

# HAZARD COMMUNICATION

## I. Policy Statement:

To assure compliance with 29CFR1910.1200, Hazard Communication (OSHA) which requires employers to evaluate the potential hazards of chemicals, and to communicate information concerning chemical hazards and appropriate protective methods to employees and contractors.

## II. General

### A. Responsibilities

- Risk Manger: Designated as the Hazard Communication Program Manager, responsible for the direction, implementation and oversight of the Hazard Communication Program.
- Department Heads: Designation of a HAZCOM Coordinator at each facility or location where chemicals are received, stored, transported, transferred, handled, or used. Responsible for maintaining an accurate Chemical Inventory, Material Safety Data Sheets, maintenance of HAZCOM related equipment such as personal protective equipment, and specific chemical/hazard training of employees and contractors.
- HAZCOM Coordinator: Responsible for one or more facilities or locations where chemical hazards are present. Maintains a chemical inventory for facilities and locations, and updates the inventory at least monthly. Receives, maintains, and updates Material Safety Data Sheets for each chemical. MSDSs are updated at least monthly. Assures that containers are properly labeled. Manages the disposal of waste materials.
- Supervisors: Training of employees on specific chemicals, physical and health hazards, protective measures, personal protective equipment, accident and spill procedures.
- Employees: Know the location of the Hazard Communication Program, Hazard Communication Standard, Chemical Inventory and MSDSs in the workplace. Read and understand MSDSs for each chemical before use. Maintain HAZCOM equipment and personal protective equipment in good condition. Understand and follow requirements for container labeling, waste generation and disposal, and accident and spill procedures.

## **B. Definitions**

- "Article" means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.
- "Assistant Secretary" means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.
- "Carcinogen:" A chemical is considered to be a carcinogen if:
  - (a) It has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen; or
  - (b) It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or,
  - (c) It is regulated by OSHA as a carcinogen.
- "Chemical" means any element, chemical compound or mixture of elements and/or compounds.
- "Chemical manufacturer" means an employer with a workplace where chemical(s) are produced for use or distribution.
- "Chemical name" means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.
- "Combustible liquid" means any liquid having a flashpoint at or above 100 deg. F (37.8 deg. C), but below 200 deg. F (93.3 deg. C), except any mixture having components with flashpoints of 200 deg. F (93.3 deg. C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

- "Commercial account" means an arrangement whereby a retail distributor sells hazardous chemicals to an employer, generally in large quantities over time and/or at costs that are below the regular retail price.
- "Common name" means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.
- "Compressed gas" means:
  - (i) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70 deg. F (21.1 deg. C); or
  - (ii) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130 deg. F (54.4 deg. C) regardless of the pressure at 70 deg. F (21.1 deg. C); or
  - (iii) A liquid having a vapor pressure exceeding 40 psi at 100 deg. F (37.8 deg. C) as determined by ASTM D-323-72.
- "Container" means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.
- "Corrosive:" A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in appendix A to 49 CFR part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term shall not refer to action on inanimate surfaces.
- "Designated representative" means any individual or organization to whom an employee gives written authorization to exercise such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

- "Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.
- "Distributor" means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.
- "Employee" means a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.
- "Employer" means a person engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.
- "Explosive" means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.
- "Exposure or exposed" means that an employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. "Subjected" in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption.)
- "Flammable" means a chemical that falls into one of the following categories:
  - (i) "Aerosol, flammable" means an aerosol that, when tested by the method described in 16 CFR1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;
  - (ii) "Gas, flammable" means:
    - (A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or

(B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit;

(iii) "Liquid, flammable" means any liquid having a flashpoint below 100 deg. F (37.8 deg. C), except any mixture having components with flashpoints of 100 deg. F (37.8 deg. C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

(iv) "Solid, flammable" means a solid, other than a blasting agent or explosive as defined in 1910.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

- "Flashpoint" means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(i) Tagliabue Closed Tester (See American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-1979 (ASTM D 56-79)) for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100 deg. F (37.8 deg. C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or

(ii) Pensky-Martens Closed Tester (see American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1979 (ASTM D 93-79)) for liquids with a viscosity equal to or greater than 45 SUS at 100 deg. F (37.8 deg. C), or that contain suspended solids, or that have a tendency to form a surface film under test; or

(iii) Setaflash Closed Tester (see American National Standard Method of Test for Flash Point by Setaflash Closed Tester (ASTM D 3278-78)).

Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above.

- "Foreseeable emergency" means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.
- "Hazardous chemical" means any chemical which is a physical hazard or a health hazard.
- "Hazard warning" means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the specific physical and health hazard(s), including target organ effects, of the chemical(s) in the container(s). (See the definitions for "physical hazard" and "health hazard" to determine the hazards which must be covered.)
- "Health hazard" means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.
- "Highly toxic:" A chemical falling within any of the following categories:
  - (a) A chemical that has a median lethal dose (LD(50)) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
  - (b) A chemical that has a median lethal dose (LD(50)) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.
  - (c) A chemical that has a median lethal concentration (LC(50)) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if

death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

- "Identity" means any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.
- "Immediate use" means that the hazardous 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.
- "Importer" means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or employers within the United States.
- "Irritant:" A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for four hours exposure or by other appropriate techniques, it results in an empirical score of five or more. A chemical is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques."Label" means any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.
- "Material safety data sheet (MSDS)" means written or printed material concerning a hazardous chemical which is prepared in accordance with paragraph (g) of this section.
- "Mixture" means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.
- "Organic peroxide" means an organic compound that contains the bivalent -O-O-structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

- "Oxidizer" means a chemical other than a blasting agent or explosive as defined in 1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.
- "Physical hazard" means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.
- "Produce" means to manufacture, process, formulate, blend, extract, generate, emit, or repackage.
- "Pyrophoric" means a chemical that will ignite spontaneously in air at a temperature of 130 deg. F (54.4 deg. C) or below.
- "Responsible party" means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.
- "Sensitizer:" A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.
- "Specific chemical identity" means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.
- "Target organ effects."

The following is a target organ categorization of effects which may occur, including examples of signs and symptoms and chemicals which have been found to cause such effects. These examples are presented to illustrate the range and diversity of effects and hazards found in the workplace, and the broad scope employers must consider in this area, but are not intended to be all-inclusive.

- a. Hepatotoxins: Chemicals which produce liver damage  
Signs & Symptoms: Jaundice; liver enlargement  
Chemicals: Carbon tetrachloride; nitrosamines
- b. Nephrotoxins: Chemicals which produce kidney damage  
Signs & Symptoms: Edema; proteinuria  
Chemicals: Halogenated hydrocarbons; uranium

- c. Neurotoxins: Chemicals which produce their primary toxic effects on the nervous system.  
Signs & Symptoms: Narcosis; behavioral changes; decrease in motor functions  
Chemicals: Mercury; carbon disulfide
  - d. Agents which act on the blood or hemato-poietic system:  
Decrease  
hemoglobin function; deprive the body tissues of oxygen  
Signs & Symptoms: Cyanosis; loss of consciousness  
Chemicals: Carbon monoxide; cyanides
  - e. Agents which damage the lung: Chemicals which irritate or damage  
pulmonary tissue  
Signs & Symptoms: Cough; tightness in chest; shortness of breath  
Chemicals: Silica; asbestos
  - f. Reproductive toxins: Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects  
on fetuses (teratogenesis)  
Signs & Symptoms: Birth defects; sterility  
Chemicals: Lead; DBCP
  - g. Cutaneous hazards: Chemicals which affect the dermal layer of the body  
Signs & Symptoms: Defatting of the skin; rashes; irritation  
Chemicals: Ketones; chlorinated compounds
  - h. Eye hazards: Chemicals which affect the eye or visual capacity  
Signs & Symptoms: Conjunctivitis; corneal damage  
Chemicals: Organic solvents; acids
- "Toxic." A chemical falling within any of the following categories:
    - (a) A chemical that has a median lethal dose (LD(50)) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
    - (b) A chemical that has a median lethal dose (LD(50)) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

(c) A chemical that has a median lethal concentration (LC(50)) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

- "Trade secret" means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Appendix D sets out the criteria to be used in evaluating trade secrets.
- "Unstable (reactive)" means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.
- "Use" means to package, handle, react, emit, extract, generate as a byproduct, or transfer.
- "Water-reactive" means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.
- "Work area" means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.
- "Workplace" means an establishment, job site, or project, at one geographical location containing one or more work areas.

### **III. Written Hazard Communication Program**

- This document will serve as the City of Flagstaff written Hazard Communication Program. This document, along with the Hazard Communication Poster, Hazard Communication Standard, Chemical Inventory, and MSDSs will be available for all employees, contractors, and visitors for review. It should be placed in a conspicuous location.

#### **A. Chemical Inventory**

- As part of the City of Flagstaff Hazard Communication Program, each facility or location will maintain a list of hazardous chemicals, or Chemical Inventory. The Chemical Inventory will be maintained and updated by the HAZCOM Coordinator for that facility or location. The Chemical Inventory will be updated monthly.

## **B. Non-Routine Tasks**

- Employees may be required to perform non-routine tasks such as cleaning tanks or entering confined spaces. Supervisors will provide specialized training for these non-routine tasks. Supervisors will also develop and use a system of Hazard Assessments, Job Safety Analysis, and/or Standard Operating Procedures to inform and educate employees and others about chemical hazards of non-routine tasks.

## **C. Multi-Employer Workplaces**

- The facility or location HAZCOM Coordinator must be notified prior to a contractor's employees or other persons enter a City of Flagstaff facility or location.
- The HAZCOM Coordinator will review the type of work or activity of the contractor's employees or other persons prior to the visit. The HAZCOM Coordinator will determine what if any chemical hazards the contractor's employees or other persons could be exposed to and provide appropriate information and education to those employees prior to the beginning of the work or activity.
- The HAZCOM Coordinator will notify the contractor's employees or other persons of the location of the City of Flagstaff Hazard Communication Program, Chemical Inventory, MSDSs, and provide information on the City of Flagstaff labeling system.
- The City of Flagstaff Employee responsible for the contract with an outside contractor's employees or other persons and the HAZCOM Coordinator, will assure that contractor or provider is in compliance with 29CFR1910.1200, and that adequate information and hazard warnings, MSDSs of chemicals and materials are readily available.

## **D. Labels and Other Forms of Warning**

- Labeling. In most cases, manufacturer's original labels on new products coming into the City of Flagstaff will adequately meet the requirements of this standard. Employees who receive new products, will check to assure that original containers are adequately labeled. At minimum, labels must contain the Chemical Identity, Hazard Warnings, First Aid Instructions, Address and Telephone of the Manufacturer or Supplier, and the CAS Number. In the event labels are missing, illegible, or covered up, employees will have these options: 1. Refuse delivery of the chemical; 2. Obtain an original replacement label from the manufacturer; 3. Make a label that contains the required information.
- Secondary Container Labeling: Any containers used to transfer chemicals from their original containers must be labeled in order to adequately communicate the hazards to others. Secondary container labels must also include the Chemical Identity and Appropriate Hazard Warnings. The City of Flagstaff labels also incorporates the NFPA Hazardous Materials Identification System. The only exception to labeling of secondary containers would be where chemicals were for immediate use. Labeling for those containers should include markings that indicate the Chemical Identity so that MSDSs are easily referenced. Empty containers should also be marked as EMPTY.
- Labels on original containers should not be removed, defaced, or covered, unless they will be relabeled immediately with the required information.
- Additional information regarding labeling and hazard warnings may be obtained from Risk Management, Environmental Services, Flagstaff Fire Department, your HAZCOM Coordinator, or your supervisor.

#### **E. Material Safety Data Sheets**

- MSDSs will be ordered at the same time as chemical products are ordered. Those employees who receive chemical products must verify that the MSDS is either already on file, or a new MSDS accompanies the product at the time of receipt. If there is no MSDS with the product and no MSDS is already on file, the person receiving the product may: 1. Refuse the product from the supplier; or 2. Receive the product, order an MSDS directly from the manufacturer, and hold the product for final distribution until the MSDS arrives.

- Employees transferring chemicals in original containers from the warehouse or other point of origin to a facility or location will do so only with the MSDSs accompanying the chemical product.
- MSDSs will be kept at each City of Flagstaff facility or location along with the Hazard Communication Program, Hazard Communication Standard and Chemical Inventories.
- The MSDSs will be reviewed and updated as necessary at least annually by the HAZCOM Coordinator.

#### **F. Employee Information and Training**

- All City of Flagstaff employees will receive training as to the requirements of the Hazard Communication Standard, and an explanation of the labeling system. This information will be presented by Human Resources in a handout on or before the employee's initial assignment. The employee will sign and date a form acknowledging that they understand the basics of the City of Flagstaff Hazard Communication Program, and original will be maintained in the employee's 201 File.
- The HAZCOM Coordinator and/or Supervisor at the employee's work facility or location will provide site specific training to include: 1. Operations in the work area where hazardous chemicals are present; 2. The location and availability of the written Hazard Communication, Chemical Inventory, and MSDSs; 3. Methods and observations used to detect the presence or release of hazardous chemicals; 4. Appearance and odors of hazardous chemicals; 5. Physical and health hazards of chemicals in the work area; and 6. Measures to protect themselves from chemicals. The employee will sign and date a form indicating that they have received this training.
- Risk Management will provide additional training on the City of Flagstaff Hazard Communication Program with primary information on MSDSs, terminology, physical and health hazards of chemicals, basic personal protective equipment, first aid procedures, accident and spill control. This training will be documented on the employees electronic H.T.E. file.
- Employees will be trained by their supervisors on specific chemicals using the MSDSs prior to using any chemicals.
- Training will be provided at the time of initial assignment, on site, for specific chemicals and any time a new chemical is

introduced, in the event of process change, or physical or chemical hazard change.

#### **G. Evaluation Of The Hazard Communication Program**

- Any employee who chooses to ignore or violate the requirements of this program could face reprimand, loss of privileges, sanctions, or termination of employment.
- Employees, on completion of all phases of training, may be required to demonstrate Hazard Communication knowledge in an effort to improve this program and its training component.
- This program will be reviewed, and revised as required by changes in the OSHA Standard, City of Flagstaff operations, chemical hazards, or as conditions warrant, but not greater than annually.
- All City of Flagstaff facilities and locations, Departments and Divisions may be audited by Risk Management, Environmental Services, or independent consultants to evaluate compliance and make recommendations for improvement of this program.
- Suggestions, opinions, criticisms, and any recommendations to improve this program are welcome, and should be directed to the attention of Risk Management.