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HAZARD COMMUNICATION

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Hazard Communication

1.0 Purpose & Scope

1.1 Purpose.

- 1.1.1 Communication of chemical hazards – To explain company & employee responsibilities as they relate to identifying chemicals and communicating vital chemical safety information.
- 1.1.2 Regulatory compliance – To fulfill the written program requirements specified in OSHA regulations 29 CFR 1910.1200 and 29 CFR 1926.59 (Hazard Communication).

1.2 Scope.

The provisions of this program apply to all hazardous substances used or stored at WCI workplaces, including the shop and jobsites.

- 1.2.1 Hazardous substance – Any chemical or by-product that poses a physical or health hazard, whether its effects are acute (short-term) or chronic (long-term). Hazardous substances can be solids, liquids, gases, dusts, vapors, smokes, fumes, sprays and/or mists.

Common Physical Hazards		Common Health Hazards	
Flammable	Corrosive	Carcinogenic	Corrosive
Combustible	Compressed	Toxic/Poison	Sensitizer
Reactive/unstable	Explosive	Mutagenic	Hepatotoxic
Pyrophoric	Water reactive	Teratogenic	Nephrotoxic
Oxidizer	Organic peroxide	Irritant	Neurotoxic
		Agents affecting the blood forming system, skin, eyes, lungs or mucous membranes	

- 1.2.2 Definitions – Refer to Appendix B for a glossary of common terms associated with chemical hazard communication & SDS.

- 1.2.3 Substances exempt from this program – The following substances or classes of substances are NOT covered under this program:

- Hazardous wastes and substances governed by EPA regulations (SWDA & CERCLA)
- Tobacco or tobacco products
- Untreated wood or wood products, including lumber which will NOT be processed
- Articles (as defined by OSHA)
- Food or alcoholic beverages intended for personal consumption
- Medication/1st aid supplies defined in the Federal Food, Drug, and Cosmetic Act
- Consumer products used in the same manner, duration & frequency as consumers use them
- Nuisance particulates that do not pose any physical or health hazards
- Ionizing and non-ionizing radiation
- Biological materials

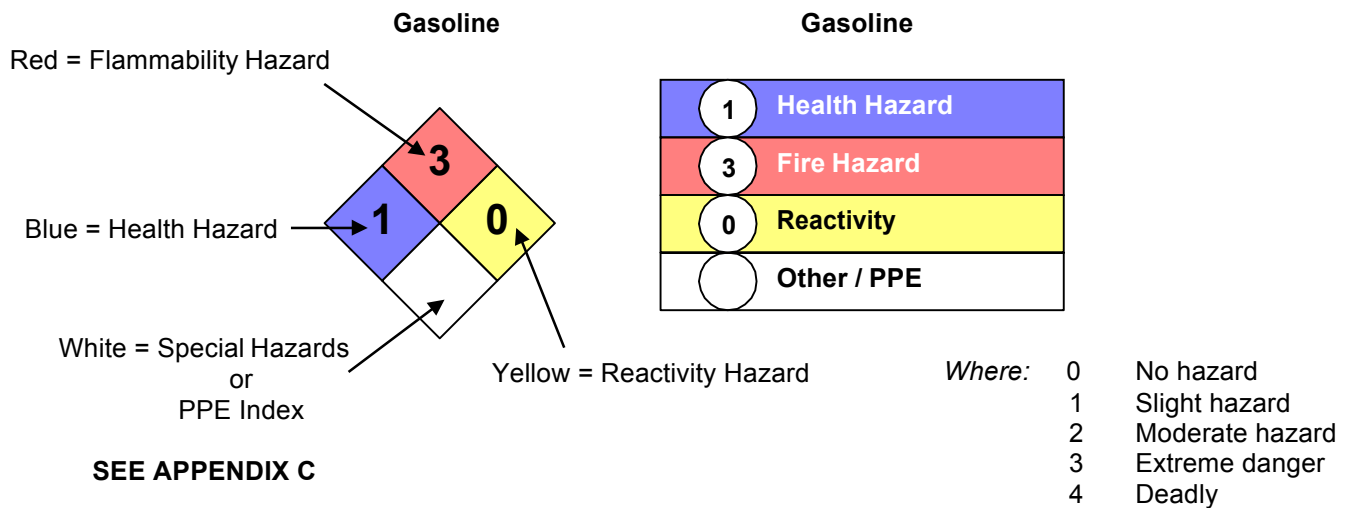
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2.0 Container Labeling

2.1 Label requirements.

All hazardous substances must have a label that clearly states the name of the hazardous substance and its appropriate hazard warnings. Labels must be capable of withstanding the environment & chemicals to which they will be exposed.

- 2.1.1 Acceptable labels :
- Manufacturer's original container label
 - Writing directly on container (or tape/sticker)
 - Pre-printed labels
 - Shipping labels (that contain ID & hazard info)



2.1.2 Refilling reusable containers – Prior to refilling, the employee shall be sure that the existing label is accurate and that only that substance is refilled into the container.

2.2 Labeling responsibility.

Each employee shall be responsible for assuring that the proper label is provided for every hazardous substance s/he uses or stores. If a label is missing or is not clearly legible, then notify the foreman. The foreman shall see that the proper label is provided.

2.2.1 Location of information needed for labels – The information necessary for completing a label may be found on the substance SDS or another container of the same substance.

2.2.2 Labels for solid materials – Solid [bulk] materials such as pipe only require a label with initial shipment, unless chemical hazard information changes. Foremen shall maintain a copy of these labels with this Hazard Communication program throughout the duration of the project (unless the supplier provides a label with each bulk shipment). Materials that have been chemically treated (paint, coating, water-proofing, etc.) must be shipped with a label for each delivery.

3.0 SDS – Safety Data Sheets

3.1 About SDS.

SDS are chemical safety information sheets. Although they may not be uniform in format, all SDS will provide the following data:

- Chemical ID (common/chemical name)
- Physical hazards
- Exposure limits
- Carcinogenicity data
- First aid for exposure incidents
- Date of SDS preparation or revision
- Physical & chemical characteristics
- Health hazards
- Route of entry into body
- Safe handling, PPE & exposure controls
- Emergency actions for fire & spill control
- Manufacturer/importer contact info

3.2 SDS location and accessibility.

SDS shall be stored in a binder in all foremen work trucks or trailers, unless we are required to keep the binder in the general contractor's job trailer. These SDS shall be maintained freely accessible to all employees at all times.

3.3 Unable to find SDS.

If an employee is unable to find an SDS for a specific product or chemical, s/he shall notify the foreman. If an SDS is needed, the foreman shall promptly act to obtain the SDS from the appropriate manufacturer or supplier.

3.4 SDS maintenance.

All SDS are to be forwarded to the office (Safety Coordinator) for handling as follows:

- 3.4.1 New SDS – If the SDS does not exist in our current SDS library, Safety Coordinator shall record the chemical name onto the chemical inventory list and provide copies to all foremen for inclusion into SDS binders.
- 3.4.2 Revised SDS – If a newer or revised version of an SDS is received, Safety Coordinator shall provide copies to all foremen for replacement of substance's existing SDS. Any significant changes in the substance's health, fire, reactivity or other hazards shall be communicated to all employees.
- 3.4.3 Existing SDS – If an SDS is received and the current version is maintained in the WCI SDS library, no further action is needed and the copy may be discarded.
- 3.4.4 SDS for hazardous substances no longer used – Obsolete SDS are exposure records and OSHA requires that the following information be kept on file for 30 years:
 - Chemical name (product identity)
 - Where it was used
 - When it was used (from month/year to month/year)
 - Manufacturer & address – not required, but recommended

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3.5 SDS modification.

Under no circumstances is any information on any SDS to be altered, deleted or otherwise changed. If you have questions or concerns about SDS data, notify your foreman and the concern will be addressed through the chemical supplier or manufacturer.

4.0 *Multi-Employer Worksites*

4.1 Information exchange.

At the start of the project, the site foreman is responsible for coordinating the exchange and availability of hazard communication information with the site general contractor and other site contractors.

This may be accomplished by making mutually available, at a pre-determined location, hazard communication programs & SDS. Hazcom information that must be shared among all site contractors includes:

- 4.1.1 SDS – Location of and unrestricted access to SDS.
- 4.1.2 Exposure precautions & PPE – Identity of hazardous substances that present significant health, flammability and/or reactivity risks and to which other site workers may be exposed during the course of work. Also, measures to minimize risks & appropriate PPE requirements.
- 4.1.3 Explanation of labeling system – Explanation of labeling system used.

4.2 Communicating information to employees.

Important safety & health information regarding hazardous substances that other contractors (or host facilities) use or bring onto the site shall be promptly communicated to employees.

5.0 *Employee Information & Training*

5.1 Employee information.

The following information regarding chemical hazard communication shall be made available to all WCI employees through training, toolbox talks, labels, SDS &/or postings:

- Overview of OSHA's Hazard Communication standard.
- Operations where hazardous substances are used or are present.
- Location & availability of our written program, chemical inventory & SDS.

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5.2 **Employee training.**

Employee hazard communication training shall include:

- How to determine the presence or release of hazardous substances.
- Physical & health hazards of hazardous substances in the work area(s).
- Symptoms of overexposure to hazardous substances.
- Steps to reduce or prevent exposure to hazardous substances.
- Review of WCI Hazcom program responsibilities.

5.3 **Trainer qualifications.**

All hazard communication training shall be administered by a person who is knowledgeable of the subject matter covered during the training.

5.4 **Training frequency.**

Training shall be conducted:

- Initially.
- Whenever a new physical or health hazard, about which employees have not been previously trained, has been introduced into the work environment. In these cases, affected employees only need to receive training on the new hazardous substance exposures.

5.5 **Documentation.**

For each training session, the following information shall be documented and provided to the safety coordinator for filing:

- Date(s) of training sessions.
- Names of attendees.
- Content summary of training curriculum.
- Name(s) of person(s) conducting the training.

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Appendix A Hazardous Chemical Inventory List

See SDS Index sheets in front of SDS binders.

Hazard Communication

Appendix B SDS Quick Reference Glossary

- **Acute health hazards** – adverse health effects which have severe symptoms that develop rapidly.
- **Alkali (or caustic)** – the hydroxides & carbonates of the alkali metals & alkaline earth metals. They neutralize acids, impart a soapy feel to water solutions and are the most common cause of occupational dermatitis.
- **Angina** – localized spasm of pain. *Angina pectoris* – recurring pain in chest and left arm caused by sudden decrease in blood supply to heart muscle.
- **Apnea** – temporary stopping of breathing.
- **Asphyxiant** – a vapor or gas which can cause unconsciousness or death by suffocation (lack of oxygen). Simple asphyxiants act by displacing a volume of oxygen with an equal volume of gas (example – Argon). Chemical asphyxiants (example – carbon monoxide) act by binding to your hemoglobin, the oxygen-carrying part of blood. They prevent oxygen from being carried from your lungs to the rest of your body.
- **Autoignition temperature** – the temperature (°F or °C) at which a chemical spontaneously ignites.
- **Benign** – not recurrent or not tending to progress.
- **Boiling point (b.p.)** – temperature (°F or °C) at which the chemical boils at standard atmospheric pressure (boiling occurs when the liquid’s vapor pressure = atmospheric pressure).
- **Bulk density** – mass of powdered or granulated solid material per unit of volume (often in terms of lbs/ft³ or kg/m³).
- **C** – ceiling limit. A level (concentration) of airborne contaminants that cannot be exceeded at any time.
- **CAS #** – a numerical code assigned to a specific material by the Chemical Abstracts Services of the American Chemical Society. These are unique, standardized codes and are basically a material’s “social security number”.
- **Carcinogenicity** – ability to produce cancer. A chemical is considered to be a carcinogen if has been found to cause (or potentially cause) cancer as determined by the IARC, NTP or OSHA.
 - **Group 1** – materials known to be carcinogenic to humans.
 - **Group 2A** – materials that are probably carcinogenic to humans.
 - **Group 2B** – materials that are possibly carcinogenic to humans.
- **Carcinoma** – a malignant tumor (a form of cancer).
- **Chronic health hazards** – adverse health effects with symptoms that develop slowly over a long period of time or which recur frequently.
- **CNS** – central nervous system (brain & spinal cord).
- **Combustible liquid** – a liquid with a flash point from 100°F up to, but not including, 200°F. Mixtures are combustible if more than 1% of the liquid volume is made up of a combustible component or components.

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- **Compressed gas** – a gas/gas mixture having, in a container, an absolute pressure exceeding 40 psi at 700°F or an absolute pressure exceeding 104 psi at 1300°F regardless of the pressure at 700°F. Also includes a liquid having a vapor pressure exceeding 40 psi at 100°F (as determined by ASTM D-323-72).
- **Conjunctivitis** – inflammation of the conjunctiva (delicate membrane that lines the eyelids, covering eyeballs).
- **Corneal vesiculation** – forming of a cyst or fluid-filled sac on the cornea of the eyes.
- **Corrosive** – a chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. This term does not refer to action on inanimate surfaces.
- **Critical temperature** – the temperature (°F or °C) above which a gas cannot be liquefied by an increase in pressure.
- **Cutaneous** – pertaining to or affecting the skin. Subcutaneous – under the skin.
- **Cyanosis** – bluish coloration of the skin caused by lack of oxygen in the blood.
- **Decomposition products** – chemically simpler substances formed by the breakdown of a material. The breakdown may occur as a result of heat (fire), chemical reaction, electrolysis, decay or similar processes. Important to know the hazards of products that are formed when the substance burns or reacts with other chemicals – these products may be more hazardous than the original substance itself.
- **Depressant** – a substance that reduces a bodily functional activity or an instinctive desire, such as appetite.
- **Dermal toxicity** – adverse effects resulting from skin exposure to a substance.
- **Dermatitis** – inflammation of the skin.
- **Edema** – an abnormal accumulation of clear watery fluid in the tissues. Pulmonary edema – fluid in the lungs.
- **Epidemiology** – the science concerned with the study of disease in a general population.
- **Evaporation rate** – the rate at which a material will evaporate as compared to a standard (normal butyl acetate = 1.0). Fast > 3.0 Medium = 0.8 to 3.0 Slow < 0.8
- **Explosive** – a chemical that causes an instantaneous release of pressure, gas & heat when exposed to sudden shock, pressure or high temperature.
- **Extinguishing media** – the type of extinguishing agent recommended for fighting fires involving the substance.
- **f/cc** – fibers per cubic centimeter of air.
- **Fibrosis** – an abnormal thickening of fibrous connective tissue, usually in the lungs.
- **Flammable liquid** – a liquid with a flash point below 100°F. Mixtures are flammable if more than 1% of the liquid volume is made up of a flammable component or components.
- **Flammable solid** – a solid, other than a blasting agent or explosive, that is liable to cause fire through friction, simple ignition, absorption of moisture, spontaneous chemical change or retained heat from manufacturing processes.

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- **Flash point** – the temperature (°F or °C) at which a flammable liquid evaporates at a rate sufficient for its vapor to sustain a fire.
- **Hematopoietic system** – the blood forming mechanism of the body.
- **Hepatotoxin** – a substance that causes injury to the liver.
- **Hypoxia** – decrease in oxygen (less than 19.5%) supplied to or used by the body.
- **IARC** – International Agency for Research on Cancer
- **IDLH** – immediately dangerous to life or health. A concentration of airborne contaminant that poses an immediate threat to life, would cause irreversible or delayed adverse health effects or would interfere with ability to escape danger area.
- **Incompatibilities** – chemicals that adversely react when in direct contact with one another.
- **Irritant** – a chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.
- **Lacrimation** – discharge of tears.
- **LEL & LFL** – lower explosive limit (or lower flammable limit). The leanest mixture of a flammable gas/vapor in air that will burn.
- **Malaise** – a feeling of general discomfort, distress or uneasiness.
- **Malignant** – tending to become progressively worse and to result in death.
- **Melting point (m.p.)** – the temperature (°F or °C) at which a solid changes into a liquid.
- **Metastasis** – spreading of disease from one organ or body part to another not directly connected with it.
- **mg/m³** – milligrams per cubic meter. (Example: 1 mg/m³ of nickel = 1 mg of nickel per 1 cu. meter of air)
- **Molecular weight (m.w.)** – the weight of a single molecule of a chemical substance – “grams per mole” (g/mol).
- **Mutagen** – a substance or agent capable of altering the genetic material in a living cell.
- **Narcosis** – a state of stupor, unconsciousness or arrested activity produced by the influence of narcotics/chemicals.
- **Nephrotoxin** – a substance that causes injury to the kidneys.
- **Neurotoxins** – a material that affects the nerve cells and may produce emotional or behavioral abnormalities.
- **NTP** – National Toxicology Program
- **Odor threshold** – the lowest concentration of a chemical’s vapor, in air, that can be smelled.
- **Organic peroxide** – a class of chemicals that act as a catalyst in polymerization reactions.

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- **OSHA** – Occupational Safety & Health Administration
- **Oxidizer** – a chemical, other than a blasting agent or explosive, that initiates or promotes combustion in other materials. It acts by either causing fire itself or through the release of oxygen or other gases.
- **PEL** – permissible exposure limit. This is the maximum concentration of airborne contaminants that are legally permitted in the workplace. They are expressed in terms of a TWA, STEL or Ceiling Limit. PEL's are enforceable by OSHA.
- **pH** – potential of Hydrogen. The pH scale is a non-linear (logarithmic) scale that expresses the acidity or alkalinity of a chemical. The pH of pure water is 7.0. Acids have a pH below 7 (the lower the pH, the stronger the acid) and alkalis have a pH above 7 (the higher the pH, the stronger the alkali).
- **Photophobia** – abnormal visual intolerance to light.
- **Pneumoconiosis** – a condition brought about by tissue reacting to the presence of particulate matter in lungs.
- **Polymerization** – a chemical reaction in which one or more small molecules join to form larger molecules. "Hazardous polymerization" reactions give off excessive amounts of heat. If hazardous polymerization could occur, the SDS will list the conditions that can initiate the reaction and the time period in which polymerization inhibitors will be effective.
- **ppb** – parts per billion.
- **ppm** – parts per million. (Example: 5 ppm of chlorine = 5 parts of chlorine for every 1 million parts of air)
- **Pyrophoric** – a chemical that will ignite spontaneously in air (54.4°F or below).
- **Range of flammability** – the concentration range of a flammable gas/vapor in air that will burn (measured in % flammable gas/vapor by volume). See also LEL/LFL and UEL/UFL. The % between the LEL/LFL and the UEL/UFL is the range of flammability.
- **Reactive or unstable** – a chemical with tendencies to decompose or undergo unwanted chemical reactions while being handled or stored in a normal manner.
- **Routes of entry/exposure** – means by which a chemical can enter the body and cause harm. Routes include ingestion (swallowing), inhalation (breathing) and absorption (skin/eyes).
- **Sensitizer** – a chemical that causes a substantial proportion of exposed people to develop an allergic reaction in normal tissue after repeated exposure to the chemical.
- **Skin notation** – indicates that the substance may be absorbed by the skin, mucous membranes and/or eyes. Consider airborne and direct skin contact exposures.
- **Specific gravity** – the weight of a liquid as compared to an equal volume of pure water (=1.0). Water insoluble chemicals with a specific gravity > 1.0 are denser than water and thus would sink. Water insoluble substances with a specific gravity < 1.0 (like most flammables) are less dense than water and would float. Important fire suppression information.
- **Stability** – the ability of a chemical to resist reaction with other chemicals. Typically, a material is considered stable if it will remain unchanged under expected & reasonable conditions of storage & use. Unstable chemicals are often sensitive to either temperature or shock (dropping or jolting).

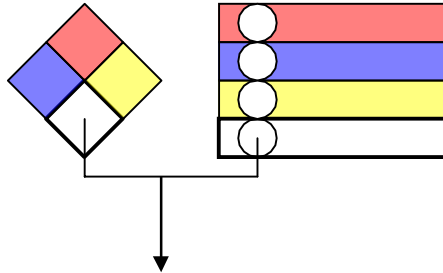
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- **STEL** – short term exposure limit. A 15-minute TWA. You are permitted up to 4 STEL exposures in one 8-hr. workday, provided that there is a break of at least 1 hour between the exposures.
 - **Surface tension** – the property of a liquid that makes it behave as if its surface is enclosed in an elastic skin. Expressed in terms of Newtons per meter (N/m) or dynes per centimeter (dynes/cm).
 - **Syncope** – fainting or loss of consciousness due to temporary deficiency of blood supply to brain.
 - **Systemic poison** – a poison that spreads throughout the body, affecting all body systems and organs.
 - **Tachypnea** – rapid breathing.
 - **Target organ toxins** – a toxic substance that attacks a specific organ or organs of the body (blood, skin, eyes, kidneys, liver, lungs, gonads, etc.).
 - **Teratogen** – a substance or agent that can cause malformations in the fetus of pregnant females.
 - **TLV** – threshold limit value. Similar to the PEL, but these are based on more current scientific data and thus provide a better degree of worker safety. However, they have not made it through the OSHA rulemaking process and thus are only recommended limits. They are not legally enforceable by OSHA.
 - **Toxic substance** – any substance which can cause acute or chronic injury to the human body, or which is suspected of being able to cause diseases or injury under some conditions.
 - **Toxicity data** – scientific data regarding the sum of adverse health effects resulting from exposure to a material (usually mouth, skin or respiratory tract exposures).
 - **TWA** – time weighted average. The maximum permissible exposure to airborne contaminants averaged over an 8-hour period. Since averaged, employee exposures may temporarily exceed the TWA as long as the average over 8-hours does not.
 - **UEL & UFL** – upper explosive limit (or upper flammable limit). The richest mixture of a flammable gas/vapor in air that will burn.
 - **Vapor density** – the weight of a gas or vapor as compared to an equal volume of air (=1.0). Gases/vapors with a vapor density above 1.0 are heavier than air and will sink to the floor. Substances with a vapor density less than 1.0 are lighter than air and will rise.
 - **Vapor pressure (v.p.)** – the pressure exerted by a saturated vapor above its own liquid in a closed container at a standard temperature. Often given in terms of “millimeters of mercury” (mmHg), “atmospheres” (atm) or psi.
 - **Viscosity** – the resistance of a liquid to flow (“thickness”). Measured in units of Pascals (P) or centiPascals (cP = 0.01 P)
 - **(%) Volatile volume** – percentage of a liquid or solid (by volume) that will evaporate at an ambient temperature.
 - **Water reactive** – a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.
- Water solubility** – ability of a chemical to dissolve into water. Usually given in terms of % of material (by weight) that will dissolve in water at ambient temperature. Important information for spill clean-up or fire suppression.

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Appendix C PPE Index & Special Hazards

Other Hazards:



ACID – Acid
 OXY – Oxidizer

ALK – Alkali
 W – Do not add water

COR – Corrosive
 – Radioactive

A				
B		+		
C		+		+
D		+		+
E		+		+
F		+		+
G		+		+
H		+		+
I		+		+
J		+		+
K		+		+
X	Consult your supervisor or S.O.P. for special handling directions.			

-  Safety Glasses
-  Protective Gloves
-  Synthetic Apron
-  Face Shield
-  Dust Respirator
-  Splash Goggles
-  Vapor Respirator
-  Combination Respirator
-  Supplied Air Respirator
-  Chemical Protective Suit
-  Chemical Protective Boots