



HAZARD COMMUNICATION PROGRAM

Tower Motor Company

Policy Statement

Tower Motor Company is committed to providing every employee with a safe and healthy work environment. Many of the work activities at the facility require the use of chemical products that have hazardous or potentially hazardous properties. It is important that workers are aware of the identity of these chemicals, their hazardous properties, and proper handling precautions; as well as safety equipment and procedures to be followed in an emergency. In brief, an informed employee is more likely to be a careful employee.

This Hazard Communication Program has been written to provide employees with the above information. It will be available on-line at www.verasuite.com for review by all employees, their designated representatives and agents of regulatory agencies.

This Hazard Communication Program has been developed in accordance with the requirements of Title 29, Section 1910.1200 of the Code of Federal Regulations. I have reviewed this program for completeness and the provisions contained herein will apply to operations at Tower Motor Company.

Signed Electronically by Amy Larson

Customer Relations Manager

Signature

Title

Amy Larson

Printed Name

8/10/2018

Date

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HAZARD COMMUNICATION PROGRAM

Tower Motor Company

In order to be fully compliant with the OSHA Hazard Communication Standard, Title 29 Code of Federal Regulations (CFR), Part 1910.1200, the following information must be maintained as part of the written Hazard Communication Program and used with employee training. For state level regulations, please reference your state specific recourses. Contact your KPA consultant when any part of your Hazard Communication Program changes.

Facility Name: Tower Motor Company

Hazard Communication Program Manager: Amy Larson, Customer Relations Manager

OSHA Information:

Authorized Agency: Address:	OR-OSHA 350 Winter Street NE, Room 430 Salem, OR 97309-0405
Telephone: Poison Control:	1-800-922-2689 1-800-222-1222 or 911

PROGRAM OVERVIEW

This Hazard Communication Program has been developed to provide our employees with information about hazardous chemicals in the workplace. Program activities include:

- Preparing and updating a written inventory of products that contain hazardous chemicals.
- Properly labeling containers of hazardous chemicals.
- Obtaining a Safety Data Sheet (SDS) for each hazardous chemical.
- Providing appropriate training to employees exposed to these chemical containing products.
- Providing contractors with Hazard Communication information.

PROGRAM MANAGEMENT

The Program Manager indicated above is responsible for keeping this program updated with additional information and/or requirements established by OSHA. Questions regarding this plan should be referred to the Program Manager.

Additions, deletions or corrections to this program shall be made in writing and shall be approved by the Program Manager prior to implementation.

EMPLOYEE RESPONSIBILITY

The success of this Hazard Communication Program depends to a great extent upon the cooperation and commitment of every employee. Each employee should be alert to the potential hazards of chemicals in the workplace and shall follow the appropriate work practices that have been established to protect their health and safety.

Whenever there is a question regarding the handling, use, disposal or emergency procedures involved with a specific chemical, the label and/or Safety Data Sheet (SDS) should be consulted. If additional information is desired, the immediate supervisor or the Program Manager should be contacted.

CHEMICAL PRODUCT INVENTORY

A written, or electronic, list of all known hazardous chemical containing products present at the facility shall be prepared. The inventory shall include each product identifier and the primary work area where it is used or stored.

This list will be reviewed and updated by the Program Manager as new hazardous chemicals are introduced. The chemical product inventory can be accessed online as outlined in Appendix A.

CONTAINER LABELING

No primary container of a hazardous chemical will be released for use until the following label information is legibly attached and verified:

- Product Identifier
- Signal Word
- Hazard Statement(s)
- Pictogram(s)
- Precautionary statement(s)
- Name, address, and telephone number of the chemical manufacturer, importer, or other party (for primary container).

It is the responsibility of the manufacturer, importer or distributor to ensure that each primary (supplier provided) chemical container leaving their workplace is properly labeled, tagged or otherwise marked. Therefore, these containers should be received at the facility with proper labels in place. Should any required labels become detached or otherwise rendered unreadable, they are to be replaced by facility management prior to issuance of the container into the workplace. Alternately, any container that is received without proper labeling may be returned to the supplier.

When a chemical is transferred from the primary container into a secondary container, this secondary container must be labeled with enough information (product identifier, pictures, symbols) that, with available Hazard Communication information, the employee knows the physical and health hazards of the material.

AREA LABELING

For the secondary containers of the hazardous material, the employer may use signs, placards, operating procedures, or other written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers and conveys the appropriate information. The employer has to ensure the written materials are readily accessible to the employees in their work area throughout each work shift.

SAFETY DATA SHEET (SDS)

A SDS is a multi-part form prepared by the manufacturer or importer of a chemical product which specifies, among other things, physical and chemical properties of the hazardous chemical, the hazards posed by the chemical, and preventative measures and remedial steps that should be taken in the event of a chemical spill or exposure. While the manufacturer/importer is obligated to provide the business purchasing the hazardous chemical product with an SDS, it is the responsibility of facility management to ensure that an SDS is readily available for every hazardous chemical maintained on-site to which employees are exposed or can potentially be exposed to.

A copy of each SDS held by the facility shall be maintained in our Environmental, Health and Safety management software, Vera Suite, and shall be "readily accessible" to any employee during their work shift. Since this is an electronic means of obtaining SDSs, the following access methods will be available:

- Electronic equipment through which SDSs are made available is reliable and accessible (including mobile devices), and potentially exposed employees are trained on its use.
- Paper copies of SDSs are provided to employees or medical personnel when requested.
- An adequate back-up SDS retrieval system is available in the event of an emergency.
- Information on the SDS retrieval system(s) are incorporated into this program.

If the employees must travel between workplaces during a work shift (i.e., they have a primary workplace but also another workplace at another geographical location), then the SDS must be kept at least at the primary workplace facility.

Mandatory items for inclusion on an SDS are noted in Exhibit (1).

If an SDS is found to be missing or incomplete, a new/updated SDS shall be requested from the manufacturer. The procedure for making this request is outlined in Exhibit (2). In addition, the supervisor or Program Manager shall ensure that incoming SDSs are reviewed for any new and significant health or safety information which, if present, shall be provided to exposed or potentially exposed employees within 30 days of receiving the SDS.

In the event an SDS is unavailable for any newly introduced hazardous chemical at the facility, the supervisor or Program Manager shall be immediately notified of this deficiency.

If there is an emergency where an employee needs information about a chemical and the SDS is missing or confusing, the supervisor or Program Manager is to take one or more of the following steps in order to obtain the SDS or to clarify questions on it:

- If it is a medical emergency, call 911 or poison control.
- Call the manufacturer of the chemical. Get the company's emergency number off an SDS for another one of its products.
- Search KPA's SDS database for the product using the procedures below.
- If during KPA business hours, call KPA for assistance.

If use of a chemical product is discontinued, the applicable SDS shall be retained for a minimum of 30 years. If the applicable SDS is destroyed; a record of the identity of the product or agent, including the chemical name or trade name (if known), where it was used, and when it was used, shall be retained for a minimum of 30 years.

INFORMATION AND TRAINING

1. **Normal Operations:** Employees with potential exposure to hazardous chemicals are to receive information and training on hazardous chemicals in their work area at the time of hire and when a chemical hazard changes in the workplace. Components of this training shall include:
 - The location and availability of the facility's written Hazard Communication Program.
 - Instructions for online access to Safety Data Sheets and Chemical Product Inventory.
 - Identified hazardous chemicals in the workplace and their primary use/storage location.
 - How to read and understand labels and SDSs in order to obtain hazard information.
 - A summary of common physical and health hazards of chemicals used at the facility.
 - Work practices, engineering controls and other protective measures that can be used to reduce exposure to those chemicals.
 - How to determine the presence or release of a hazardous chemical.
 - Emergency and first aid procedures to be followed in the event of spill, fire, or other incident.

Whenever the facility receives a new or revised SDS indicating significantly increased risk to, or measures necessary to protect employee health, employees shall be provided this information within 30 days of receipt of the SDS.

To better ensure that each employee understands these components, facility management has prepared a written Hazard Communication Training Program. This program is included as Appendix to this Hazard Communication Program.

2. **Hazardous Non-Routine Tasks:** Periodically employees may be required to perform hazardous, non-routine tasks. Prior to starting work on such projects, any employee involved is to be given information by their supervisor about additional chemical hazards to which he or she may be exposed during such an assignment.

This information will include:

 - Specific hazards that may be encountered.
 - Protective/safety measures which must be utilized.
 - Measures the company has taken to lessen the hazards including protective equipment, and the presence of another employee to assist and emergency procedures.
3. **Hazardous Chemicals in Unlabeled Pipes:** To prevent the possible exposure of employees to hazardous chemicals in unlabeled pipes, it is policy that no employee is authorized to work or otherwise tamper with any pipe at the facility.
4. **Informing Contractors:** Contractors shall be provided with the following information prior to beginning work in an area of the facility where he or his employees could be exposed to hazardous chemicals. A signed "Contractor Notification" record will be maintained and will include:
 - Location and access to the Hazard Communication Program.
 - Location access to the Safety Data Sheets.
 - Explanation of the labeling system used.

The contractor shall also be required to provide information on the hazardous chemicals they intend to use during their work. This information shall be provided to the Program Manager and

should include a review of appropriate precautions facility employees should take to lessen their exposure to these chemicals.

5. **Certification of Training:** Each employee that receives Hazard Communication Training at the facility will complete training certification that includes wording similar or identical to that displayed on Exhibit (3). Training records are maintained online or in the Yellow Box at the store site.

PROGRAM EXEMPTIONS

The Hazard Communication Regulation does include certain exemptions. These exemptions are outline in Exhibit (4).

Safety Data Sheet Required Items

1. Identification

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

2. Hazard(s) identification

- Classification of the chemical in accordance with paragraph (d) of 1910.1200;
- 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);
- Describe any hazards not otherwise classified that have been identified during the classification process;
- 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.

3. Composition/information on ingredients

For Substances:

- Chemical name;
- Common name and synonyms;
- CAS number and other unique identifiers;
- 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):

- 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
 - Are present above their cut-off/concentration limits; or
 - Present a health risk below the cut-off/ concentration limits.
- The concentration (exact percentage) shall be specified unless a trade secret claim is made in accordance with paragraph (i) of §1900.1200, 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.

4. First-aid Measures

- Description of necessary measures, subdivided according to the different routes of

exposure, i.e., inhalation, skin and eye contact, and ingestion;

- Most important symptoms/effects (acute and delayed).
- Indication of immediate medical attention and special treatment needed, if necessary.

5. Fire-fighting measures

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

6. Accidental release measures

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

7. Handling and storage

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

8. Exposure controls/personal protection

- 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*).
- Appropriate engineering controls.
- Individual protection measures, such as personal protective equipment.

9. Physical and chemical properties

- Appearance (physical state, color, etc.);
- Odor;
- Odor threshold;
- pH;
- Melting point/freezing point;
- Initial boiling point and boiling range;
- Flash point;
- Evaporation rate;
- Flammability (solid, gas);
- Upper/lower flammability or explosive limits;
- Vapor pressure;
- Vapor density;
- Relative density;
- Solubility(ies);
- Partition coefficient: n-octanol/water;

- Auto-ignition temperature;
- Decomposition temperature;
- Viscosity.

10. Stability and reactivity

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

11. Toxicological information

Description of the various toxicological (health) effects and the available data used to identify those effects, including:

- Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact);
- Symptoms related to the physical, chemical and toxicological characteristics;
- Delayed and immediate effects and also chronic effects from short- and long-term exposure;
- Numerical measures of toxicity (such as acute toxicity estimates).
- 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.

12. Ecological information (Non-mandatory)

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

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.

14. Transport information (Non-mandatory)

- UN number;
- UN proper shipping name;
- Transport hazard class(es);
- Packing group, if applicable;
- Environmental hazards (e.g., Marine pollutant (Yes/No));

- Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code);
- 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.

15. Regulatory information (Non-mandatory)

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

16. Other information, including date of preparation, or last revision.

Note: Section 12, 13, 14 and 15 are not required by OSHA.

Procedure for obtaining an SDS

Federal law holds the manufacturer, producer or seller of a hazardous chemical responsible for the preparation of the Safety Data Sheet (SDS). That party is also responsible for providing a current SDS to management. If facility management has not received or cannot locate a SDS, or if the SDS provided is determined to be incomplete or not current, one of the following procedures shall be followed:

1. If a SDS is needed quickly, the following procedure may be utilized:
 - a. Obtain the product name and manufacturer. This information should be in the product label.
 - b. Get the telephone number of the manufacturer from the product label or from the first page of another SDS for that manufacturer. Have at hand the product name and number (if any) and call the manufacturer to request the SDS. Ask that it be provided as soon as possible. Delivery can typically be by fax, email or the postal system.
 - c. Alternately, call the product distributor and request the applicable SDS. Have the manufacturer, product name and product number (if any) at hand.
 - d. If the SDS is being sought in connection with a medical emergency, do not delay calling for help (usually 911) or otherwise caring for the individual.
2. Alternate procedure for obtaining a SDS.
 - a. Within 7 working days of determining that a SDS is missing, make a written inquiry to the manufacturer or seller asking that a complete and current SDS be sent to the facility. Attachment (2.a) is a sample letter for making such a request.
 - b. If the inquiry is made in response to an employee request for a SDS, provide the requestor with a copy of the written inquiry and any response received. When the SDS is provided, inform requestor of its availability.
 - c. If within 25 working days of making the above noted written request, a response has not been received, a copy of the request shall be sent to the regulatory agency. This copy shall include the notation provided in Attachment (2.b).

Sample SDS Request Letter

Date

Chemical Company or Distributor

RE: SDS for _____ (product)(s) _____

Please send me a copy of the current Safety Data Sheet (SDS) for the above product. This SDS is needed for compliance with the Hazard Communication Regulation.
Please send the SDS to:

Tower Motor Company
505 S Broadway
Coos Bay, OR 97420

If this product does not require a SDS, please notify me in writing.

If you have any questions regarding this request, please contact _____.

Sincerely,

Amy Larson, Customer Relations Manager

Sample Written Request Notification Letter

Date

OR-OSHA

350 Winter Street NE, Room 430
Salem, OR 97309-0405

Dear Sir or Madam:

Attached is a copy of our request for a Safety Data Sheet. This request was made over 25 working days ago and, to date, no response has been received.

As required by the Hazard Communication Regulation, we are notifying you of this failure to respond. We would also appreciate any assistance you could render in obtaining the requested SDS.

Sincerely,

Amy Larson, Customer Relations Manager

Attachment:

cc: Chemical Company or Distributor

CERTIFICATION OF HAZARD COMMUNICATION AND EMERGENCY RESPONSE TRAINING

Tower Motor Company

I acknowledge that I have received Hazard Communication Training. During this training I was made generally aware of hazards associated with chemicals present at the facility, steps I can take to reduce these hazards, and typical responses in the event of an emergency. I was also made aware of chemical specific information available to me in the form of product labels and Safety Data Sheets (SDSs). I understand that I may review the facility's Hazard Communication Program and SDSs at any time during my work shift.

I also acknowledge that I have received emergency response training. During this training I was made aware of guidelines for responding to a fire or explosion (including use of portable hand-held fire extinguishers), a release of hazardous materials, and certain natural disasters. I was also informed of the facility's evacuation assembly point.

I understand facility management alone is responsible for environmental and safety issues at the facility, and that I should contact my supervisor with any questions or concerns I have about these matters.

Signature

Job Position

Printed Name

Date

cc: Employee File

Program Exemptions

The following substances are exempt from regulation under the Hazard Communication Standard:

1. Hazardous wastes: This exemption, however, is limited to those wastes regulated by the federal EPA.
2. Tobacco products.
3. Wood or wood products: An example here might be wood furniture. The glue, varnish, paint, etc. used in its manufacture is a hazardous chemical during the manufacturing process and would be regulated at that time. When the finished product is delivered to the facility, however, those chemicals are bound up and are no longer considered hazardous.
4. Articles (manufactured items): A vehicle tire is an example. Again, numerous hazardous chemicals are used in its manufacture but, when delivered, these components are not considered hazardous to the handler.
Note: Asbestos brake shoes and clutch plates could be considered exempt under this provision. Brake maintenance activities, however, pose a risk to exposed employees. This facility has therefore developed a special asbestos training and control program. The written program is included as Appendix B to the facility Hazard Communication Program.
5. Food, drugs or cosmetics intended for use or consumption by the employee.
6. Retail food establishments: This exemption is not effective if the establishment is located in the facility work area where other hazardous chemicals are handled or stored.
7. Consumer products sold at retail: This exemption is not effective if the duration and frequency of employee exposure is greater than that of the ordinary consumer. For example, if facility shop employees use a pressurized spray can of solvent for cleaning oil and grease off auto parts, the frequency of employee use far exceeds that of the ordinary consumer and the product is not exempt, even if it is an over-the-counter product.
8. Pesticide use already regulated by another agency.

Program specific labeling is not required for the following substances as they are already governed by appropriate federal agency requirements:

- Consumer products
- Food, drug and additive (ex: flavors, fragrances, etc.) products
- Alcoholic beverages
- Pesticides and agricultural or vegetable seed treated with pesticides
- Already regulated toxic substances under the Toxic Substances Control Act

Contractor Notification

CONTRACTOR EMPLOYER/EMPLOYEE RECORD OF RECEIPT OF HAZARD COMMUNICATION INFORMATION

Hazardous materials regulated under the OSHA Hazard Communication Standard, Title 29 CFR Part 1910.1200, are present at this facility. Hazardous materials may include chemical products with the following physical hazards:

- Flammable materials such as gasoline, adhesive remover, and paint.
- Combustible materials such as parts washer solvent, diesel fuel, polishes, and glazes.
- Compressed gases such as Freon, oxygen, acetylene, and propane.
- Corrosives such as battery acid (sulfuric acid), wire wheel cleaner, and some soaps.

Chemicals can enter your body through inhalation (breathing), absorption (through your skin and eyes), or ingestion (through your mouth). Overexposure can cause short-term effects such as dizziness, dry skin, or coughing. Use of appropriate work practices and personal protective equipment will prevent overexposure and protect you from the health effects that may be associated with chemical use.

- I have been informed of the location of the Hazard Communication Program.
- I have been informed of the procedures for accessing Safety Data Sheets (SDSs).
- I have been informed about the information on secondary container labels.
- I have been given an opportunity to ask questions regarding workplace safety practices.
- My Employer carries valid Workers' Compensation and Commercial General Liability Insurance.

Signature

Employer Name

Printed Name

Date

HAZARD COMMUNICATION TRAINING PROGRAM

Tower Motor Company

OVERVIEW

The Hazard Communication (“Right to Know”) Regulation is intended to ensure that both employers and employees are aware of the dangers associated with hazardous chemicals in the workplace, and understand that chemical-specific information is available to them in the form of product labels and Safety Data Sheets (SDSs).

Tower Motor Company has a written Hazard Communication Program that defines facility policy on this matter and outlines the information and support that will be provided to help employees manage their exposure to hazardous chemicals. The objective of this training program is to implement key provisions of this policy. In particular, it provides information needed to carry out employee training on the following:

1. The location and availability of the facility’s written Hazard Communication Program.
2. Instructions for online access to Safety Data Sheets and Chemical Product Inventory.
3. Identified hazardous chemicals in the workplace and their primary use/storage location
4. How to read and understand labels and SDSs in order to obtain hazard information.
5. A summary of common physical and health hazards of chemicals used at the facility.
6. Work practices, engineering controls and other protective measures that can be used to reduce exposure to those chemicals. How to determine the presence or release of a hazardous chemical.
7. Emergency and first aid procedures to be followed in the event of spill, fire or other incident.

An employee with questions or concerns about any aspect of this program should see their supervisor.

EMPLOYEE RIGHTS

Each employee has certain rights under the Hazard Communication Program. They are:










1. To personally receive information on the hazardous chemicals to which the employee is or may be exposed. This shall include the right to review, during their working hours, the facility's written Hazard Communication Program and any SDSs.
2. For the physician or collective bargaining agent of the employee to receive information on the hazardous chemicals to which the employee is or may be exposed.
3. To not be subject to discharge or other discrimination due to the employee's exercise of the rights afforded pursuant to the regulation.

Hazard Communication Label Components

The manufacturer or distributor of a hazardous chemical is obligated to ensure that each product container shipped includes a hazard-warning label. For those chemicals that are regulated by the Hazard Communication Standard there are required elements that must be present on the label. This includes:

- **Product Identifier:** The name on the label must match the name on the Safety Data Sheet.
- **Pictogram:** Each pictogram consists of a different symbol on a white background within a red square frame set on a point (i.e. a red diamond). There are nine pictograms under the GHS. However, only eight pictograms are required under the HCS.
- **Signal words:** A single word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used are "danger" and "warning." "Danger" is used for the more severe hazards, while "warning" is used for less severe hazards.
- **Hazard Statement:** A statement assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard.
- **Precautionary Statement:** A phrase that describes recommended measures to be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling of a hazardous chemical.
- **Supplier or Manufacturer Identifier:** This includes the name, address, and telephone number of the supplier or manufacturer.

There are nine pictograms under the GHS that convey health, physical, and environmental hazards. The final Hazard Communication Standard (HCS) requires eight of these pictograms, the exception being the environmental pictogram, as environmental hazards are not within OSHA's jurisdiction. The hazard pictograms and their corresponding hazards are shown below.

HCS Pictograms and Hazards		
Health Hazard 	Flame 	Exclamation Mark 
<ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	<ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides 	<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)
Gas Cylinder 	Corrosion 	Exploding Bomb 
<ul style="list-style-type: none"> • Gases under Pressure 	<ul style="list-style-type: none"> • Skin Corrosion/ burns • Eye Damage • Corrosive to Metals 	<ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides
Flame over Circle 	Environment (Non-Mandatory) 	Skull and Crossbones 
<ul style="list-style-type: none"> • Oxidizers 	<ul style="list-style-type: none"> • Aquatic Toxicity 	<ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)

SAMPLE LABEL

PRODUCT IDENTIFIER

CODE _____

Product Name _____

SUPPLIER IDENTIFICATION

Company Name _____

Street Address _____

City _____ State _____

Postal Code _____ Country _____

Emergency Phone Number _____

PRECAUTIONARY STATEMENTS

Keep container tightly closed. Store in cool, well ventilated place that is locked.
Keep away from heat/sparks/open flame. No smoking.
Only use non-sparking tools.
Use explosion-proof electrical equipment.
Take precautionary measure against static discharge.
Ground and bond container and receiving equipment.
Do not breathe vapors.
Wear Protective gloves.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
Dispose of in accordance with local, regional, national, international regulations as specified.

In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO₂) fire extinguisher to extinguish.

First Aid

If exposed call Poison Center.
If on skin (on hair): Take off immediately any contaminated clothing. Rinse skin with water.

HAZARD PICTOGRAMS



SIGNAL WORD

Danger

HAZARD STATEMENT

**Highly flammable liquid and vapor.
May cause liver and kidney damage.**

SUPPLEMENTAL INFORMATION

Directions for use

Fill weight: _____ Lot Number _____

Gross weight: _____ Fill Date: _____

Expiration Date: _____

Required labels should already be affixed to original containers when they are received at the facility. If this is not the case, or if the label is obscured or otherwise unreadable, the individual noting this discrepancy should promptly bring it to the attention of their supervisor who is responsible for correcting the deficiency. A similar procedure applies if a label is missing or becomes unreadable on a secondary container.

Secondary containers should be labeled with the signal word, product identifier, and the hazard statement. For secondary containers, the facility may decide to use alternative labeling methods. This can include posting signs, placards, operating procedures or other such written material in lieu of affixing labels to individual secondary containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required to be on a label. This procedure is allowed by regulation and may be especially appropriate for areas where container labels are frequently washed off or become unreadable. Alternative labels must be approved by the Program Manager prior to being used.

The law exempts from these requirements any "consumer product" that must be labeled in accordance with regulations issued by the Consumer Products Safety Commission (CPSC). Many of the hazardous chemicals commonly used in many industries are indeed regulated by CPSC. Examples include aerosol cans of spray solvent and spray paint. These containers should include a hazard warning that is similar in nature to that required by the Hazard Communication Program.

How to Read and Understand a SDS

INTRODUCTORY COMMENTS

This section reviews the general information that should be found when reading a Safety Data Sheet (SDS). The information that is included may vary depending upon the differing properties of the hazardous material.

The purpose of an SDS is to provide health and safety information on hazardous chemicals, first aid procedures for chemicals, chemical storage procedures and restrictions, and relevant hazardous materials shipping information. Employers are required to have a safety data sheet in the workplace for each hazardous chemical or substance that they use.

All sections highlighted here for the hazardous material must be included and in the same order in compliance with OSHA regulation. If any SDS is blank or has only a trade name and a lot of N.A.s ("not applicable") on it, it is not going to be useful and most likely has not been updated. By cross checking the information in various sections, one should be able to determine the vital information that one is required to know, to be able to complete the job safely and without accident. Questions concerning any SDS should be referred to the inquiring employee's supervisor.

REVIEW OF KEY SECTIONS

OSHA now requires that all SDSs utilize a standard format. The following paragraphs will review the types of information typically found on a prepared SDS. If no relevant information can be listed under any section, then the SDS should indicate that no applicable information could be found.

SECTION 1 IDENTIFICATION

The first section of every SDS should address the main identification information of the chemical product. The trade name on the SDS should agree with the one on the label on the product container.

Additional names the chemical is identified under are listed, recommended use of the chemical and the manufacturing information is listed, as well as the emergency phone number. Including the manufacturing information is important as it provides a means of obtaining additional information on the chemical product in a situation where the information is not otherwise obtainable.

This information is very important in making sure employees are using the correct chemical product for the right job, while also tracking the origin of the chemical product in case there are any problems with the chemical components.


SECTION 2 HAZARD(S) IDENTIFICATION

This section gives you the most important information for your health and safety. It identifies the hazards of the chemicals presented on the SDS and the appropriate warning information associated with those hazards. The required information consists of:

- Product Identifier that relates the SDS to the name on the label.
- Signal word; "Danger" or "Warning". "Danger" indicates more hazard than "Warning".
- Hazard statement(s): This includes the primary physical and/or health hazard and the routes of entry.
- Pictograms: Symbol and graphic elements used to convey information about the hazard present.
- Precautionary statement(s): There are four types of precautionary statements; Prevention of exposure; Response to exposure; Storage of materials; Disposal of materials.

- Description of any hazards not otherwise classified. This is primarily additional information that the manufacturer considers needed but must contain the percentage of an ingredient with unknown toxicity.

Example of Section 2

Gasoline			
Hazard Category	Signal Word	Hazard Statement	Pictogram Flame
2	Danger	Highly flammable liquid and vapor	
Precautionary statements			
Prevention	Response	Storage	Disposal
Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. Ground/Bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wear protective gloves/eye protection	If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. In case of fire: Use Dry Chemical, CO2, AFFF Foam or alcohol resistant foam if >15%volume polar solvents (oxygenates. to extinguish.	Store in a well-ventilated place. Keep cool.	Dispose of contents/container to... ... in accordance with local/regional/national regulations

To view a list of definitions of common terms, please refer to OSHA 1910.1200 Section C.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

This section states the chemical identity, common name and synonyms, the Chemical Abstract Service (CAS) number, and the impurities and stabilizing additives which are themselves classified and which could contribute to the classification of the substance.

For mixtures, each chemical name and percentage or concentration range of all health hazards that are in a range that can cause health hazards shall be listed. This information is critical when an exposure occurs that causes concern.

SECTION 4 FIRST AID MEASURES

This section indicates emergency actions to take when exposure occurs through different routes of exposure such as: Inhalation, Skin and Eye, and/or Ingestion. Symptoms and/or effects of acute or delayed acute or delayed exposure. Directions for immediate actions and treatment.

Within this section, there should also be a note to the treating physician including special information that would be important to a diagnosis, including required or recommended pre-placement and periodic medical examinations, diagnostic procedures, and medical management of overexposed

employees.

WHEN IN AN EMERGENCY SITUATION: do not apply any treatment (vomiting, medication, etc.) without consulting the first aid measures section of the SDS for the specific chemical first. Any treatment administered before looking at the SDS could make the situation worse, or could make the situation life-threatening. Always remember to have the SDS readily available in case of an emergency.

SECTION 5 FIREFIGHTING MEASURES

Many facilities work with flammable materials on a daily basis, so the risk for fire is increased for these facilities. Suitable and unsuitable firefighting methods are listed. Specific hazards arising from the combustion of the products are stated as are required personal protective equipment and precautions for the fire fighters.

SECTION 6 ACCIDENTAL RELEASE MEASURES

The accidental release measures section states the personal precautions, personal protective equipment, and emergency procedures. Methods and materials for containment and cleanup are noted. Disposal of clean up materials must be conducted in accordance with Federal, State, and Local regulations. If this section is not understood, consult your KPA engineer for proper disposal information.

SECTION 7 HANDLING AND STORAGE

The handling and storage section of a SDS details precautions for safe handling, and the conditions for safe storage, including any incompatibilities.

Storage procedures include instructions such as storing away from acids, avoiding storage above a certain temperature, etc. This prevents toxic or dangerous chemical interactions during non-use.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

This section includes acceptable exposure limits, engineering controls, and personal protective equipment requirements.

The OSHA permissible exposure limit (PEL), the 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.

- The Permissible Exposure Limit (PEL) is a standard developed by OSHA. A PEL is, by regulation, the maximum allowable average workday exposure to a particular chemical (ex: Carbon Monoxide). There are different PELs for different chemicals. These limits are normally expressed in parts per million (ppm) for gases and vapors, or as milligrams per cubic meter (mg/M³) for dust and mist.
- The Threshold Limit Value (TLV) represents the highest airborne concentration of a chemical to which most workers may be repeatedly exposed, day after day, without adverse effect. As with PEL, TLV is normally expressed in parts per million (ppm) for gases and vapors, or as milligrams per cubic meter (mg/M³) for dust and mist.

Engineering Controls include additional instruction for how the chemical or substance should be used, i.e. use in a well-ventilated area.

Requirements for individual personal protective equipment are stated in this section. This may include safety glasses, safety goggles, gloves of a particular type, and respiratory protection.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

The physical and chemical properties are listed under this section. The properties let you know how the product will act when released to the atmosphere. This knowledge helps you understand the potential hazards.

- Appearance (physical state, color, etc.); IS THE PRODUCT LIQUID, SOLID, OR VAPOR?
- Odor; IS THE ODOR EASILY RECOGNIZABLE?
- Odor threshold;
- pH; IS THE MATERIAL ACID OR ALKALINE?
- Melting point/freezing point;
- Initial boiling point and boiling range;
- Flash point; AT WHAT TEMP DOES THE MATERIAL HAVE FLAMMALE VAPORS?
- Evaporation rate;
- Flammability (solid, gas);
- Upper/lower flammability or explosive limits;
- Vapor pressure;
- Vapor density; ARE THE VAPORS HEAVIER OR LIGHTER THAN AIR? AIR = 1
- Relative density; WILL THE MATERIAL FLOAT OR SINK IN WATER? WATER = 1
- Solubility(ies);
- Partition coefficient: n-octanol/water;
- Auto-ignition temperature;
- Decomposition temperature;
- Viscosity. WILL THE MATERIAL FLOW EASILY OR NOT?

A list of definitions is included as Exhibit A-9.

SECTION 10

STABILITY AND REACTIVITY

The stability and reactivity information are important to reducing the risk of dangerous chemical interactions when handling and storing the chemical or substance.

The SDS will indicate whether or not the chemical is inherently stable, materials and conditions to avoid (i.e., strong acids, strong oxidants, exposure to oxygen), and the hazardous materials or by-products that are produced as a result of use or decomposition. This information contributes towards safe handling procedures, how the chemical/substance should be stored, and the appropriate protective equipment that should be utilized.

SECTION 11

TOXICOLOGICAL INFORMATION

This section describes the health effects and the data used to establish the health effects. Routes of exposure must be stated in this section as must the symptoms of exposure. Chronic (delayed) and acute (immediate) effects from short and long term exposure are listed. Numerical measures of toxicity are noted. This section also notes whether the material 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)

This section is non-mandatory, and may not have any information listed. However, this section is utilized for addressing the impact of the chemical upon the environment and population in general in the situation of accidental release. The ecotoxicity, persistence and degradability, the bioaccumulative potential, etc. may be listed and should be considered when deciding whether or not to use the chemical or substance in operation procedures.

SECTION 13

DISPOSAL CONSIDERATIONS (NON-MANDATORY)

This section is non-mandatory, and may not have any information listed. The disposal method details additional disposal information in the situation where the chemical disposal is not otherwise regulated.

Methods may include incineration, third party disposal, etc., but care should be taken to make sure that all disposal methods comply with Local, State, and Federal regulations.

SECTION 14

TRANSPORT INFORMATION (NON-MANDATORY)

This section is non-mandatory, and may not have any information listed. This section includes information that is utilized in shipping hazardous materials, which includes the UN proper shipping name, the transport hazard class(es), packing group, etc. This is generally not relevant to employer operations.

SECTION 15

REGULATORY INFORMATION (NON-MANDATORY)

This section is non-mandatory, and may not have any information listed. This section will include any safety, health and environmental regulations that are not otherwise included in the SDS.

SECTION 16

OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

The date of preparation of the SDS or the last changes should be included in this section. Revisions to the SDS may indicate changes in industry use of the chemical, or how safety information has been updated or changed.

This section can also include disclaimers, or other hazard classifications.

Category Specific Training

INTRODUCTION

Chemical Specific Training: Most chemicals used at this facility generally fall into one of the following three hazard categories:

- a. Flammables (this includes combustibles)
- b. Corrosives
- c. Compressed Gases

Information listed on SDSs for chemicals, which fall into each category, has been used to develop category specific training information. This information is summarized in Exhibits A.3 through A.5 of this training program. Information on additional hazards, which may be presented by hazardous chemicals present at the facility, is summarized in Exhibit A.6. It is emphasized that this information is general in nature and may not address hazards associated with a specific chemical that may or may not fall into one of these categories. Information on a specific chemical product should be obtained from the product label and SDS.

Category Specific Training

Flammable Materials

EXAMPLES

Flammable Gases

Flammable gas means a gas having a flammable range with air at 68 F and a standard pressure of 14.7 psi.

Example: Acetylene Flash point -0.7 F.

Flammable Liquids

Liquids that give off enough vapors to burn are now called "Flammable Liquids". The potential hazard of flammable liquids is determined by the flash point and the boiling point. Flammable liquids have a flash point below 199.6 degrees F. The hazard level of flammable materials are determined as follows:

Category 1 Flash point < 73.4 F and initial boiling point < 95 F

Category 2 Flash point < 73.4 F and initial boiling point > 95 F

Category 3 Flash point > 73.4 F and <140 F

Category 4 Flash point > 140 and < (199.4 F)

Examples:

Gasoline Flash point -44 F and initial boiling point > 95 F

Bulk brake wash Flash point 0 F and initial boiling point > 95 F

Some paints and thinners Flash point 54 F and initial boiling point > 95 F

Diesel fuel Flash point > 73.4 F and < 140 F

Parts washer solvent Flash point > 140 F and < (199.4 F)

Key Definitions

- Flash Point.** The lowest temperature at which a liquid gives off enough vapors to make an ignitable mixture of vapor and air in a test container. It is an indicator of how easily a material will catch fire. A chemical designated "flammable" has a flash point of less than 100°F. Those with flash points of 100°F or higher are classified as combustible.
- Boiling Point.** The temperature at which the vapor pressure of a liquid equals the external pressure surrounding the liquid causing the liquid to change into vapor.
- Evaporation Rate.** The rate at which the chemical evaporates compared to Ether, which evaporates very quickly, or to butyl acetate, which evaporates very slowly. If a chemical has an evaporation rate greater than 1, it evaporates faster than the chemical to which it is compared. If the rate is less than 1, it evaporates more slowly than the chemical to which it is compared.

A chemical that evaporates easily will also typically have a high "vapor pressure", and air concentrations can build up rapidly when the liquid is in use. Chemicals with high vapor pressures can be especially hazardous when one is working with them in an enclosed area or an area with poor ventilation. Hazards include those from inhalation of vapors (health hazard) in addition to the danger of fire or explosion (physical hazard).

- Explosive Limits.** The upper and lower limits of a vapor and air concentration (given as a

percent) which, when exposed to a source of ignition, can cause a flash or explosion at ambient temperatures and pressures. Concentrations outside these limits (higher or lower) are usually too "rich" or too "lean" to ignite when exposed to an ignition source.

Explosive Limits are especially applicable for vapors that are heavier than air. Gasoline vapors are a good example.

Physical Hazards and Characteristics

1. **Fire and Explosion.** Flammable and combustible chemicals present fire and explosion hazards if the chemicals are not handled properly. Many aerosol sprays, for example, present a special explosion hazard when exposed to heat or fire. Each SDS should have a section on the fire and explosion hazards posed by the chemical.
2. **Reactivity.** Most flammable and combustible chemicals common to many industries are stable and will not react violently with water or other chemicals. Any special data on reactivity should be included in the SDS.

Health Effects

1. **Routes of Entry.** Most chemicals also pose a health hazard to exposed individuals. The three general "routes of entry" for a chemical to affect an individual are reviewed below:

- a. **Inhalation** (Breathing in vapors). Most people have breathed detectable vapors of one sort or another. While some are generally considered harmless, others are not. For example, many volatile chemicals can reach fatal concentrations inside a closed or poorly ventilated area, such as inside a tank.

Protecting this route of entry normally includes the use of mechanical ventilation designed to maintain vapor concentrations at a safe level. Respiratory equipment can also prevent access to this route of entry. In some instances a paper facemask will suffice. In others, a positive pressure air respirator may be required. The SDS will provide guidance on safe exposure limits.

- b. **Dermal** (Contact with the skin or eyes). Some chemicals can directly affect the skin. For example, repeated exposure to many solvents can result in dryness and irritation of the skin. A released compressed gas can cool or even freeze the skin. Eyes, as the most sensitive surface tissue, are especially susceptible to damage.

Some chemicals can be absorbed right through the skin, and the health effects can be the same as if they were inhaled.

Use of protective clothing and common sense practices can be used to seal off this route of access. Some paint products, for example, may require the use of full protective clothing. In other instances, however, exposed individuals are advised to use gloves, goggles, or other Personal Protective Equipment. In addition, they should normally clean off contaminated skin and change excessively contaminated clothing to minimize dermal exposure. The SDS for the hazardous chemical that came into contact with the skin, will have instructions in the event of exposure.

- c. **Ingestion** (Swallowing the chemical). Few employees are going to intentionally ingest a dangerous chemical. Poor hygiene, however, can result in vapors settling on food and liquids (coffee, etc.) that are later consumed. Chemicals can also be ingested when a worker with contaminated skin handles food, cigarettes, etc. An individual can also unintentionally ingest a chemical that, for example, is in an unlabeled or improperly labeled container such as a coffee cup. Ingestion is normally prevented by sound hygiene practices. Food, for example, should not be openly stored or eaten in the work area. All employees should clean up before eating, drinking or smoking.

2. **Common Effects of Overexposure:**

- a. **Inhalation.** High concentrations of vapors are irritating to the eyes, nose, throat and lungs. These concentrations may cause headaches, dizziness and/or sleepiness.

Nausea and loss of coordination may also occur. Severe overexposure can result in loss of consciousness, coma and even death.

- b. **Dermal.** Prolonged or repeated liquid contact may cause defatting of the skin leading to dryness. Skin irritation and dermatitis (reddening and inflamed skin) may also occur. Some solvents can be absorbed through the skin and result in health effects similar to those that occur when the chemical is inhaled.
- c. **Eye Contact.** Can produce irritation, burning and severe discomfort. Damage to the eyes, including blindness, can also occur.
- d. **Ingestion.** May produce nausea, vomiting, abdominal cramps, diarrhea and other gastrointestinal problems. Poisoning and death can also occur.

Detection of a Release

- 1. **Odor.** Most vapors produce an odor or cause a person's nose or eyes to become irritated. However, odor thresholds (the lowest level that can be detected) vary from person to person and should not be depended upon as a reliable warning mechanism. In addition, exposure to some chemicals produces olfactory fatigue (a rapid loss of ability to smell the odor).
- 2. **Appearance.** Most vapors are invisible and therefore provide no visible warning. Many facility chemicals, however, have a low vapor pressure and thus evaporate slowly. These chemicals may have a color and/or viscosity (thickness) that will allow one to quickly distinguish them from water or other free liquid common to shop operations.
- 3. **Instrumentation.** A variety of industrial hygiene instruments can be used to measure employee exposures. Normally these instruments are only used to monitor exposure levels and will probably not be in use in the event of a release.

Emergency Response

- 1. **Spill Cleanup.** The facility relies primarily upon community provided services for emergency response to a substantial release of flammable liquid. Emergency response procedures are more fully addressed in the facility's Emergency Response Plan. However, the following absorbent materials are normally maintained onsite that can be utilized, in a housekeeping sense, to clean up small spills:

Absorbent	Location
Absorbent Granular / Powder	Service Dept.
Absorbent Granular / Powder	Body Shop / Paint Dept
Absorbent Pads	Service Dept.
Absorbent Pads	Body Shop / Paint Dept
Mops and Brooms	Service Dept.
Mops and Brooms	Body Shop / Paint Dept
Shop Rags	Service Dept.
Shop Rags	Body Shop / Paint Dept
Spill Kit	Service Dept.
Spill Kit	Body Shop / Paint Dept

The following procedures should be generally followed when cleaning up a release:

- a. Shut off and eliminate all sources of ignition.
 - b. Contain the released material by diking around it using sand, earth or other absorbent material. If necessary, dike around storm or sanitary sewer drains in order to prevent the material from flowing into any of them.
 - c. Attempt to prevent any additional release. An example would be closing a leaking valve or turning off a pump that is causing the release.
 - d. Recover the free product by adding sand, earth or other absorbent material to the spilled material. It may also be possible to pump up a significant portion of the contained material.
 - e. Minimize breathing vapors and skin contact. This may require the use of protective clothing or other personal protective equipment.
 - f. Ventilate the area with local exhaust systems or by opening available doors and windows.
 - g. Dispose of the contaminated absorbent in accordance with applicable regulations.
2. **First Aid Procedures.** Each SDS includes first aid information specific to the chemical and should be immediately reviewed to determine proper first aid procedures. A physician should also be immediately consulted. General first aid responses include:
- a. **Eye Contact.** Flush the eyes with large amounts of water for at least 15 minutes. Occasionally lift both upper and lower lids. If condition persists, consult a physician.
 - b. **Skin Contact.** Remove contaminated clothing and wash skin thoroughly with soap and water.
 - c. **Inhalation.** If overcome or affected by vapors, remove from exposure and to a source of fresh air. Call a physician immediately. If breathing is irregular or has stopped, resuscitation efforts may be initiated by a qualified individual.
 - d. **Ingestion.** Call emergency medical aid immediately. Consult the SDS to determine if vomiting should or should not be induced or if individual should be provided other first aid measures.

Personal Protective Equipment

Use chemical-resistant gloves, aprons, or clothing if repeated or prolonged skin contact is likely to occur. Use splash goggles and/or face shield when eye or face contact may occur. If required, use approved respiratory protection equipment as provided by the facility.

Engineering Controls/Work Practices

1. **Ventilation.** Used to prevent buildup of vapors to a level that poses a health or fire/explosion hazard.
2. **Containers.** Keep containers closed when not in use. Do not store or place containers near heat or any source of ignition.
3. **Smoking.** Do not smoke when in the vicinity of flammable vapors (ex: gasoline).

Category Specific Training

Corrosives

A corrosive is a chemical that can materially damage or destroy objects that it comes into contact with. The corrosive properties of a material are measured by their specific

pH value. pH is measured on a scale from 0-14. pH values from 0-7 indicate acidity and values from 7-14 indicate alkalinity. Water has a pH of around 7. A pH of 1 is a strong acid. A pH above 12 indicates a strong alkaline (or basic) material.

Examples:

Acids

Battery Acid (Sulfuric Acid)	pH = 1.2
Wire Wheel Cleaner (Hydrofluoric Acid)	pH = 2.1
Metal Prep Solutions (phosphoric/hydrochloric acid)	pH below 3

Alkaline Materials (caustics)

Strong Soaps (sodium hydroxide)	pH 12-14
Detail cleaners/degreasers (sodium hydroxide)	pH 12-14

Physical Hazards and Characteristics

- 1. Fire and Explosion Hazards.** Most corrosives are neither flammable nor combustible. Many, however, can react with other materials to release fumes or gases. These fumes or gases can create a mixture that can explode. (for example: sulfuric acid in a vehicle battery can react with lead and free hydrogen gas. Hydrogen is a flammable (explosive) gas.)
- 2. Reactivity.** The very nature of a corrosive is that it will react with other materials. pH is a measure of this reactivity. Very low values (0-2) and very high values (12-14) mean the solution is very reactive.

Health Effects

- 1. Routes of Entry:** The three general “routes of entry” for a corrosive to affect an individual are inhalation, dermal (skin) contact (including eye contact), and ingestion. Routes of entry are discussed in Exhibit (A.3) under “Health Effects and should be reviewed.
- 2. Common Effects of Overexposure:**
 - a. Inhalation.** Dilute concentrations may produce irritation of the upper respiratory tract and cause pulmonary edema (a collection of fluid in the lungs). Should this occur, exposed individuals may find it difficult to take a deep breath without coughing or experiencing a burning sensation. High concentrations may produce loss of consciousness and chemical pneumonitis (an infection of the lungs similar to pneumonia).
 - b. Dermal (Contact with skin or eyes).** Concentrated solutions may produce severe burns. Exposure can also result in skin ulceration and blisters. Dilute alkaline concentrations may cause defatting and drying of skin. Corrosives are especially dangerous when eye contact occurs. A corrosive mist can cause irritation and tearing. Liquids can produce severe burns to the eye and damage eye tissue. In severe cases, blindness can occur.
 - c. Ingestion.** Most corrosives will damage the digestive tract. Gastritis, ulceration and scarring of the digestive tract are likely. Corrosives can also produce nausea,

vomiting, diarrhea and abdominal cramps. If sufficient quantities are swallowed, the result could be fatal.

Detection of a Release

1. **Odor.** Vapors may cause respiratory irritation. Each person's sensitivity is different, and therefore cannot be relied upon to detect a release. Some corrosive soaps will have an added odor in order to produce a more pleasant (and distinct) smell.
2. **Appearance.** Corrosives can vary in color and viscosity. Acid, for example, is normally a colorless liquid, much like water. Most soaps will have a coloring agent added.
3. **Instrumentation.** A variety of industrial hygiene instruments can be used to measure employee exposures. Normally, however, these instruments are not used at automotive repair facilities.

Emergency Response

1. **Spill Cleanup.** The facility relies primarily upon community provided services for emergency response to a substantial release of a corrosive liquid. Emergency response procedures are more fully addressed in the facility's Emergency Response Plan. However, the following absorbent materials are normally maintained onsite that can be utilized, in a housekeeping sense, to clean up small spills:

Absorbent	Location
Absorbent Granular / Powder	Service Dept.
Absorbent Granular / Powder	Body Shop / Paint Dept
Absorbent Pads	Service Dept.
Absorbent Pads	Body Shop / Paint Dept
Mops and Brooms	Service Dept.
Mops and Brooms	Body Shop / Paint Dept
Shop Rags	Service Dept.
Shop Rags	Body Shop / Paint Dept
Spill Kit	Service Dept.
Spill Kit	Body Shop / Paint Dept

The following procedures should be generally followed when cleaning up a release:

- a. Shut off and eliminate all sources of ignition.
- b. Contain the released liquid by diking around it using sand, earth or other absorbent material. If necessary, dike around storm or sanitary sewer drains in order to prevent the liquid from flowing into any drainage systems.
- c. Attempt to prevent any additional release (after donning appropriate personal protective equipment).
- d. If feasible, neutralize released material to a pH of 7 or 8 (ex: Acid – use lime; Caustic – use vinegar).
- e. Absorb spilled material using sand, earth or another absorbent. Floor cleaning/sweeping materials are appropriate.

- f. Avoid breathing in any vapors and avoid skin contact. Wear protective clothing and equipment including chemical resistant gloves, eye protection and (if necessary) a positive pressure air respirator unit.
 - g. Ventilate the area with local exhaust systems or by opening available doors and windows.
 - h. Place contaminated absorbent material in polyethylene or polyethylene-lined container for disposal. Dispose of the material in accordance with applicable regulations.
 - i. Thoroughly flush the surface where the spill occurred with water ensuring that the wash water is not released into the environment.
1. **First Aid Procedures.** Each SDS includes first aid information specific to the chemical and should be immediately reviewed to determine proper first aid activities. A physician should also be immediately consulted. General first aid responses include:
- a. **Eye Contact.** Flush the eyes with large amounts of water for at least 15 minutes. Occasionally lift upper and lower lids. Consult a physician.
 - b. **Skin Contact.** Remove contaminated clothing and immediately flush contaminated areas with large amounts of water.
 - c. **Inhalation.** Remove individual to fresh air at once and call a physician immediately. If breathing is irregular or has stopped, a qualified individual may begin artificial respiration.
 - d. **Ingestion.** Drink large quantities of water to dilute the corrosive. Do not induce vomiting as this could cause further damage to the esophagus. Call a physician immediately.

Personal Protective Equipment

Use chemical-resistant gloves, aprons or clothing if skin contact is likely to occur. Use splash goggles and/or face shield when eye or face contact may occur. Use approved respiratory equipment as provided by the facility.

Engineering Controls

- 1. **Ventilation.** Used to prevent buildup of vapors to a level that poses a health or fire/explosion hazard.
- 2. **Containers.** Keep containers closed when not in use. Do not store or place containers near flammables/combustibles or near heat/sources of ignition.
- 3. **Mixing.** Do not add water to corrosive materials. Handle carefully to prevent splashing on clothes, eyes or unprotected skin.

Category Specific Training

Compressed Gases

Compressed gases are gases that have been liquefied, or liquefied and refrigerated, and held at a pressure of 29 psi or more. They comprise of compressed gases, liquefied gases, dissolved gases and refrigerated liquefied gases.

Examples

Oxygen, a non-liquefied gas, is an oxidizer. It causes or contributes to the combustion of other material.

Acetylene is dissolved in acetone to keep it stable. It is a flammable gas with a flash point of -0.7 F.

Freon is a liquefied compressed gas. It forms toxic conditions when exposed to air.

Nitrogen is a non-liquefied gas. It is non-flammable. It can cause asphyxiation.

Helium is a non-liquefied gas. It is non-flammable and non-toxic.

Physical Hazards and Characteristics

Pressurized vessel. Most compressed gases are contained under high pressure in heavy metal cylinders. Compressed oxygen is an example. Typically gas is released from one of these vessels by opening a valve at the top of the cylinder. If a release valve is broken off, the escape of pressurized gas could cause the containment cylinder to act like an unguided rocket.

Fire and Explosion. Certain compressed gases such as acetylene, are flammable. Compressed oxygen is an oxidizer and when released, it can promote vigorous growth of a fire. Some compressed gases can, under fire conditions, decompose into dangerous gases. Freon, for example, can decompose into Phosgene. Finally, under conditions of excessive heat and pressure, particularly those that can occur in a fire situation, all compressed gas cylinders can explode. In addition to the danger of flying metal, such an event would result in the rapid release of potentially dangerous gas.

Reactivity. Compressed gases often react with certain metals or gases. A reactive situation is unlikely under normal operating circumstances. Data on reactivity is included in the specific compressed gas's SDS.

Health Effects

1. **Routes of entry:** The two likely "routes of entry" for a compressed gas to affect an individual are inhalation and dermal (skin) contact (including eye contact). Ingestion is unlikely as the chemicals are gas at room temperature. Additional information on routes of entry is included in Exhibit (A.3).
2. **Common effect of overexposure:**
 - a. **Inhalation.** High concentrations of gases other than oxygen can displace oxygen and act as asphyxiates. This can result in numerous health effects including diminished alertness and depression of all sensations, nausea and vomiting, loss of consciousness, irregular pulse and death.
 - b. **Dermal.** Contact of cryogenic liquid, such as Freon, or rapidly expanding gas with the skin or eyes may cause frostbite. More routine contact with some gases may be irritating to the skin or eyes.

Detection of a Release

1. **Odor.** Many compressed gases, such as carbon dioxide are odorless and colorless.

Concentration of some gases, such as acetylene, may produce a detectible odor.

2. **Appearance.** Normally invisible. In some instances, however, a rapidly releasing gas may cool surrounding air thereby condensing moisture and creating a fog like atmosphere.
3. **Noise.** Significant release of gas by a highly pressurized storage vessel may result in an audible hissing sound.

Emergency Response

1. **Release Response.** The facility relies primarily upon community provided services for emergency response to a substantial release of a compressed gas. Emergency response procedures to be implemented by facility personnel are generally limited to the following:
 - a. **Cryogenic Release:** Clear and evacuate the facility and allow the liquid to dissipate and then adhere to the guidance below.
 - b. **Gaseous Release:** Uncontrolled releases should be addressed by the appropriate community response agency (ex. fire department). The facility should normally be evacuated until determined to be safe. If possible to do safely, shut off ignition sources and, if release is caused by an open valve, stop the leak by closing the valve. For small leaks, if possible to do safely, a cylinder may be moved to an area outdoors and away from any sources of ignition.
2. **First Aid Procedures.** Each SDS includes first aid information specific to the chemical and should be immediately reviewed to determine proper first aid procedures. A physician should also be immediately consulted. General first aid responses include:
 - a. **Inhalation.** Remove victim to fresh air as quickly as possible. Do not attempt to retrieve a victim of over exposure without adequate personal protective equipment as specified on the chemical SDS.
 - b. **Eye Contact.** Flush with large amounts of water for at least 15 minutes. Occasionally lift both upper and lower lids.
 - c. **Skin Contact.** Clean affected area with soap and water. If frostbite is an issue, place affected area in warm (not hot) water or wrap in blankets. Encourage victim to exercise affected part while being warmed.

Protective Equipment

Use eye and skin protective equipment appropriate for the job. This could include safety goggles or safety shields for eyes, and leather or other suitable protection for hands and skin during cutting and welding.

Engineering Controls/Work Practices

1. **Ventilation.** Use compressed gases only in well-ventilated areas.
2. **Storage.** Store compressed gas containers upright in cool, dry, well-ventilated areas with the valve protection cap in place. Do not store cylinders near any sources of ignition or where cylinder temperature could exceed 120°F.
3. **Special engineering controls for bottled gases:** A primary hazard from these gases is their containment under high pressure. If a release valve is broken off, a cylinder (or other container) can act like an unguided rocket. Special engineering controls for these gases are intended primarily to prevent such an incident.
 - a. Always transport gas cylinder with the safety cap on.
 - b. Secure the cylinder to handcart or truck when transporting.
 - c. Never remove the safety cap unless the cylinder is properly secured.

- d.** Store compressed gas cylinders upright and secured to a wall or other stable structure. Secure it using a chain or other securing device. Full and empty containers should be segregated. Separate flammable gases from oxidizers (ex: compressed oxygen) by 20 feet.
- e.** Ensure the proper regulator is used on a compressed gas cylinder.
- f.** Close the cylinder valve after each use and when cylinder is empty.

Category Specific Training

Additional Hazards

PHYSICAL HAZARDS

There are additional chemicals that may be present at the facility and that do not fit well into the three categories discussed in Exhibits (A.3) through (A.5). Examples include antifreeze, chlorinated solvents and some cleaning products. While the individual chemical's SDS should be consulted the physical hazards of this category can, in addition to the many hazards already noted for other facility chemicals, include incompatibility or reactivity.

HEALTH HAZARDS

The SDS for some facility chemicals list more severe health effects that could potentially result from exposure, and particularly over-exposure, to a chemical. These effects can include irritation, or redness or swelling of the affected area; sensitization, which is the development of an increasingly severe reaction to a chemical; central nervous system damage including numbness and nervous twitches; internal tissue damage, such as liver or kidney harm; and cancer or reproductive harm. To determine the hazards of a particular chemical, carefully read the product label and Safety Data Sheet.

ADDITIONAL TRAINING MATERIALS

Additional training materials for hazards encountered at the facility may be provided to employees as attachments to this Hazard Communication Program and available for download from the KPA software.

Definitions

- **Appearance and Odor.** These characteristics may help identify the chemical one is working with, but odor should not be relied upon to indicate if there is a hazardous concentration of the chemical in air. Some chemicals can reach hazardous levels and not have a noticeable odor.
- **Auto-ignition Temperature.** The temperature at which a chemical will self-ignite and sustain combustion in the absence of a spark or flame.
- **Boiling Point.** This is the temperature in degrees Fahrenheit or Centigrade at which the product boils (or becomes a gas). Ranges are normally given for mixtures.
- **Evaporation Rate.** This is the rate at which the chemical evaporates compared either to ether, which evaporates very quickly, or to butyl acetate which evaporates very slowly. The chemical which is used for comparison (ether or butyl acetate) should be listed. If a chemical has an evaporation rate greater than one, it evaporates more quickly than the chemical to which it is compared. If the rate is less than one, it evaporates more slowly than the chemical to which it is compared.
- **Extinguishing Media.** This indicates what kind of fire extinguisher to use. If the chemical is not flammable and/or is completely inert, the SDS should say so.
- **Flammable Limits in Air - LEL (Lower Explosive Limit) and UEL (Upper Explosive Limit).** The lower and upper limit of vapor and air concentration, given as percent, which, when exposed to an ignition source, can flash or explode at ambient temperatures and pressures.
- **Flash Point.** The lowest temperature at which a liquid gives off enough vapors to make an ignitable mixture of vapor and air in a test container.
- **Special Fire Fighting Procedures and Unusual Fire and Explosion Hazards.** These would need to be described for any flammable or combustible chemical. Any special procedures or protective equipment that should be used in fighting the fire should be noted.
- **Specific Gravity.** This refers to the ratio of the weight of a volume of the chemical to the weight of an equal volume of water at a specified temperature. If a chemical has a specific gravity greater than one, it will sink in water; if it has a specific gravity less than one, it will float in water.
- **Vapor Density.** This is the relative density or weight of a vapor or gas compared with an equal volume of air. If the vapor density of a chemical is less than one, it will tend to rise in air. If the vapor density is greater than one, it will fall in air. Chemicals with high vapor densities pose a particular problem because they will collect in the bottom of tanks or other areas (the vapors of many flammable liquids are heavier than air).
- **Vapor Pressure.** A high vapor pressure indicates that a liquid will evaporate easily. The term "volatile" is often used to describe a liquid that evaporates easily. This is important to know because it indicates that air concentrations can build up quickly when the chemical is used in its liquid form. Chemicals with high vapor pressures can be especially hazardous if they are used in an enclosed area or in an area with poor ventilation.

ASBESTOS CONTROL PROGRAM

Tower Motor Company

Overview of Asbestos in the Automobile Service Industry

Asbestos is one of the best friction materials available. While most OEMs have stopped using asbestos components in most new vehicles, some brake shoes and clutch plates may still contain this fibrous material. When these shoes and plates are new and the asbestos is bonded together with other materials in construction, these parts are safe to handle. During use, however, brakes and clutches deteriorate. Asbestos fibers are freed from these bonding agents and often end up in brake and clutch dust. This asbestos laden dust is easily disturbed during repair work thereby allowing these normally invisible fibers to become airborne. Once airborne, asbestos fibers can linger in the air for hours and may be inhaled by personnel throughout the shop.

Certain practices, such as the use of compressed air to clean brake shoes and backing plates, can result in high levels of airborne asbestos; possibly in excess of regulatory standards, and are prohibited.

Fortunately, there are methods that, if properly implemented, are normally able to reduce airborne asbestos levels down to very low levels. Successful implementation of any of these methods requires the active participation of facility employees that deal with asbestos.

Health Concerns Related to Asbestos Exposure

There is substantial data validating the adverse health effects that result from exposure to airborne asbestos fibers. Research also notes a clear link between exposure levels and the risk of contracting an asbestos-related disease, most likely asbestosis or cancer.

There is no known asbestos level below which health effects do not occur. Low exposure levels do, however, present a comparatively small risk. As discussed elsewhere in this Training Plan, government studies show that, with proper control techniques, the amount of airborne asbestos in a dealership can be held to very low levels.

1. **Exposure Routes:**

- a. **Inhalation.** Medical studies of asbestos-related diseases have revealed that the primary exposure route is inhalation. This exposure may be classified as "occupational exposure" for workers and "para-occupational exposure" for workers families due to asbestos on work clothes taken home.
- b. **Ingestion.** There have been no conclusive studies to date indicating that ingestion of asbestos in food or water results in health damage. However, because of concern that there may be potential health impacts not yet identified, there are federal regulations specifying asbestos limitations in ambient water and in products such as food processing filters.
- c. **Skin Contact.** There is currently no evidence to indicate that asbestos fibers can penetrate the skin tissue. Some workers have indicated that asbestos fibers irritate the skin resulting in a rash similar to that experienced with handling of other fibrous materials such as fiberglass insulation.
- d. **Latency Period:** It usually takes 15 to 30 years or more for cancer or asbestos lung scarring to show up after exposure. Scientists call this the "latency period". Until then, the victim often feels fine. This gives a false sense of security. For example, if one touches a hot stove, one gets burned right away. With asbestos, however, the damage is not obvious until many years later. This false sense of security can easily lead a worker and/or supervisor to follow work practices that can cause harmful exposures, since they are not aware that disease may develop later.

Asbestos Exposure Standard

In 1995 the federal government adopted a new standard for airborne asbestos levels in the workplace. In brief, it reduced the Permissible Exposure Limit (PEL) for workers to 0.1 fibers per cubic centimeter of air (0.1 f/cc).

This standard also includes preferred asbestos control methods.

Tower Motor Company Policy

Tower Motor Company recognizes that vehicle maintenance operations involving the repair and maintenance of asbestos contaminated parts pose risks to exposed workers. It is, therefore, our policy that:

1. The company will take all steps necessary to ensure that shop airborne asbestos levels remain below the 0.1 fibers per cubic centimeter (0.1 f/cc) PEL as defined by the federal asbestos standard.
2. The company will implement approved asbestos control activities even if asbestos levels remain well below allowable levels.
3. Employees who violate required procedures may be subject to disciplinary action.

Asbestos Control Method

Tower Motor Company will use the "wet method" to control airborne asbestos levels during brake and clutch repair. This method involves use of a brake washer unit and/or sprayed brake cleaner. Available data indicate that proper application of this wetting method can reduce concentrations of airborne asbestos to levels well below the PEL.

General application of this control method is outlined below. Note that the training outline is directed towards brake repair work. Related procedures will apply for work involving clutch repair. Also, manufacturer/distributor guidance specific to the operation of any brake parts unit should be reviewed prior to using it.

Performing the Work

Before explaining the asbestos control activities, it is important to again emphasize that the objective of these activities is to minimize the concentration of airborne asbestos in the shop area. None of the steps outlined below are mysterious or complicated. Each, however, plays an important part in a successful asbestos control strategy.

1. **Remove the wheel(s).** Self-explanatory
2. **Remove the brake drum.** If the work involves removal of a brake drum, the technician should appreciate that failure to observe appropriate work practices here can release substantial amounts of asbestos laden dust. **Caution is warranted.**

The key requirements in this step are to remove the drum as gently as possible and to avoid spilling any dust that may be cradled within the drum. After removing the drum, it should be gently placed in the basin of the washing unit. Brake dust contained in the drum should be thoroughly but gently wetted down with the solvent or aqueous solution contained in the brake washer and washed from the drum. The dust free drum can then be wiped dry and set aside.

If an aerosol spray is used for this wetting purpose the technician should begin spraying at a distance from the drum sufficient to ensure that asbestos particles are not dislodged by the velocity of the spray. Drum should not be wiped clean until the dust is thoroughly dampened.

If it is necessary to use tools (i.e., a hammer) to loosen the drum, the technician should be especially attentive to removing the drum gently. Try to avoid pulling or yanking it off in a sudden, sharp motion that can release much of the dust contained in it.

3. **Wet down entire brake assembly area.** Brake pads and rotors and/or drum and backing plate should be wet down using the solution fed brake washer brush or other cleaning instrument included with the unit. If an aerosol spray is used for this purpose, ensure that the spray can is held at a distance sufficient that the force of the spray does not dislodge dust particles. For

either process, ensure that the solvent brake washer basin or other catch basin is placed directly under the brake assembly so that runoff will fall into it rather than dropping onto the floor. After washing, the brake assembly can be wiped down with a rag.

4. **Remove Damaged or Worn Parts.** Parts should be thoroughly washed in the unit (or wet down with aerosol spray) and wiped clean before being set aside. Properly cleaned, non-friable brake parts may be disposed of as normal refuse.
5. **Cleanup.** Ensure any contaminated liquid that drips from the brake area onto the shop floor is promptly wiped up. If allowed to dry, any asbestos in it can easily become airborne.
6. **Disposal:** Proper execution of the above steps should effectively control shop asbestos during vehicle maintenance. Asbestos, however, will now be contained in the liquid solution in the brake washer unit, if such a unit is used. This asbestos bearing liquid may be hazardous and should be managed in accordance with applicable state and federal regulations.

Rags used in this process may also contain asbestos. These rags may be properly managed by placing them in a closed receptacle for pickup and recycling by an authorized laundry service.

Though non-friable used brake shoes and pads may continue to contain asbestos fibers, these fibers are tightly bound and should not be released during reasonably foreseeable handling. Therefore, if these old shoes/pads (and other parts) are wiped clean of any loose dirt, dust, etc. they typically require no special labeling.

CAUTION

Under no circumstances is a standard shop or home vacuum cleaner to be used to clean up asbestos laden dust. The filter bags used in these machines are not fine enough to trap asbestos fibers. Instead, these vacuums are likely to stir up asbestos fibers and scatter them into the air.

Personal Hygiene

Certain personal hygiene measures can further reduce exposure levels and health risks for those who work with asbestos. Technicians should, therefore, observe the following practices. Particular attention should be given to the section dealing with the effects of smoking.

1. **Refrain from eating, drinking or smoking in the area where brake or clutch repair work is being done.** Asbestos fibers can settle on food, cigarettes, etc. and a technician who disregards this guidance will be handling substances that may be contaminated with asbestos. These fibers can then be ingested or breathed in. Those who smoke should remove their cigarettes from any open shirt pocket and properly cover them before beginning clutch or brake work. For example, they could be put in one's toolbox.
2. **Wash hands and face before eating or smoking.** This should remove asbestos fibers that have settled on the hands and face or are entrained in oil and grease that the technician may get on his skin during brake and clutch work.
3. **Wash all exposed skin and change clothes before going home.** Purpose is to avoid contaminating others, especially family members, with asbestos.
4. **Stop Smoking.** Studies have shown that exposure to asbestos, combined with cigarette smoking, create a significantly higher risk of developing an asbestos-related disease. The EPA, for example, has estimated that a smoker exposed to asbestos has a much higher chance of developing lung cancer compared to a similarly exposed nonsmoker. Some information suggests that quitting smoking can reduce this risk.