CHEMICAL HAZARDS AND GHS

Prepared by the Labor Occupational Health Program,
University of California, Berkeley,
In partnership with the Amalgamated Transit Union, Local 192, AFL-CIO

Training Objectives

- List factors that can influence the likelihood a person will develop health effects from a chemical exposure.
- Identify three ways chemicals can enter the body.
- Explain how chemicals can affect the body.
- Describe and evaluate three ways to eliminate or reduce chemical hazards.
- Describe five requirements of Cal/OSHA's Hazard Communication standard.
- Describe the new Globally Harmonized System.
- Get information from a Safety Data Sheet (SDS).

OSHA Disclosure Statement

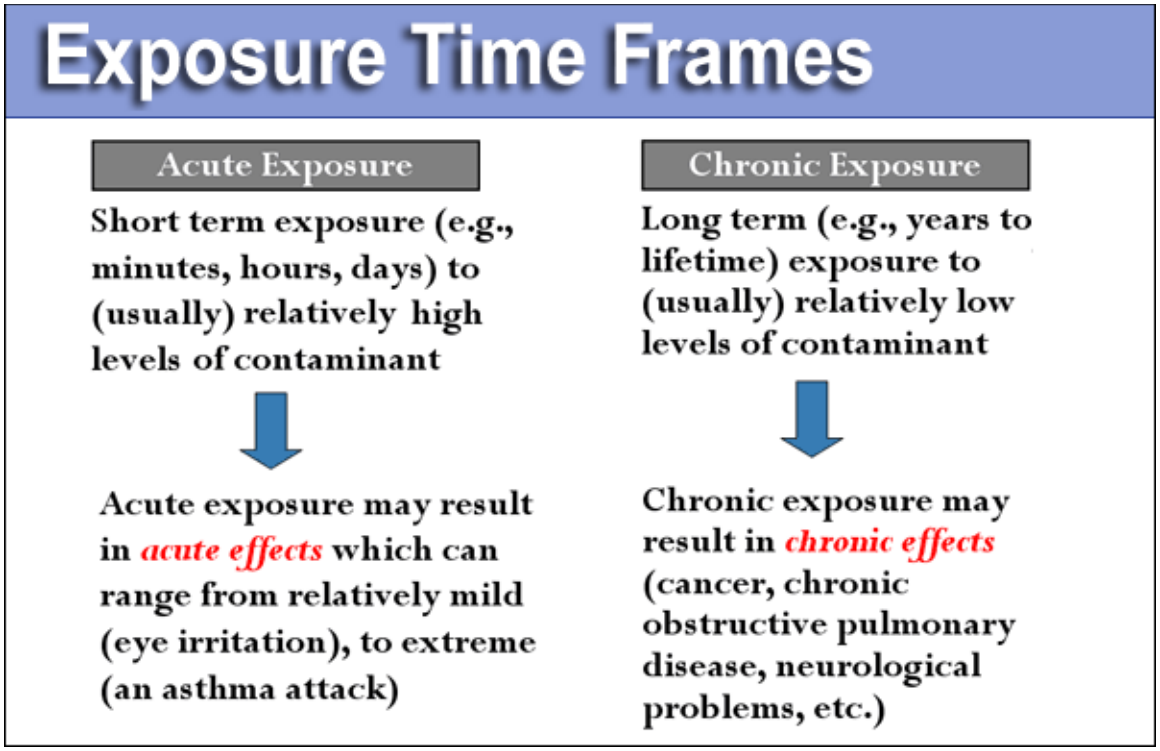
This training is supported under grant number #SH-2764SH5 from the Occupational Safety and Health Administration, U.S. Department of Labor.

It does not necessarily reflect the views or policies of the U.S. Department of Labor, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

What Chemicals Do You Work With?

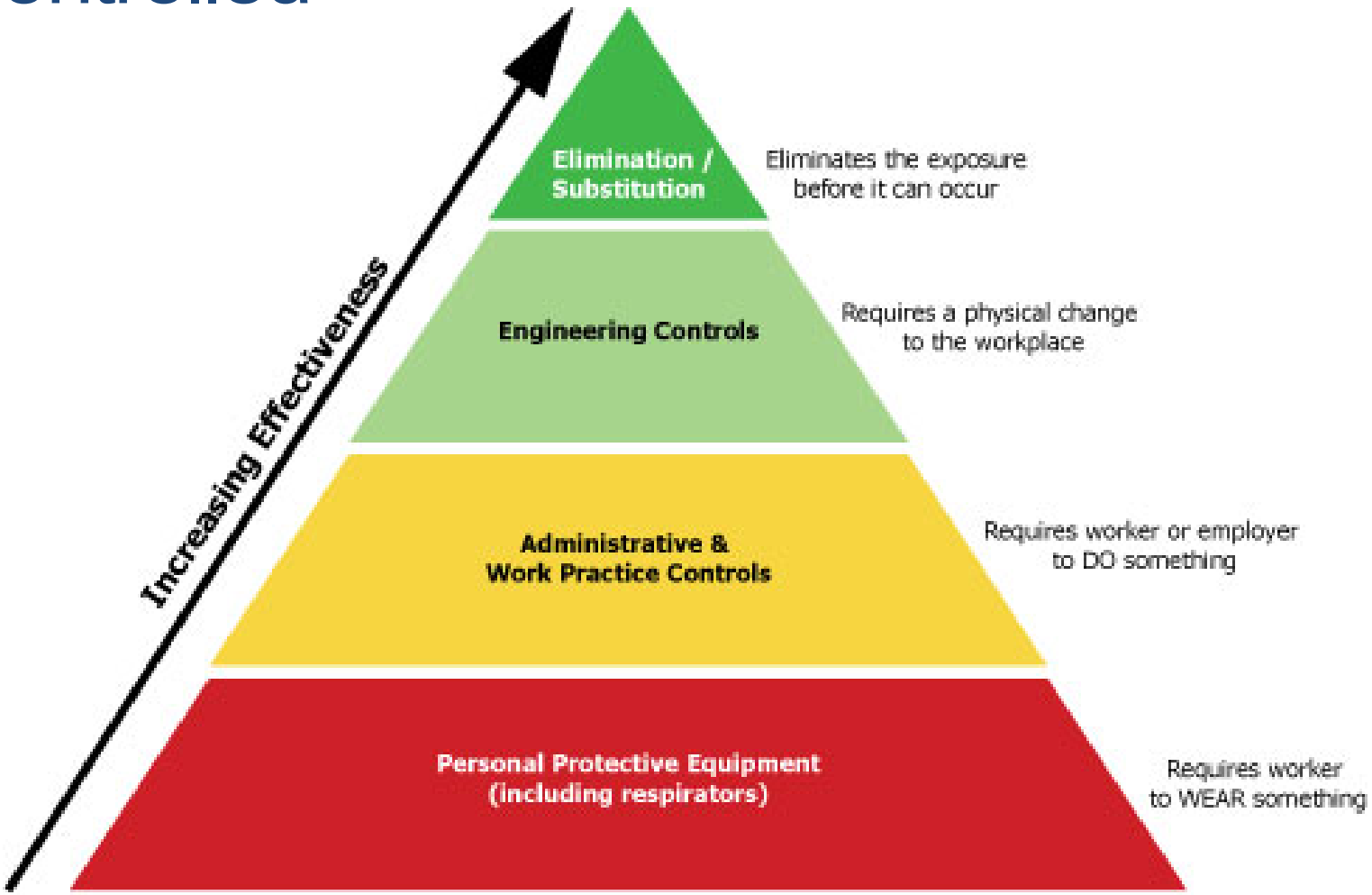
Photo: AC Transit bus.

Acute and Chronic Health Effects



Source: Indiana.gov

How Chemical Hazards Can Be Controlled



Source: Federal OSHA

Five Elements of the Hazard Communication Standard

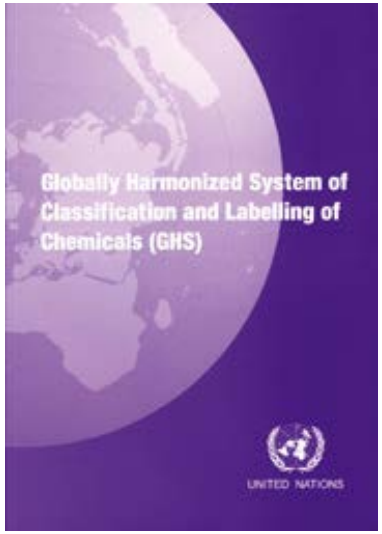
- Inventory of hazardous chemicals and hazard assessment
- System for maintaining SDSs
- Chemical labels and warning signs
- Training
- Written Hazard Communication Program

State of California
CAL OSHA
Department of Industrial Relations

Globally Harmonized System (GHS)

Why Change to GHS?

- Align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) adopted by 67 nations worldwide
- Provide a common classification of chemicals
- Increase understanding of hazards
- Facilitate training
- Help address literacy problems



GHS Dates and Requirements

Effective Completion Date	Requirement(s)	Responsible Party
December 1, 2013	Train employees on the new label elements and SDS format	Employers
June 1, 2015	Compliance with all modified provisions of the final rule except:	Chemical manufacturers, importers, distributors, and employers
December 1, 2015	The distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label	Distributor
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified hazards [and affected vertical standard specific signage]	Employer

Chemical Classifications

Chemicals classified using a harmonized system that provides standardized language for:

- Health Hazard Categories
- Physical Hazard Categories
- Environmental Hazard Categories*

*Not regulated by OSHA

Chemical Classifications: Health Hazards

- Acute Toxicity
- Skin Corrosion/Irritation
- Respiratory or Skin Sensitization
- Germ Cell Mutagenicity
- Carcinogenicity
- Reproductive Toxicity
- Specific Target Organ Toxicity – Single Exposure
- Specific Target Organ Toxicity – Repeated Exposure
- Aspiration
- Simple Asphyxiants

The symbol on this slide is for acute toxicity, which means the product is extremely poisonous and dangerous and very soon after you swallow, inhale it or get it on your skin, it can make you very sick or even kill you. Source: OSHA

Chemical Classifications: Physical Hazards

- Explosives
- Flammable Aerosols
- Oxidizing Gases
- Gases under Pressure
  - Compressed Gases
  - Liquefied Gases
  - Refrigerated Liquefied Gases
  - Dissolves Gases

This symbol is for explosives.

Chemical Classifications: Physical Hazards (continued)

- Flammable Liquids
- Flammable Solids
- Self-Reactive Chemicals
- Pyrophoric Liquids
- Pyrophoric Solid
- Pyrophoric Gases
- Self-heating Chemicals
- Chemicals, which in contact with water, emit flammable gases

The photo shows a worker standing next to a chemical drum.
Source: WISHA

Product Label

There are several new label elements:

- Symbols called “Pictograms”
- Signal Words
- Hazard Statements
- Precautionary Statements
- Product Identification
- Supplier/Manufacturer Identification

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.
Dispoae of in accordance with local, regional, national, international regulations as specified.

In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO_2) 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

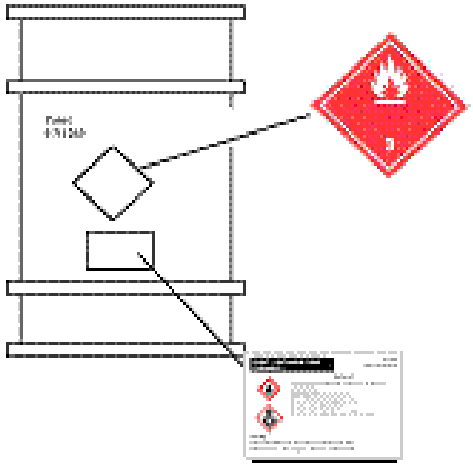
Directions for use

_____
_____
_____

Fill weight: _____ Lot Number _____
Gross weight: _____ Fill Date: _____
Expiration Date: _____

Shipping Label

Effective June 1, 2015 all shipping labels will be required to have all GHS label elements



Shipping Container Label
(55 gallon / 200 liter drum)

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.
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_____
_____

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Expiration Date: _____

Pictograms within DOT label

DOT Shipping

Flammable liquids, toxic, n.o.s. (contains XYZ)
UN 1992

Pictograms

The OSHA Hazard Communication Standard requires pictograms on labels to alert users of the chemical hazards to which they may be exposed.

Health Hazard  • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	**Flame**  • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	**Exclamation Mark**  • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder  • Gases Under Pressure	**Corrosion**  • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals	**Exploding Bomb**  • Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle  • Oxidizers	**Environment** (Non-Mandatory)  • Aquatic Toxicity	**Skull and Crossbones**  • Acute Toxicity (fatal or toxic)

"OSHA BRIEF - Hazard Communication Standard: Labels and Pictograms"

Signal Words

These are words used to indicate the severity of the hazard and alert employees to the potential hazard.

Only 2 signal words will appear:

- **“DANGER”**(more severe hazard), or
- **“WARNING”** (less severe hazard)

Not all labels will have a signal word. Some chemicals are not hazardous enough to require that a signal word.

Hazard Statement

There are specific hazard statements that must appear on the label based on the chemical hazard classification.

Examples:

- Flammable liquid and vapor
- Causes skin irritation
- May cause cancer

This illustration shows
A new GHS label.

Precautionary Statement

Recommended measures related to:

- Prevention
- Response
- Storage
- Disposal

Examples:

- Wear respiratory protection
- Wash with soap and water
- Store in a well ventilated place

Product Identification

- Product identification (i.e. name of product)
- Supplier identification:
  - Address
  - Telephone number

This photo shows an incorrectly labelled container of a chemical: Windex.

Example GHS Label

Signal Word

Product Identifier

Pictogram

ToxiFlam (Contains: XYZ)

Danger! Toxic If Swallowed, Flammable Liquid and Vapor

Hazard Statement

Do not eat, drink or use tobacco when using this product. Wash hands thoroughly after handling. Keep container tightly closed. Keep away from heat/sparks/open flame. – No smoking. Wear protective gloves and eye/face protection. Ground container and receiving equipment. Use explosion-proof electrical equipment. Take precautionary measures against static discharge. Use only non-sparking tools. Store in cool/well-ventilated place.

Precautionary Statement

IF SWALLOWED: Immediately call a POISON CONTROL CENTER or doctor/physician. Rinse mouth.

In case of fire, use water fog, dry chemical, CO_2 , or "alcohol" foam.

See Material Safety Data Sheet for further details regarding safe use of this product

MyCompany, MyStreet, MyTown, NJ 00000, Tel: 444 999 9999

Contact Information

Safety Data Sheets

- Material Safety Data Sheets (MSDS) are now called Safety Data Sheets (SDS).
- All SDSs will have a consistent 16-section format that must be followed in a specific order.
- Employers must ensure that SDSs are readily accessible to employees.

This photo shows a binder for Safety Data Sheets (SDS).
Source: UC Riverside

Safety Data Sheets (SDSs)

Section 1 – Identification

Section 2 – Hazard(s) identification

Section 3 – Composition / Information on Ingredients

Section 4 – First-aid Measures

Section 5 – Fire-fighting Measures

Section 6 – Accidental Release Measures

Section 7 – Handling and Storage

Section 8 – Exposure Controls / Personal Protection

Section 9 – Physical and Chemical Properties

Section 10 – Stability and Reactivity

Section 11 – Toxicological Information

Section 12 – Ecological Information*

Section 13 – Disposal Consideration*

Section 14 – Transport Information*

Section 15 – Regulatory Information*

Section 16 – Other information including date of preparation of last revision

*Sections 12-15 are outside of OSHA jurisdiction but inclusion of these sections is necessary for a GHS compliant SDS

Does Your Employer Provide The Following Information?

- Location and availability of written program and SDSs
- Specific information related to chemicals in the facility:
  - Physical Hazards,
  - Health Hazards,
  - Hazards not otherwise classified.
- Chemical list, location and use of hazardous chemicals
- Secondary container labeling system
- Specific procedures to follow to protect employees from the chemical hazard
- Methods used to detect the presence or release of hazardous chemicals (sensor alarms, odors, visual other monitoring devices)

SDS Activity

- Break into small groups.
- Read the SDS assigned to your group.
- Answer the questions on the worksheet.
- Select one person to report
  your groups answers
  back to the large group.