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|---|--|-------------------------------------|
|  <b>CITY OF<br/>TUCSON</b> | <b>City of Tucson</b><br>Central Safety Services<br>Number: S-020A<br>Subject: | Page 1 of 14                        |
|   | <b>Hazard Communication<br/>Program</b>  | Effective Date:<br>July 12, 1999    |
|   |  | Reviewed/ Revised:<br>July 16, 2013 |

## 1.0 PURPOSE

To ensure that all chemicals in the work place are classified, and that information concerning their hazards is transmitted to employees. This comprehensive hazard communication program includes identifying responsible parties who shall;

- Oversee communication of chemical hazards, specifically communication of pictograms, hazard or precautionary statements found in the Safety Data Sheets (SDS) and Chemical Labels;
- Maintain electronic SDS and may elect to maintain paper SDS;
- Ensure initial and annual employee training is completed at the department level.

## 2.0 SCOPE

This program applies to all City of Tucson employees where chemicals are present. Departments shall designate employees to implement and maintain a written Hazard Communication Program in the workplace. The policies and procedures contained in this section are intended to assist in identifying and complying with regulations and rules set forth by the Occupational Safety and Health Administration Code of Federal Regulations (CFR) 1910.1200. In all cases where there is a difference between specific OSHA standards and the policy set forth in this procedure, the stricter of the two shall prevail.

## 3.0 DEFINITIONS

**Chemical Classification:** Identification of the hazard(s) of a chemical or mixture by assigning a category of hazard/danger using defined criteria.

**CHEMTREC:** Chemical Transportation Emergency Center; a national center established to relay pertinent information concerning specific chemicals on request. Toll free 24-hr telephone number is 1-800-424-9300.

**Combustible:** A term used to classify certain liquids that will burn on the basis of flash points.

**Electronic SDS:** A method by which an employee may access an MSDS for their specific work site by entering in the web address, or accessing the site through a hot link established on the City web page or the Central Safety Services web page. <http://drupal.ci.tucson.az.us/central-safety-services>

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**Flammable:** NFPA and DOT define a flammable liquid as a liquid with a flash point below 100F (37.8C).

**Globally Harmonized System (GHS):** A means to harmonize the classification and the hazard communication elements of chemicals by container labeling and safety data sheets.

**Hazard Pictograms:** From part of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) intended for the labeling of containers to convey workplace hazard warnings.

**Hazard Statements:** From part of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), intended to form a set of standardized phrases about the hazards of chemical substances and mixtures that can be translated into different languages.

**Irritant:** A substance that, by contact in sufficient concentration for a sufficient period of time, will cause an inflammatory response of the eye, skin, or respiratory system.

**PEL:** Permissible Exposure Limit. An exposure limit established by OSHA regulatory authority. May be time-weighted average (TWA) limit or a maximum concentration exposure limit.

**Precautionary Statements:** From part of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). They are intended to form a set of standardized phrases giving advice about the correct handling of chemical substances and mixtures, which can be translated into different languages.

**Reactivity:** A description of the tendency of a substance to undergo chemical reaction with the release of energy.

**Safety Data Sheets (SDS):** Formerly known as Material Safety Data Sheets (MSDS) is a standard document containing sixteen (16) sections (Appendix 3). Employee training emphasis shall be placed on Hazard Identification which is Section two (2) of each SDS.

**Signal Word:** Either **DANGER** or **WARNING** – where necessary.

**TLV:** Threshold Limit Value. A term used to express the airborne concentration of a material to which nearly all persons can be exposed day after day without adverse effects.

**Water-Reactive:** a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

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#### **4.0 RESPONSIBILITIES**

##### **A. Department Heads/Division Managers**

1. Department Heads and/or Administrators shall assign personnel to:
  - a. Determine hazards in the workplace.
  - b. Maintain and enforce a written Hazard Communication Program.
  - c. Maintain current Safety Data Sheets in both electronic and paper formats.
  - d. Enforce container labeling conforming to the Globally Harmonized System (GHS).
  - e. Perform or facilitate employee training and Information.

##### **B. Supervisor**

1. Supervision shall ensure that:
  - a. All newly hired employees receive initial OSHA Training within ten (10) days of employment.
  - b. All employees receive Annual OSHA Refresher Training every twelve (12) months as conveyed by Central Safety Services.
  - c. All employees are aware of chemical hazards in the workplace.
  - d. All employees know how to protect themselves with the proper selection of personal protective equipment.
  - e. All employees that have computer access are effectively trained to utilize the electronic Safety Data Sheet Web Site and know where the paper copy SDS are located in the workplace and where the written Hazard Communication SDS book is located, if the department maintains written SDS.
  - f. All employees understand how to read and utilize the information contained in a SDS.

##### **C. Employee**

1. Employees shall:
  - a. Comply with the written Hazard Communication Program.
  - b. Employees will know how to access and interpret an SDS, either in electronic or paper format.
  - c. Know the location of SDS, if the department maintains written SDS.
  - d. Understand the meaning of the Globally Harmonized System pictograms, and understand the Hazard and Precautionary Statements related to the chemicals in the workplace.
  - e. Utilize the proper personal protective equipment needed to perform a job task in a safe manner.

#### **5.0 TRAINING**

Central Safety Services shall develop and host training for all employees and shall develop specialized training for Administrators of the electronic SDS system. Where paper SDS is maintained by the department, the department shall train employees to ensure employees may locate current and updated SDS information.

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## 6.0 GENERAL

### A. Hazard Communication Program

1. In order to standardize a Hazard Communication Program for the multiple City departments to be easily recognized by thousands of City employees, Central Safety Services has developed a standard template Hazard Communication Program (Appendix 2). Where paper SDS are maintained by the department, this template shall be printed and inserted in the Hazard Communication Program binder or SDS Book and the information required in the blank spaces shall be completed by hand. The employee designated as responsible for the data included in the Hazard Communication Program shall review and update the Program as needed or shall review contact information and SDS electronic and paper inventory at least annually
2. When the information changes in the printed template, the template shall be reprinted and the corrected (new) information required in the blank spaces shall be completed by hand and the completed template shall be inserted into the Hazard Communication Program.
3. Where hazardous material or similar are piped into or through a city facility, the pipes shall be individually identified with the hazardous material and the direction of travel.

### B. Chemical Inventory List

1. Where the list of chemicals housed in the workplace is not kept electronically by utilizing the web-based program the written chemical list shall be updated on an annual basis by the person designated by the department to manage the Hazard Communication Program.

### C. Safety Data Sheets

1. The Safety Data Sheet shall be maintained in the workplace in electronic format and may be held in paper format at the discretion of the department.
2. In areas where caustic or specialized chemicals are utilized, the SDS for those chemicals should be distributed widely and located in areas selected by the department for immediate access by supervisors and employees.
3. For work performed at remote locations or for chemicals housed on work trucks or needed to perform a specific work task, the SDS may be printed and carried by the employees until the work is completed and/or the chemical is removed from the work truck.

### D. Globally Harmonized System (GHS)

1. Hazard Identification (Section 2) of the SDS and the chemical container label (reference Appendix 1) contain Hazard Identification

information that shall be conveyed to the employee prior to chemical use.

2. Hazard Identification comes in the form of:

- Pictograms
- Hazard Statements
- Precautionary Statements

## E. Pictograms

| Description              | Pictogram   | Hazard class and hazard category:   |
|--------------------------|---|---|
| <b>Exploding Bomb</b>    |    | Unstable explosives<br>Explosives of Divisions 1.1, 1.2, 1.3, 1.4<br>Self-reactive substances and mixtures, Types A,B<br>Organic peroxides, Types A,B   |
| <b>Flame</b>             |   | Flammable gases, category 1<br>Flammable aerosols, categories 1,2<br>Flammable liquids, categories 1,2,3<br>Flammable solids, categories 1,2<br>Self-reactive substances and mixtures, Types B,C,D,E,F<br>Pyrophoric liquids, category 1<br>Pyrophoric solids, category 1<br>Self-heating substances and mixtures, categories 1,2<br>Substances and mixtures, which in contact with water, emit flammable gases, categories 1,2,3<br>Organic peroxides, Types B,C,D,E,F |
| <b>Flame Over Circle</b> |  | Oxidizing gases, category 1<br>Oxidizing liquids, categories 1,2,3  |
| <b>Gas Cylinder</b>      |  | Gases under pressure:<br>- Compressed gases<br>- Liquefied gases<br>- Refrigerated liquefied gases<br>- Dissolved gases   |
| <b>Corrosion</b>         |  | Corrosive to metals, category 1<br>Skin corrosion, categories 1A,1B,1C<br>Serious eye damage, category 1  |

**Skull and Crossbones**



Acute toxicity (oral, dermal, inhalation), categories 1,2,3

**Exclamation Mark**



Acute toxicity (oral, dermal, inhalation), category 4  
 Skin irritation, category 2  
 Eye irritation, category 2  
 Skin sensitization, category 1  
 Specific Target Organ Toxicity – Single exposure, category 3

**Health Hazard**



Respiratory sensitization, category 1  
 Germ cell mutagenicity, categories 1A,1B,2  
 Carcinogenicity, categories 1A,1B,2  
 Reproductive toxicity, categories 1A,1B,2  
 Specific Target Organ Toxicity – Single exposure, categories 1,2  
 Specific Target Organ Toxicity – Repeated exposure, categories 1,2  
 Aspiration Hazard, category 1

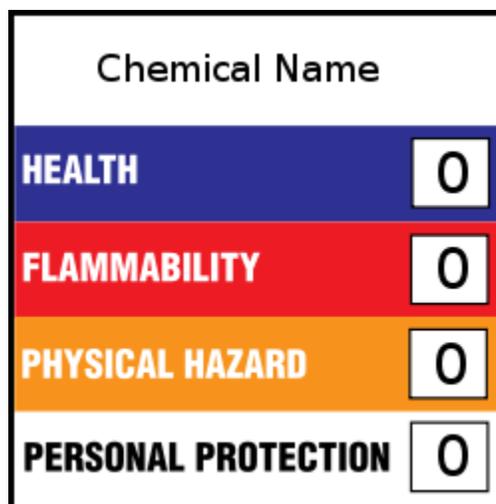
**Environment**



Hazardous to the aquatic environment  
 - Acute hazard, category 1  
 - Chronic hazard, categories 1,2

**F. HMIS Color Bar**

- The HMIS Color Bar is similar to the NFPA fire diamond. The color bar is not for emergencies and is used to convey broader health warning information.



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## G. Symbols

1. The four bars are color-coded, using the modern color bar symbols with blue indicating the level of health hazard, red for flammability, orange for a physical hazard, and white for Personal Protection. The number ratings range from 0-4.

### **Blue/Health**

The Health section conveys the health hazards of the material. If present, an asterisk signifies a chronic health hazard, meaning that long-term exposure to the material could cause a health problem.

- 4 Life-threatening, major or permanent damage may result from single or repeated overexposures.
- 3 Major injury likely unless prompt action is taken and medical treatment is given.
- 2 Temporary or minor injury may occur.
- 1 Irritation or minor reversible injury possible.
- 0 No significant risk to health

### **Red/Flammability**

For HMIS 0, 1 and 2, the criteria used to assign numeric values are identical to those used by NFPA. For HMIS 3 and 4, the flammability criteria are defined according to OSHA standards.

- 4 Flammable gases, or very volatile flammable liquids with flash points below 73 °F (23 °C), and boiling points below 100 °F (38 °C).  
Materials may ignite spontaneously with air.
- 3 Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 °F (23 °C) and boiling points above 100 °F (38 °C), as well as liquids with flash points between 73 °F and 100 °F.
- 2 Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100 °F (38 °C) but below 200 °F (93 °C).
- 1 Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 °F (93 °C).
- 0 Materials that will not burn.

### **Orange/Physical Hazard**

Reactivity hazard are assessed using the OSHA criterion of physical hazard.

- 4 Materials that are readily capable of explosive water reaction, detonation or explosive decomposition, polymerization, or self-reaction at normal temperature and pressure

- 3 Materials that may form explosive mixtures with water and are capable of detonation or explosive reaction in the presence of a strong initiating source. Materials may polymerize, decompose, self-react, or undergo other chemical change at normal temperature and pressure with moderate risk of explosion.
- 2 Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.
- 1 Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.
- 0 Materials that are normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosives.

### White/Personal Protection

HMIS uses the white section to indicate what personal protective equipment (PPE) should be used when working with the material by assigning a letter(s) A through X.

| HAZARDOUS MATERIALS IDENTIFICATION SYSTEM |  |  |   |  |
|---|--|--|---|--|
| HAZARD INDEX                              |  | PERSONAL PROTECTION INDEX                |   |  |
| 4 = SEVERE HAZARD                         | An asterisk(*) or other designation corresponds to additional information on a data sheet or separate chronic effects notification | <b>A</b>                                 |   |  |
| 3 = SERIOUS HAZARD                        |  | <b>B</b>                                 |   |  |
| 2 = MODERATE HAZARD                       |  | <b>C</b>                                 |   |  |
| 1 = SLIGHT HAZARD                         |  | <b>D</b>                                 |   |  |
| 0 = MINIMAL HAZARD                        | Additional Information   | <b>E</b>                                 |   |  |
|   |  | <b>F</b>                                 |   |  |
|   |  | <b>G</b>                                 |   |  |
|   |  | <b>H</b>                                 |   |  |
|   |  | <b>I</b>                                 |   |  |
|   |  | <b>J</b>                                 |   |  |
|   |  | <b>K</b>                                 |   |  |
|   |  | <b>X</b>                                 | Consult your supervisor or S.O.P. for "SPECIAL" handling directions |  |
| PERSONAL PROTECTION EQUIPMENT             |  |  |   |  |
| <b>A</b><br>Safety Glasses                | <b>n</b><br>Splash Goggles   | <b>o</b><br>Face Shield & Eye Protection | <b>p</b><br>Gloves  |  |
| <b>q</b><br>Boots                         | <b>r</b><br>Synthetic Apron  | <b>s</b><br>Full Suit                    | <b>t</b><br>Chem. Respirator  |  |
| <b>u</b><br>Vapor Respirator              | <b>w</b><br>Chem. & Vapor Respirator   | <b>y</b><br>Full Face Respirator         | <b>z</b><br>Airless Hood or Mask                                    |  |

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## **7.0 ADVICE AND COUNCIL**

Central Safety Services shall review this procedure at least annually.

**APPENDIX 1  
HAZARD INFORMATION/CHEMICAL SHIPPING LABEL AND INTERPRETATION**

|  |   |   |
|--|---|---|
| <b>Benzene</b>   |   | Weight<br><b>20Kg</b>   |
|   | CAS No. <b>71-43-2</b>  | UN No. <b>1114</b>  |
| <b>Hazard</b>  |   |   |
|   |  |  |
| Flammable  | Caution   | Health Hazard   |
| <b>Hazardous Information</b><br>Liquid or vapor that is extremely flammable<br>Fatal if swallowed<br>Skin irritation<br>Serious eye irritation<br>Threat of genetic diseases<br>Threat of carcinogenesis<br>May damage fertility or unborn child<br>Organ (lung) failure<br>Threat of drowsiness and dizziness<br>May cause irritation to respiratory<br>Organ failure (central nerve, haemopoietic system, immune system)<br>if long term or repeatedly exposed to air.   |   |   |
| <b>Precautionary Statement</b><br>Obtain special instructions before use.<br>Do not handle until all safety precautions have been read and understood.<br>Keep away from ignition sources such as heat/sparks/open flame - No smoking<br>Ground/bond the container and receiving equipment, if electrostatically sensitive material is for reloading.<br>Use explosion-proof electrical/ventilating/lighting/.....equipment.<br>Take precautionary measures against static discharge.<br>Use tools that do not cause fire.<br>Wear protective gloves and eyeface protection.<br>Use personal protective equipment as required.<br>Do not breathe mist/vapor/spray.<br>Do not eat, drink or smoke when using this product.<br>Wash hands thoroughly after handling.<br>Use only outdoors or in a well-ventilated area.<br>If swallowed: Rinse mouth. Do not induce vomiting.<br>If on skin (hair): Take off/remove immediately all contaminated clothing.<br>Wash the skin with water/shower.<br>If on skin: Wash with plenty of soap and water.<br>Take off/remove immediately all contaminated clothing.<br>Take off contaminated clothing and wash before re-use.<br>If inhaled: Remove to fresh air and keep at rest in a position comfortable for breathing.<br>If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.<br>If exposed or concerned: Get medical advice/attention.<br>Seal container tightly and store it.<br>Store container in cool/well-ventilated places.<br>Store locked up.<br>Dispose of contents/container to...<br>(in accordance with local/regional/national/international regulation). |   |   |
| No fire Hazard Category -4 Ignition liquid First petroleum Water non-soluble liquid Danger rating II   |   |   |
| <b>For enquiries, please contact SATO ASIA PACIFIC PTE LTD</b><br><b>Rina Phua (HP:9850 0730) or Eugene Poh (HP: 9684 8948)</b><br>438A Alexandra Road #05-01/04, Alexandra Technopark, Singapore 119967<br>Tel: (65) 6271 5300 Fax: (65) 6273 6011<br><a href="http://www.satoworldwide.com">www.satoworldwide.com</a>  |   |   |

**1. Name of Chemical**

**2. Barcode**

**3. Precautionary Statement**

**4. Pictogram**

**5. Hazard Information**

**6. Note of caution**

**7. Manufacturer or Provider of Chemical company**

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## APPENDIX 2

# City of Tucson Template Hazard Communication Program

### A. WRITTEN HAZARD COMMUNICATION PROGRAM

1. Copies of written Hazard Communications Program will be kept @  
\_\_\_\_\_  
(Locations)
2. \_\_\_\_\_ will be responsible for ensuring that:  
(Name or title of individual)
3. Names of personal assigned to maintain the written program is current at all times.
4. Hazard determination procedures are followed for all new and existing chemicals in the workplace
5. Current list of the hazardous chemicals known to be present in the workplace is maintained.
6. SDS for each chemical are most current, if the department maintains paper SDS.
7. Before work begins there will be a Safety meeting to inform employees and contractors of hazards of non-routine tasks, along with hazards present in the workplace.
8. Employees are made aware of chemical labels and pictograms in the workplace.
9. Employees are trained on how to read and interpret a SDS.
10. Employees shall complete a Hazard Communication Program Annual Refresher (OSHA Annual Refresher).
11. Employees review the Emergency Procedures and Spill Response Procedures annually.

### B. HAZARD DETERMINATION

1. \_\_\_\_\_ will be responsible for ensuring that:  
(Name or title of individual)
2. All chemicals used by City of Tucson employees will be evaluated for the health and physical hazards, by identifying the acute and chronic symptoms. Chemicals that are carcinogens, mutagens, teratogens, and highly toxic agents or have been banned from use will not be used in the workplace, if a suitable equally effective alternative can be found.

### C. SAFETY DATA SHEETS (SDS)

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1. Copies of SDS for all chemicals to which employees may be exposed can either be located electronically and/or shall be kept @ \_\_\_\_\_ (Location).  
The web address for the Electronic SDS Program can be accessed via the link found on the City of Tucson web page or the Central Safety Services Web Page titled MSDS. <http://drupal.ci.tucson.az.us/central-safety-services>
2. \_\_\_\_\_ will be responsible for ensuring that:  
(Name or title of individual)
  - a. SDS's for the new chemicals are added to the chemical inventory.
  - b. SDS's will be available for review to all employees during each work shift.
  - c. Copies of each SDS will be available upon employee request.

#### **D. ORIGINAL CONTAINER LABELING AND PICTOGRAMS**

1. \_\_\_\_\_ will verify that all hazardous chemical  
(Name or Title of individual)  
containers shall have the proper labeling, hazard and precautionary statements and pictograms.
2. Shall ensure that vendors and employees contracted to the City of Tucson provide SDS on the hazardous chemicals utilized by the vendor and that the SDS are housed onsite.

#### **E. SECONDARY CONTAINER LABELING**

1. City of Tucson employees shall:
  - a. For hazardous chemical, utilize the label feature on the electronic SDS Web Site to create a custom secondary container label.
  - b. For non-hazardous chemicals - clearly label all secondary containers with indelible (or similar) marker identifying the contents.

#### **F. EMPLOYEE TRAINING AND INFORMATION**

1. \_\_\_\_\_ will be responsible for the coordination,  
(Name or Title of individual)  
performance and documentation of initial training and when new chemicals are added to the SDS inventory.

Training shall include:

- a. All operations and locations in the work area where hazardous chemicals are present and used.

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- b. The location and availability of the written Hazard Communication Program, including list(s) of hazardous chemicals used and related SDS's.
- c. Emergency Action Plan that contains warning alarms, secondary evacuation routes and assembly area(s).
- d. Spill cleanup procedures.

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## APPENDIX 3



### Hazard Communication Safety Data Sheets

The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) to communicate the hazards of hazardous chemical products. As of June 1, 2015, the HCS will require new SDSs to be in a uniform format, and include the section numbers, the headings, and associated information under the headings below:

**Section 1, Identification** includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

**Section 2, Hazard(s) identification** includes all hazards regarding the chemical; required label elements.

**Section 3, Composition/information on ingredients** includes information on chemical ingredients; trade secret claims.

**Section 4, First-aid measures** includes important symptoms/ effects, acute, delayed; required treatment.

**Section 5, Fire-fighting measures** lists suitable extinguishing techniques, equipment; chemical hazards from fire.

**Section 6, Accidental release measures** lists emergency procedures; protective equipment; proper methods of containment and cleanup.

**Section 7, Handling and storage** lists precautions for safe handling and storage, including incompatibilities.

**Section 8, Exposure controls/personal protection** lists OSHA's Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE).

**Section 9, Physical and chemical properties** lists the chemical's characteristics.

**Section 10, Stability and reactivity** lists chemical stability and possibility of hazardous reactions.

**Section 11, Toxicological information** includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12, Ecological information\*

Section 13, Disposal considerations\*

Section 14, Transport information\*

Section 15, Regulatory information\*

**Section 16, Other information**, includes the date of preparation or last revision.