) or authority(ies) designed or otherwise recognized as such in connection with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Compressed Gas: a gas which when packaged under pressure is entirely gas at -50°C

Contact sensitizer: a substance that will induce an allergic response following skin contact. The definition for “contact sensitizer” is equivalent to “skin sensitizer”.

Criteria: technical definition of the physical, health and environmental hazards.

Critical temperature: the temperature above which a pure gas cannot be liquefied, regardless of the degree of compression.

Dissolved gas: a gas which when packaged under pressure is dissolved in a liquid phase solvent.

EC₅₀: the effective concentration of a substance that causes 50% of the maximum response.

EC Number or (ECN⁰): a reference number used by the European Communities to identify dangerous substances, in particular those registered under EINECS.

ECOSOC: Economic and Social Council of the United Nations

EINECS: European Inventory of Existing Commercial Chemical Substances

End Point: physical, health and environmental hazards

ErC₅₀: EC₅₀ in terms of reduction of growth rate

EU: European Union

Explosive Article: an article containing one or more explosive substances

Explosive substance: a solid or liquid substance (or mixture of substances) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances are included even when they do not emit gases.

Eye Irritation: the production of changes in the eye following the application of test substance to the front surface of the eye, which are fully reversible within 21 days of application.

Flammable aerosol: any gas compressed, liquefied or dissolved under pressure within a non-refillable container made of metal, glass, or plastic, with or without a liquid, paste or powder. The container is fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid or gaseous state.

Flammable gas: a gas having a flammable range with air at 20⁰C and standard pressure of 101.3 kPA.

Flammable liquid: a liquid having a flash point of not more than 93⁰C.

Flammable solid: a solid 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.

Flash Point: the lowest temperature (corrected to a standard pressure of 101.3 kPa) at which the application of an ignition source causes the vapor of a liquid to ignite under specified test conditions.

Gas: a substance or mixture which at 50°C has a vapor pressure greater than 300kPa; or is completely gaseous at 20°C and a standard pressure of 101.3 kPa.

GESAMP: joint Group of Experts on the Scientific Aspects of marine Environmental Protection of IMO/FAO/UNESCO/WMO/WHO/IAEA/UN/UNEP

GHS: Globally Harmonized System of Classification and Labeling of Chemicals

Hazard Category: means the division of criteria within each hazard class, e.g., oral acute toxicity includes five hazard categories and flammable liquid includes four hazard categories. These categories compare hazard severity within a hazard class and should not be taken as a comparison of hazard categories more generally.

Hazard class: nature of the physical, health and environmental hazard, e.g., flammable solid carcinogen, oral acute toxicity.

Hazard Not otherwise Classified (HNOC): an adverse or health effect identified through evaluation of scientific evidence during the classification process that does not meet the specified criteria for the physical and health classes (effect either falls below the cut-off value/concentration limit of the hazard class or is under a GHS hazard category that has not been adopted by OSHA).

Hazard Statement: a statement assigned to a hazard class and category that describes the nature of the hazards of a hazardous product, including where appropriate, the degree of hazard.

Hazardous chemical: any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified (HNOC).

Health Hazard: a chemical which is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard.

IARC: International Agency for Research on Cancer

ILO: International Labor Organization

IMO: International Maritime Organization

Immediate Use: the hazardous chemical will be under the control of and used only by the person who transfer it from the labeled container and only within the work shift in which it is transferred.

Initial Boiling Point: the temperature of a liquid at which its vapor pressure is equal to the standard pressure (101.3kPa), i.e., the first gas bubble appears.

IOMC: Inter-organization Program on the Sound Management of Chemicals

IPCS: International Program on Chemical Safety

ISO: International Standards Organization

IUPAC: International Union of Pure and Applied Chemistry. Label – an appropriate group of written, printed or graphic information elements concerning a hazardous product, selected as relevant to the target sector(s), that is affixed to, printed on, or attached to the immediate container of a hazardous product, or to the outside packaging of a hazardous product.

Label element: one type of information that has been harmonized for use in a label, e.g., pictogram, signal word.

LC 50 (50% lethal concentration): the concentration of a chemical in air or of a chemical in water which causes the death of 50% (one-half) of a group of test animals.

LD₅₀: the amount of chemical, given all at once, which causes the death of 50% (one-half) of a group of test animals.

L(E)C₅₀: LC₅₀ or EC₅₀

Liquefied gas: a gas which when packaged under pressure, is partially liquid at temperatures above -50°C. A distinction is made between:

- i. high pressure liquefied gas: a gas with a critical temperature between -50°C and +65°C; and
- ii. low pressure liquefied gas: a gas with a critical temperature above +65°C.

Liquid : a substance or mixture that is not a gas and which has a melting point or initial melting point of 20°C or less at standard pressure of 101.3 kPa.

MARPOL: International Convention for the Prevention of Pollution from Ships

Mixture: solutions composed of two or more substances in which they do not react.

Mutagen: an agent that increase the occurrence of mutations in populations of cells and/or organisms.

Mutation: a permanent change in the amount or structure of the genetic material in a cell.

NGO: non-governmental organization

NOEC: no observed effect concentration

OECD: Organization for Economic Cooperation and Development

Organic peroxide: an organic liquid or solid which contains 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. This also includes organic peroxide formulations (mixtures).

Oxidizing gas: any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does.

Oxidizing liquid: a liquid which, while in itself is not necessarily combustible, may, generally by yielding oxygen, cause or contributes to the combustion of another material.

Oxidizing solid: a solid which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause or contributes to the combustion of another material.

QSAR: quantitative structure-activity relationship

Physical Hazard: a chemical that is classified as posing one of the following hazardous effects: explosive, flammable, oxidizer, self- reactive, pyrophoric, self-heating, organic peroxide, corrosive to metal, gas under pressure or in contact with water emits flammable gas.

Pictogram: a graphical composition that may include a symbol plus other graphic elements, such as a border, background pattern or color that is intended to convey specific information.

Precautionary statement: a phrase (and/or pictogram) that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous product, or improper storage or handling of a hazardous product.

Product identifier: a name or number for a hazardous product on a label or in the SDS. It provides a unique means by which the product user can identify the substance or mixture within the particular use setting (e.g. transport, consumer or workplace)

Pyrophoric liquid: a liquid which, even in small quantities, is liable to ignite within five (5) minutes after coming into contact with air.

Pyrophoric solid: a solid which, even in small quantities, is liable to ignite within five (5) minutes after coming into contact with air.

Pyrotechnic article: an article containing one or more pyrotechnic substances.

Pyrotechnic substance: a substance or mixture of substances designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative, self-sustaining exothermic (heat-related) chemical reactions.

Readily combustible solid: powdered, granular, or pasty substance or mixture which is dangerous if it can be easily ignited by brief contact with an ignition source, such as a burning match, and if the flame spreads rapidly.

Refrigerated liquefied gas: a gas which when packaged is made partially liquid because of its low temperature.

Respiratory sensitizer: a substance that induces hypersensitivity of the airways following inhalation of the substance.

Reproductive Toxicity: adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in offspring.

SAR: Structure Activity Relationship

SDS: Safety Data Sheet, and in this document is used interchangeably with Material Safety Data Sheet (MSDS).

Self-accelerating Decomposition Temperature (SADT): the lowest temperature at which self-accelerating decomposition may occur with substances as packaged.

Self-heating substances: a solid or liquid, other than a pyrophoric substance, which by reaction with air and without energy supply, is liable to self-heat.

Self-Reactive Substance: a substance that is thermally unstable liquid or solid that is liable to undergo a strongly exothermic thermal decomposition even without the presence of oxygen (air). This excludes materials classified under the GHS as explosive, organic peroxides or as oxidizing.

Signal Word: a word to indicate the relative severity of hazard and alert the reader to potential hazard on the label. "Danger" is used for more severe hazards, while "warning" is used for less severe.

Skin sensitizer: a substance that will induce an allergic response following skin contact. The definition of "skin sensitizer" is equivalent to "contact sensitizer".

Solid: a substance or mixture that does not meet the definitions of a liquid or gas.

Substance: chemical element and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.

Technical Name: a name that is generally used in commerce, regulations and coded to identify a substance or mixture, other than the IUPAC or CAS name, and that is recognized by the scientific community. Examples of technical names include those used for complex mixtures (e.g., petroleum fractions or natural products), pesticides, dyes and minerals.

Work Area: a room or defined space in a workplace where hazardous chemicals are produced or used and where employees are present.

Workplace: an establishment, job site, or project, at one geographical location containing one or more work areas.

Appendix F: HazCom Information and Training

Communicating the chemical hazards and safety precautions to employees and students include both providing appropriate information and conducting effective training. Both must be done upon initial assignment, and whenever a new chemical hazard, on which employees and students have not previously been trained, is introduced into the work/instructional area.

Information and training can cover either classes of hazards (e.g., flammability, carcinogenicity) or specific chemicals. However, chemical-specific information must always be available through labels and SDSs.

Information

Provide information to employees and students on:

1. The requirements of this section;
2. Any operations in the work/instructional area where hazardous chemicals are present; and,
3. The location and availability of the written HazCom program, including the required Chemical Inventory and SDSs.

Training

At least the following topics must be addressed:

1. Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work/instructional area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);
2. The physical, health, simple asphyxiation, combustible dust, and pyrophoric gas hazards, as well as hazards not otherwise classified, of the chemicals in the work/instructional area;
3. The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,
4. The details of HCC's HazCom Program, including an explanation of the labels received on shipped containers and the labeling system used by HCC; and SDS, including how its information is used to prevent or minimize exposure. For employees, explain how SDSs can be obtained.
5. If appropriate, cover information on unlabeled pipes, non-routine works, and outside contractors as described in HCC's HazCom Program.

Appendix G: Training Documentation

Hazard Communication Training

Training conducted by: _____

Location: _____ Training Date: _____

Training Topics: (examples)

- Requirements of Hazard Communication Program
- Employee Rights
- Contents of SDS
- Elements of the Written Program
- Physical/Health Effects of Hazardous Substances
- Detection of Hazardous Substances
- How to Prevent Exposure

Name (Please print)	Department	Signature
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