

Hazard Communication Standard Program

Introduction

The purpose of this Hazard Communication Standard (HazCom) Program is to provide Kansas State University (KSU) employees with the necessary information to protect their health and well-being from chemical hazards. The KSU Department of Environmental Health and Safety (EHS) has developed this written HazCom Program detailing the methods used at KSU to provide necessary chemical hazard information to employees. These methods include an inventory of every hazardous chemical on campus, proper chemical labels, collections of Safety Data Sheets with Right-to-Know access, training, and this written document. These hazard communication methods will reduce injuries and illnesses resulting from exposure to hazardous chemicals.

All university laboratories should have a copy of this written program. It can be found on the web page:

www.k-state.edu/safety/occupational/

Hazard Communication Standard

The Occupational Safety and Health Administration (OSHA) released an updated Hazard Communication Standard (HCS) in 2012 which aligned the document with the United Nations' Globally Harmonized System of Classification and Labeling of Chemicals (GHS). GHS is a standardized international format of communicating chemical hazard information intended to improve the quality and consistency of such information. The GHS system includes requirements for chemical labels, pictograms, and Safety Data Sheets.

This written HazCom Program complies with OSHA's HCS 29 CFR 1910.1200 and is to be enforced throughout the university.

OSHA defines a hazardous chemical or chemical product as one that poses a physical and/or health hazard to the user. Typical hazards include:

- a. Physical: compressed gases, explosives, flammables, oxidizers
- b. Health: carcinogens, poisons, irritants

Thousands of chemicals are used daily throughout the campus and new ones are routinely introduced into the work environment. This program applies to all chemicals or chemical products that are known to be present in the workplace and which employees may be exposed under normal use conditions or in a foreseeable emergency. The chemicals covered by this program include but are not limited to laboratory chemicals, cleaning agents, floor strippers and waxes, maintenance solvents and oils, compressed gas, printing inks and solvents and paint.

This standard does not apply to:

- a. Food, drugs, cosmetics, tobacco or tobacco products, or alcoholic beverages packaged for sale to consumers or intended for personal consumption by employees in the workplace.



- b. Any consumer product or hazardous substance where it can be demonstrated that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than consumer exposure.
- c. Any drug as defined by the Federal Food, Drug, and Cosmetic Act that is used in its final form for administration to the patient such as a dispensing pharmacy or hospital.
- 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. Hazardous waste.
- f. Nuisance particulates where the chemical manufacturer or importer can establish that they do not pose any physical or health hazard covered under this section.
- g. Ionizing and non-ionizing radiation.
- h. Biological hazards.

The HazCom Program is distinct from the University's Chemical Hygiene Plan (CHP). The CHP is primarily to inform the safe use of chemicals in the workplace, and so contains standard operating procedures, criteria for selecting safety controls, and measures to maintain safety controls present in the laboratory. The purpose of the HazCom Program is to ensure effective communication about the chemical/physical hazards in the workplace, and so has requirements for container labels, Safety Data Sheets, training, and inventory control. The two programs work hand in hand.

Responsibilities

EHS

Environmental Health and Safety shall have overall responsibility to manage the HazCom Program.

- a. Design and maintain university HazCom Program
- b. Design safety training programs
- c. Conduct safety training programs that are not site-specific
- d. Conduct site or topic specific trainings, as requested or required
- e. Maintain laboratory safety training records
- f. Assist PIs and laboratory workers with compliance with all aspects of this Plan
- g. Maintain a central chemical inventory

Dean

The Dean of each college is responsible for appointing a College Environmental Health & Safety Committee and to ensure that personnel adhere to current safety standards. This includes ensuring corrective actions are taken when concerns are identified.



Department Head

Each university department is responsible for evaluating areas under its administrative control and determining whether hazardous chemicals are present. If so, a Safety Coordinator must be appointed to liaison with EHS. Department Heads also have a role in ensuring personnel adhere to current safety standards and applying corrective actions when concerns are identified.

Safety Coordinator/Safety Committee

The Safety Coordinator shall serve as a liaison to assist EHS with tasks concerning chemical safety. This includes:

- a. Inspecting laboratories for chemical safety and appropriate documentation, including Chemical Hygiene Plan, Hazard Communication Plan, Emergency Plan, and training records
- b. Notifying EHS of chemical spills
- c. Ensure that the department's faculty members, students, managers, supervisors, and office workers implement the HCS Program in their work area
- d. Keep a copy of the department HCS training records.

For more information, see the Laboratory Safety Manual as many of the above items are beyond the scope of this HCP.

Faculty Members, Managers and Supervisors

Due to their specific knowledge of processes and procedures conducted in their areas, this group of personnel retains major responsibility for the success of the Hazard Communication Program. They are responsible for:

- a. The safety of personnel under their supervision
- b. Ensuring that SDSs for each chemical in the workplace are readily accessible to all employees at any time needed.
- c. Ensuring that each container of chemical material in their work area is properly labeled with its contents and appropriate hazard warnings.
- d. Maintaining an inventory of chemicals in the workplace using EHS Assistant.
- e. Conducting training programs for department employees who work with or near chemical materials.
- f. Cooperate fully with their safety coordinator and EHS.
- a. Minimize any potential exposure to employees by using appropriate work practices and informing employees of the potential hazards associated with the chemicals used in their laboratory.

Employees and Students

The success of the Hazard Communication Program ultimately lies in the hands of university employees. Personnel who work with chemicals need to be conscientious in their efforts to follow the guidelines presented in this program and to report the existence of health and safety hazards associated with chemical use to their supervisors and/or EHS. Employees are responsible for ensuring their own safety:

- a. Actively participate in training programs and comply with training provisions.

- b. Review SDSs and know the hazards of materials they use at work.
- c. Utilize measures that have been prescribed in order to ensure protection from exposure to hazardous materials.
- d. Employees are to be informed that failure to comply with established safety standards and procedures may subject them to disciplinary action, up to and including discharge.

Program Requirements

Every laboratory must maintain a comprehensive HazCom Program that includes provisions for container labeling, collection and availability of safety data sheets, chemical inventory, and an employee training program. It also must contain the means the employer will use to inform employees of the hazards of non-routine tasks and the hazards associated with chemicals in unlabeled pipes.

Chemical Control

Each laboratory will maintain an inventory of all hazardous chemicals. The inventory should include a list of the chemicals, their storage location (building and room #), the approximate amount, and the owner.

The chemical inventory must be maintained online through “Environmental Health and Safety Assistant” (EHS Assistant) found at www.k-state.edu/safety.

Training for EHS Assistant is available via this website.

Labeling and Warnings

Labels are an all-important, first visible clue to the relative dangers and risks of the chemical. All chemical containers must include a label. Labels must be legible, written in English, and prominently displayed. Other languages may be added to the label if desired. Employees are responsible for ensuring that labels are never defaced or removed, whether they are manufacturer labels or workplace labels.

Hazardous chemicals come from manufacturers with labels containing six required fields. These fields are intended to communicate the identity of the chemical and necessary hazard information. The fields include:

1. Chemical identifier in English
2. Signal word
3. Hazard statements
4. GHS pictograms
5. Precautionary statements
6. Company contact information

HYDROCHLORIC ACID 1

Danger 2

Corrosive to metals 3

Causes severe skin burns and eye damage

May cause respiratory irritation

Do not breathe dust/fume/gas/mist/vapours/spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves/protective clothing/eye protection/face protection.

IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. 5

IF exposed or if you feel unwell:
Call a POISON CENTER or doctor/physician.
Immediately call a POISON CENTER or doctor/physician.
Specific treatment (see supplemental first aid instructions on this label).
Wash contaminated clothing before reuse.
Store locked up.
Dispose of contents/container to an approved waste disposal plant.

XYZ Chemical Manufacturer, 500 Somewhere Lane, City, State, Country
Telephone Number 6

Figure 1 - Example Manufacturer Label



Workplace labels must include hazard information in addition to the full chemical name in English. Departments have the option to create their own workplace labels. They can either provide all of the required information that is on the label from the chemical manufacturer or, the product identifier and words, pictures, symbols or a combination thereof, which in combination with other information immediately available to employees, provide specific information regarding the hazards of the chemicals. Detailed labelling requirements are listed below:

- a. Chemical labels must include the full chemical name, not abbreviations or chemical formulas.
- b. If existing labels already convey the necessary information, new labels need not be added.
- c. If hazardous chemicals are transferred from a labeled container to a secondary (transfer) container that is only intended for immediate use by the employee who performs the transfer, no labels are required for the portable container. However, the secondary container must remain in the employee's possession until it no longer contains the hazardous chemical.
- d. If the Department chooses to use the pictograms (see Figure 1) on the workplace (or in-plant) labels, these pictograms may have a black border, rather than a red border.
- e. Any hazardous chemicals *leaving the workplace* or received from chemical manufacturers, importers, or distributors must be labeled, tagged or marked with the following information: product identifier; signal word; hazard statement(s); precautionary statement(s); and pictogram(s); and name, address and telephone number of the chemical manufacturer, importer, or other responsible party.

<p>Health Hazard</p>  <ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	<p>Flame</p>  <ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides 	<p>Exclamation Mark</p>  <ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
<p>Gas Cylinder</p>  <ul style="list-style-type: none"> • Gases Under Pressure 	<p>Corrosion</p>  <ul style="list-style-type: none"> • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals 	<p>Exploding Bomb</p>  <ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides
<p>Flame Over Circle</p>  <ul style="list-style-type: none"> • Oxidizers 	<p>Environment (Non-Mandatory)</p>  <ul style="list-style-type: none"> • Aquatic Toxicity 	<p>Skull and Crossbones</p>  <ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)

Figure 2: Pictograms and Hazards

Every effort must be made to use up the old chemicals prior to ordering new supplies. Manufacturers supplied labels on old bottles do not need to be upgraded to the new OSHA Standard. Old chemicals may be discarded at any time through the hazardous waste disposal process. See www.k-state.edu/safety for more information.

Safety Data Sheets

Safety Data Sheets (SDS) are a printed description of the chemicals used in the workplace. These sheets provide the employer and employees with the necessary information to use the chemicals safely and how to deal with chemical accidents.

Manufacturers and importers of chemicals must provide SDS's to distributors, retailers, and buyers. If the department does not receive the required SDS, the Department Safety Coordinator must request the SDS from the manufacturer.



Any department that manufactures or provides a chemical product must prepare and make available an SDS for that product. Storerooms, such as the Chemistry Storeroom, Biology Storeroom, and Facilities Storeroom that sell chemicals to the campus must provide SDS's for the chemicals sold.

A collection of SDS for each chemical present in the workplace must be maintained. This collection of SDS may be printed in a notebook or stored digitally provided there are no barriers to employee access to the information. Laboratories are encouraged to use digital copies of SDS as a supplement. If the same chemical is purchased from multiple manufacturers, there must be an SDS for that chemical from each manufacturer in the SDS collection. The SDS should be the most current version for the product in use or in storage.

Workers should review an SDS prior to working with a chemical. SDSs should also be readily available for quick response to spills, medical emergencies, and other situations involving the chemical.

Each SDS contains the following information which should be reviewed by employees:

1. Product identification

This section identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier. The required information consists of:

- a. Product identifier used on the label and any other common names or synonyms by which the substance is known.
- b. Name, address, phone number of the manufacturer, importer, or other responsible party, and emergency phone number.
- c. Recommended use of the chemical (e.g., a brief description of what it actually does, such as flame retardant) and any restrictions on use (including recommendations given by the supplier).

2. Hazard identification

This section identifies the hazards of the chemical presented on the SDS and the appropriate warning information associated with those hazards. The required information consists of:

- a. The hazard classification of the chemical (e.g., flammable liquid, category¹).
- b. Signal word.
- c. Hazard statement(s).
- d. Pictograms (the pictograms or hazard symbols may be presented as graphical reproductions of the symbols in black and white or be a description of the name of the symbol (e.g., skull and crossbones, flame).
- e. Precautionary statement(s).
- f. Description of any hazards not otherwise classified.
- g. For a mixture that contains an ingredient(s) with unknown toxicity, a statement describing how much (percentage) of the mixture consists of ingredient(s) with unknown acute toxicity. Please note that this is a total percentage of the mixture and not tied to the individual ingredient(s).

3. Chemical composition

This section identifies the ingredient(s) contained in the product indicated on the SDS, including



impurities and stabilizing additives. This section includes information on substances, mixtures, and all chemicals where a trade secret is claimed. The required information consists of:

- a. Chemical name with common name and synonyms and CAS #
- b. Impurities and stabilizing additives, which are themselves classified and which contribute to the classification of the chemical.
- c. The concentration (i.e., exact percentage) of all ingredients which are classified as health hazards and are:
 - i. Present above their cut-off/concentration limits or
 - ii. Present a health risk below the cut-off/concentration limits.
- d. The concentration (exact percentages) of each ingredient must be specified except concentration ranges may be used in the following situations:
 - i. A trade secret claim is made,
 - ii. There is batch-to-batch variation, or
 - iii. The SDS is used for a group of substantially similar mixtures.
 - iv. A statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required.

4. *First-aid measures*

This section describes the initial care that should be given by untrained responders to an individual who has been exposed to the chemical. The required information consists of:

- a. Necessary first-aid instructions by relevant routes of exposure (inhalation, skin and eye contact, and ingestion).
- b. Description of the most important symptoms or effects, and any symptoms that are acute or delayed.
- c. Recommendations for immediate medical care and special treatment needed, when necessary.

5. *Fire-fighting measures*

This section provides recommendations for fighting a fire caused by the chemical. The required information consists of:

- a. Recommendations of suitable extinguishing equipment, and information about extinguishing equipment that is not appropriate for a particular situation.
- b. Advice on specific hazards that develop from the chemical during the fire, such as any hazardous combustion products created when the chemical burns.
- c. Recommendations on special protective equipment or precautions for firefighters.

6. *Accidental release measures*

This section provides recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties, or the environment. It may also include recommendations distinguishing between responses for large and small spills where the spill volume has a significant impact on the hazard. The required information may



consist of recommendations for:

- a. Use of personal precautions (such as removal of ignition sources or providing sufficient ventilation) and protective equipment to prevent the contamination of skin, eyes, and clothing.
- b. Emergency procedures, including instructions for evacuations, consulting experts when needed, and appropriate protective clothing.
- c. Methods and materials used for containment (e.g., covering the drains and capping procedures).
- d. Cleanup procedures (e.g., appropriate techniques for neutralization, decontamination, cleaning or vacuuming; adsorbent materials; and/or equipment required for containment/clean up)

7. *Handling and storage*

This section provides guidance on the safe handling practices and conditions for safe storage of chemicals. The required information consists of:

- a. Precautions for safe handling, including recommendations for handling incompatible chemicals, minimizing the release of the chemical into the environment, and providing advice on general hygiene practices (e.g., eating, drinking, and smoking in work areas is prohibited).
- b. Recommendations on the conditions for safe storage, including any incompatibilities. Provide advice on specific storage requirements (e.g., ventilation requirements)

8. *Exposure controls and Personal Protective Equipment*

This section indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure. The required information consists of:

- a. OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), 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 (e.g., use local exhaust ventilation, or use only in an enclosed system).
- c. Recommendations for personal protective measures to prevent illness or injury from exposure to chemicals, such as personal protective equipment (PPE) (e.g., appropriate types of eye, face, skin or respiratory protection needed based on hazards and potential exposure).
- d. Any special requirements for PPE, protective clothing or respirators (e.g., type of glove material, such as PVC or nitrile rubber gloves; and breakthrough time of the glove material).

9. *Physical and chemical properties*

This section identifies physical and chemical properties associated with the substance or mixture. The minimum required information consists of:

- a. Appearance (physical state, color, etc.);
- b. Upper/lower flammability or explosive limits;
- c. Odor;
- d. Vapor pressure;



- e. Odor threshold;
- f. Vapor density;
- g. pH;
- h. Relative density;
- i. Melting point/freezing point;
- j. Solubility(ies);
- k. Initial boiling point and boiling range;
- l. Flash point;
- m. Evaporation rate;
- n. Flammability (solid, gas);
- o. Partition coefficient: n-octanol/water;
- p. Auto-ignition temperature;
- q. Decomposition temperature; and
- r. Viscosity.

The SDS may not contain every item on the above list because information may not be relevant or is not available. When this occurs, a notation to that effect must be made for that chemical property. Manufacturers may also add other relevant properties, such as the dust deflagration index (Kst) for combustible dust, used to evaluate a dust's explosive potential.

10. Stability and reactivity

This section describes the reactivity hazards of the chemical and the chemical stability information. This section is broken into three parts: reactivity, chemical stability, and other. The required information consists of:

- a. Description of the specific test data for the chemical(s). This data can be for a class or family of the chemical if such data adequately represent the anticipated hazard of the chemical(s), where available.
- b. Indication of whether the chemical is stable or unstable under normal ambient temperature and conditions while in storage and being handled.
- c. Description of any stabilizers that may be needed to maintain chemical stability.
- d. Indication of any safety issues that may arise should the product change in physical appearance.
- e. Indication of the possibility of hazardous reactions, including a statement whether the chemical will react or polymerize, which could release excess pressure or heat, or create other hazardous conditions. Also, a description of the conditions under which hazardous reactions may occur.
- f. List of all conditions that should be avoided (e.g., static discharge, shock, vibrations, or environmental conditions that may lead to hazardous conditions).
- g. List of all classes of incompatible materials (e.g., classes of chemicals or specific substances) with which the chemical could react to produce a hazardous situation.



- h. List of any known or anticipated hazardous decomposition products that could be produced because of use, storage, or heating. (Hazardous combustion products should also be included in Section 5 (Fire-Fighting Measures) of the SDS.)

11. Toxicological information

This section identifies toxicological and health effects information or indicates that such data are not available. The required information consists of:

- a. Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact). The SDS should indicate if the information is unknown.
- b. Description of the delayed, immediate, or chronic effects from short- and long-term exposure.
- c. The numerical measures of toxicity (e.g., acute toxicity estimates such as the LD50 (median lethal dose)) - the estimated amount [of a substance] expected to kill 50% of test animals in a single dose.
- d. Description of the symptoms. This description includes the symptoms associated with exposure to the chemical including symptoms from the lowest to the most severe exposure.
- e. Indication of whether the 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 editions) or found to be a potential carcinogen by OSHA

12. Ecological information

This section provides information to evaluate the environmental impact of the chemical(s) if it were released to the environment. The information may include:

- a. Data from toxicity tests performed on aquatic and/or terrestrial organisms, where available (e.g., acute or chronic aquatic toxicity data for fish, algae, crustaceans, and other plants; toxicity data on birds, bees, plants).
- b. Whether there is a potential for the chemical to persist and degrade in the environment either through biodegradation or other processes, such as oxidation or hydrolysis.
- c. Results of tests of bioaccumulation potential, making reference to the octanol-water partition coefficient (K_{ow}) and the bioconcentration factor (BCF), where available.
- d. The potential for a substance to move from the soil to the groundwater (indicate results from adsorption studies or leaching studies).
- e. Other adverse effects (e.g., environmental fate, ozone layer depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and/or global warming potential).

13. Disposal considerations

This section provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. To minimize exposure, this section should also refer the reader to Section 8 (Exposure Controls/Personal Protection) of the SDS. The information may include:

- a. Description of appropriate disposal containers to use.
- b. Recommendations of appropriate disposal methods to employ.



- c. Description of the physical and chemical properties that may affect disposal activities.
- d. Language discouraging sewage disposal.
- e. Any special precautions for landfills or incineration activities

14. Transport information

This section provides guidance on classification information for shipping and transporting of hazardous chemical(s) by road, air, rail, or sea. The information may include:

- a. UN number (i.e., four-figure identification number of the substance) 1.
- b. UN proper shipping name¹.
- c. Transport hazard class.
- d. Packing group number, if applicable, based on the degree of hazard².
- e. Environmental hazards (e.g., identify if it is a marine pollutant according to the International Maritime Dangerous Goods Code (IMDG Code)).
- f. Guidance on transport in bulk (according to Annex II of MARPOL 73/783 and the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code (IBC Code))).
- g. Any special precautions which an employee should be aware of or needs to comply with, in connection with transport or conveyance either within or outside their premises (indicate when information is not available).

15. Regulatory information

This section identifies the safety, health, and environmental regulations specific for the product that is not indicated anywhere else on the SDS. The information may include:

- a. Any national and/or regional regulatory information of the chemical or mixtures (including any OSHA, Department of Transportation, Environmental Protection Agency, or Consumer Product Safety Commission regulations)

16. Other information

This section indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. You may wish to contact the supplier for an explanation of the changes. Other useful information also may be included here.

Employee Information & Training

EHS offers Hazard Communication training to all University employees. HazCom training is available online at www.k-state.edu/safety/training. EHS will also provide introductory information to all new employees hired by KSU.

The Department Safety Coordinator or P.I. will provide employees with information and training on HazCom at the time of their initial assignment, and whenever a new chemical is introduced.

Employee training shall include:

- a. Methods and observations to detect the presence or release of a hazardous chemical in the workplace.



- b. The physical and health hazards of the chemicals in the workplace.
- c. The measures employees can take to protect themselves from the chemical hazards.
- d. The details of the HazCom Program including how employees can obtain, read, and understand the SDS's.

Every effort must be taken by the Department Safety Coordinator or P.I. to train employees who cannot read English.

Each laboratory must keep records of each employee's training.



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