Health Hazards

Extension Service
West Virginia University
Safety and Health Extension

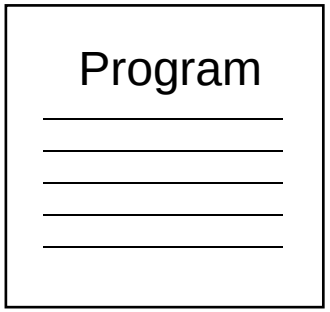
Introduction

- Evaluate jobs for potential health hazards
- Determine the extent of employee exposure to hazards
- Decide what is needed to control these hazards, in order to protect workers
- Regulations for hazardous substances in the workplace
  - 1910.1000 Air Contaminants; set limits on worker
    1910.1200 Hazard Communication

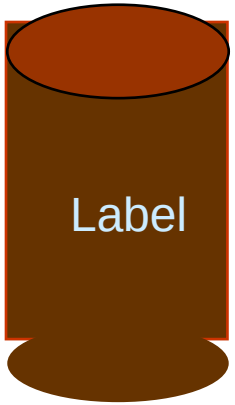
Purpose of OSHA's Hazard Communication Standard

To ensure that employers and employees know about work hazards and how to protect themselves so that the incidence of illnesses and injuries due to hazardous chemicals is reduced.

Hazard Communication Program



Container Labeling



Material Safety Data Sheet

Employer Responsibilities

- Identify and list hazardous chemicals in their workplaces
- Obtain Material Safety Data Sheets (MSDSs) and labels for each hazardous chemical, if not provided by the manufacturer, importer, or distributor
- Implement a written HazCom program, including labels, MSDSs, and employee training
- Communicate hazard information to employees through labels, MSDSs, and formal training programs

How can workplace hazards be minimized?

- The first step in minimizing workplace hazards is to perform a thorough hazard assessment
- Employers can rely on the evaluations performed by the manufacturers or importers to establish the hazards of the chemicals they use
  - This information is obtained from MSDSs and labels

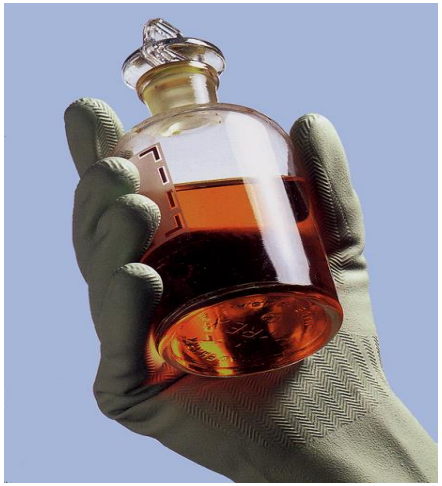
Written HazCom Program
Requirements

- Describes container labeling, MSDSs, and employee training for each workplace
- List of the hazardous chemicals
- Make information regarding hazards and protective measures available to other employers onsite

How must chemicals be labeled?

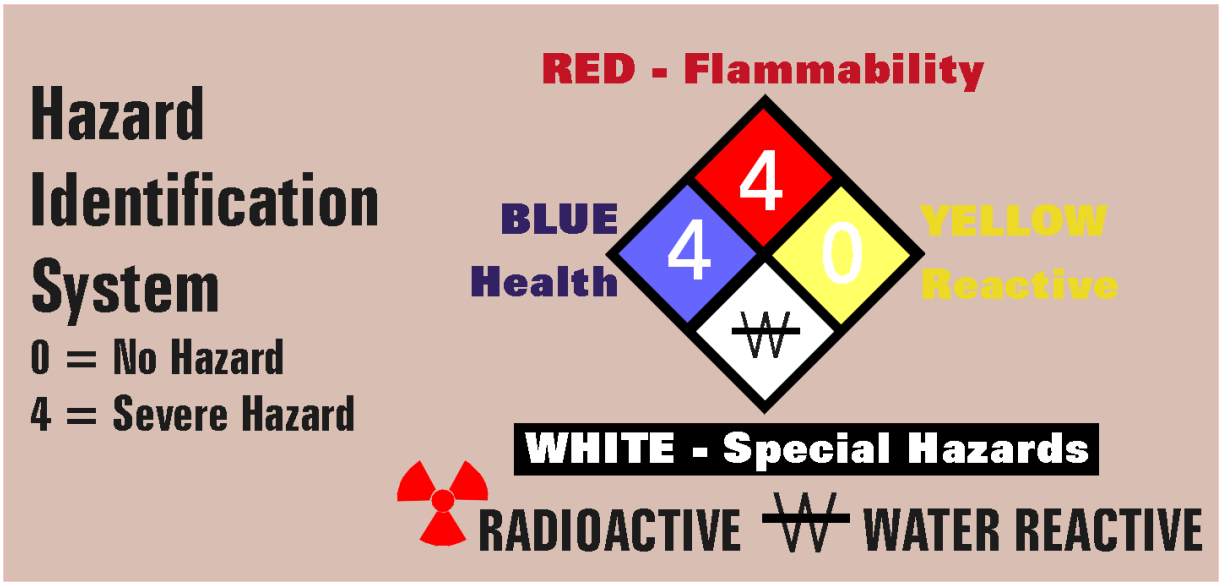
Each container of hazardous chemicals entering the workplace must be labeled or marked with:

- Identity of the chemical
- Appropriate hazard warnings
- Name and address of the responsible party

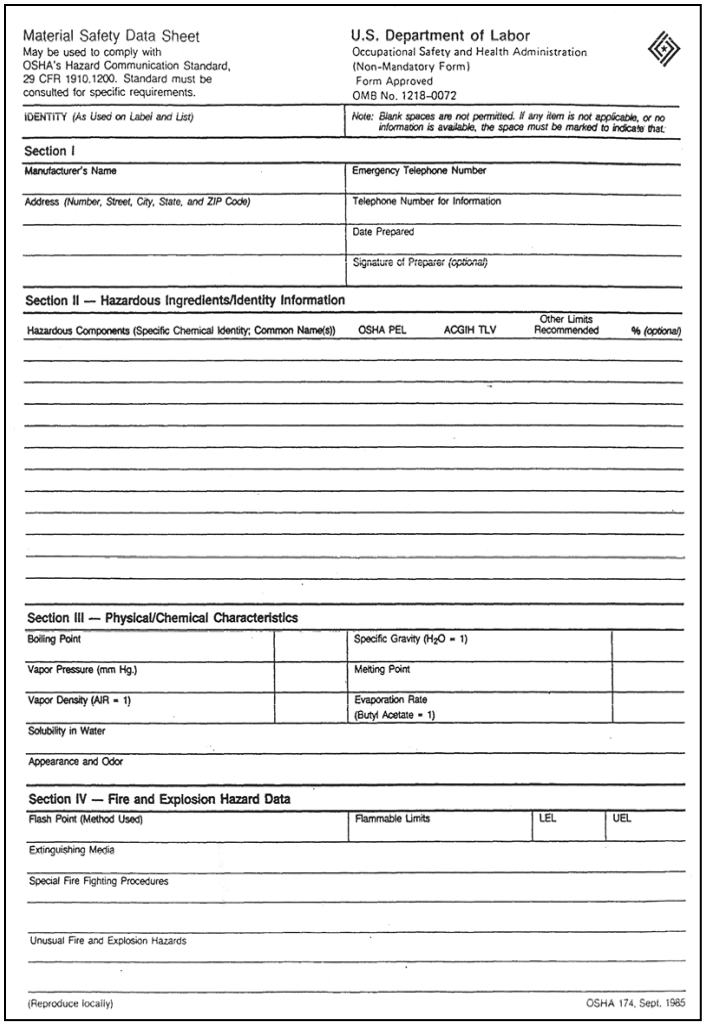


NFPA Label

- National Fire Protection Association
- The higher the number (max is 4), the greater the hazard. Check the MSDS.



Material Safety Data Sheets



Material Safety Data Sheet
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List)

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name	Emergency Telephone Number
Address (Number, Street, City, State, and ZIP Code)	Telephone Number for Information
	Date Prepared
	Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)

Section III — Physical/Chemical Characteristics

Boiling Point		Specific Gravity (H_2O = 1)	
Vapor Pressure (mm Hg.)		Melting Point	
Vapor Density (AIR = 1)		Evaporation Rate (Butyl Acetate = 1)	

Solubility in Water

Appearance and Odor

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL

Extinguishing Media

Special Fire Fighting Procedures

Unusual Fire and Explosion Hazards

(Reproduce locally) OSHA 174, Sept. 1985

Material Safety Data Sheets (cont'd)

- Must be in English and include information regarding the specific chemical identity and common names
- Must be readily accessible to employees in their work area
- Prepared by the chemical manufacturer or importer and describe:
    - Physical hazards, such as fire and explosion
    - Health hazards, such as signs of exposure
    - Routes of exposure
    - Precautions for safe handling and use
    - Emergency and first-aid procedures
    - Control measures
- Identification (name, address, and telephone number) of the organization responsible for preparing the sheet

Training

- Training is required for employees who are exposed to hazardous chemicals in their work area:
  - At the time of initial assignment
  - Whenever a new hazard is introduced into their work area
- Explanation of the HazCom program, including information on labels, MSDSs, and how to obtain and use available hazard information
- Operations in their work areas where hazardous chemicals are present
- Hazards of chemicals
- Protective measures such as engineering controls, work practices, and the use of PPE
- How to detect the presence or release of a hazardous chemical (using monitoring devices, observation, or smell)

Summary

- OSHA's Hazard Communication Standard is based on a simple concept - that employees have both a need and a right to know the hazards and identities of the chemicals they are exposed to when working
- Employees also need to know what protective measures are available to prevent adverse effects from occurring

Related Work Activities

- Applying pesticides and other chemicals
- Cutting concrete, brick
- Spraying paint
- Applying mulch, peat and other organics
- Clearing heavy brush
- Trimming, cutting heavy undergrowth

Hazardous Conditions & Unsafe Acts

- Application of chemicals without PPE
- Release of silica dust from concrete
- Spray painting in poorly ventilated areas
- Release of dust and mold from organic materials
- Working in pest infested areas
- Contacting poisonous plants without skin protection
- Working in hot, non-shaded areas

Potential Outcomes

- Skin irritation from chemicals on your skin
- Anaphylactic shock
- Lung diseases from inhalation of toxic substances
- Disease transmission from insects
- Skin reactions from poisonous plants
- Heat related illnesses

Dermatitis (Skin Irritation)

Pesticide Exposures

- Dermal – Getting pesticide on your skin
- Inhalation – Breathing in pesticide
- Oral – Swallowing pesticide
- Ocular – Getting pesticide in the eyes

Preventing Skin Irritation From Chemicals

- Know what substances you are using
- Read MSDS for the chemical
- Read the chemical label
- Avoid contact with strong chemical irritants
- Use PPE
- Launder clothing after handling pesticides.
- Wash exposed body parts often to reduce dermal exposure.

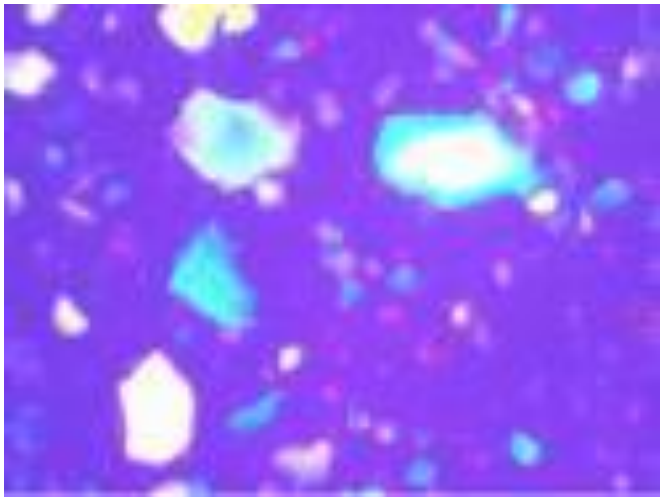
Additional Pesticide Information

- http://www.epa.gov/oppt/labeling/rtlf/garden.pdf
- http://www.cdc.gov/nasd/docs/d000701-d000800/d000734/d000734.html
- http://www.epa.gov/oppfead1/Publications/lawncare.pdf

Warning: Silica Exposure From Cutting Concrete

Preventing Silica Exposure

- Use a substitute for silica
- Use engineering controls to reduce exposure
- Improve work practices
- Use personal protective equipment




危險
拆卸範圍
不准進入
EAR PROTECTION ZONE
WEAR EAR PROTECTION

Additional Silica Information

- http://www.osha.gov/Publications/silicosis.pdf

Spray Painting

- May occur during building or equipment maintenance.
- Spraying paint at a worksite exposes workers to hazardous vapors.
- Paint vapors can also be explosive.
- Workers must take safety precautions to minimize their exposure to those vapors.

Reducing Exposure to Vapors

- Ventilation
  - Spray painting outside may help to reduce exposure to vapors
  - Local exhaust ventilation when indoors
- Wear a respirator if engineering controls fail.

Dust and Mold

- Landscaping and horticultural work often involve peat, vermiculite, perlite, and mulch.
- Exposure to mold can cause respiratory disease.
- Greenhouses and nurseries particularly susceptible.

Reducing Exposure To Dust And Mold

- Identify possible dust and mold at the work site and limit exposure
- Move work outside whenever possible
- Ventilate dusty areas
- Use mechanical controls to remove dust and mold from the air
- Wear a particulate respirator or dust mask as a last resort

Additional Dust and Mold Information

- http://www.osha.gov/Publications/mold.pdf
- http://www.osha.gov/OshDoc/data_Hurricane_Facts/mold_fact.pdf

“Killer” Bees

- 1 to 2 million people in US allergic to stings
- 90 to 100 people die each year because of sting

Preventing Insect Stings

- Use a stinging insect control aerosol
- Make sure not to mow over or disturb a nest
- Wear a hat and closed shoes (not sandals).
- Light-colored cotton clothing is best.
- Avoid heavy, flowery perfumes, or scents.
- Avoid sweet beverages, which can attract stinging insects.

Spiders

- Two poisonous spiders you should be aware of:
  - Black Widow Spider

  - Brown Recluse Spider

Preventing Spider Bites

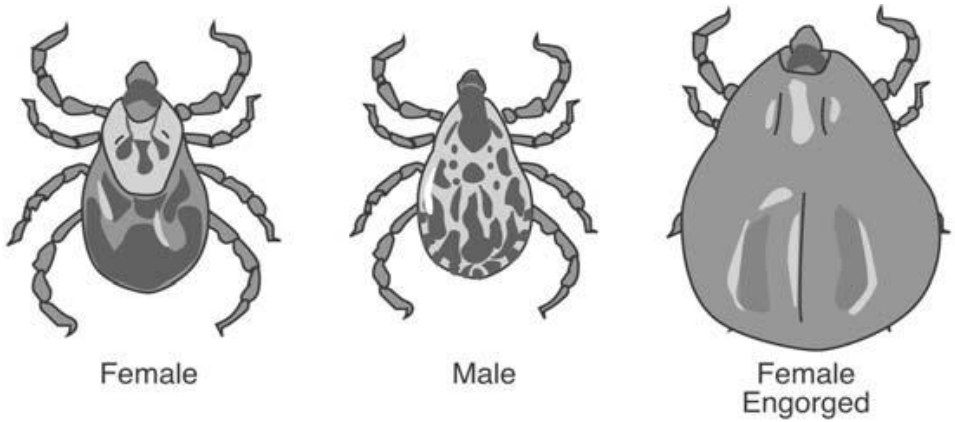
- Shake out clothing or shoes before getting dressed
- Wear gloves when handling lumber or rocks
- Do not stack wood around a building
- Remove vegetation and leaf litter around building
- Use insect repellants, such as DEET or Picaridin, on clothing and footwear.

Additional Spider/Insect Information

- http://www.osha.gov/OshDoc/data_Hurricane_Facts/black_widow_spider.pdf
- http://www.osha.gov/OshDoc/data_Hurricane_Facts/brown_recluse_spider.pdf
- http://www.osha.gov/OshDoc/data_Hurricane_Facts/rodents_snakes_insects.pdf

Ticks

- Working in landscaping, forestry, or brush clearing can be risky because of exposure to ticks.
- Lyme Disease and Rocky Mountain spotted fever.



Tick Transmitted Diseases

Lyme Disease Symptoms	Rocky Mountain Spotted Fever Symptoms

• Bulls-eye rash
  ○ Looks like a bulls-eye, with a reddish outer ring and a pale center
  ○ Warm to the touch
  ○ Usually more than two inches in diameter
  ○ Occurs in 75 percent of those infected with Lyme disease.
• Fever
• Lymph node swelling
• Neck stiffness
• Generalized fatigue
• Headaches
• Migrating joint aches
• Muscle aches
	• Initial symptoms may include:
	  ○ Fever
	  ○ Nausea
	  ○ Vomiting
	  ○ Severe headache
	  ○ Muscle pain
	  ○ Lack of appetite
	• Later signs and symptoms include:
	  ○ Rash
	  ○ Abdominal pain
	  ○ Joint pain
	  ○ Diarrhea
	
	The three classic symptoms are fever, rash, and history of tick bite.

Preventing Tick Bites

- Stay out of brushy, overgrown grass, and wooded habitats
- Remove leaves, tall grass, and brush from work areas.
- Wear light-colored clothing so ticks may be easily seen and removed before attaching.
- Check your whole body for ticks, especially armpits, groin, and pubic areas.

Fire Ants

- Fire ants attack anything that disturbs their mound (nest).
- The sting of a fire ant develops into a pustule (small, firm blister-like sore) in 24-48 hours.
- Be aware – don’t stand on ant nests or areas where they are foraging.

Additional Fire Ant Information

- http://www.osha.gov/OshDoc/data_Hurricane_Facts/fire_ants.pdf

Mosquitoes

- Mosquitoes transmit West Nile Virus

Avoiding Mosquito Exposure

- Stay indoors at dawn and dusk and in the early evening, if possible.
- Wear long pants and long sleeves outdoors.
- Use space sprays or aerosol foggers for rapid knockdown of mosquitoes.
- Eliminate mosquito breeding grounds by removing stagnant water

Additional Mosquito Information

- http://www.osha.gov/OshDoc/data_Hurricane_Facts/west_nile_virus.pdf
- http://www.osha.gov/OshDoc/data_Hurricane_Facts/west_nile_quick_card.pdf
- http://www.osha.gov/dts/shib/shib082903b.html

Venomous Snakes

Rattlesnake

Copperhead

Cottonmouth

Snake Bite Treatment

- The first step in snakebite treatment is to avoid panic.
- Keep bite victims still and calm to slow the spread of venom in case the snake is poisonous.
- If bitten, note the color and shape of the snake to help with treatment.
- Do not cut the wound or attempt to suck out the venom.

Additional Snake Information

- http://www.osha.gov/OshDoc/data_Hurricane_Facts/cottonmouth_snakes.pdf
- http://www.osha.gov/OshDoc/data_Hurricane_Facts/rodents_snakes_insects.pdf

Poisonous Plants

- Avoiding contact
  - Recognize the leaf patterns of the poisonous plants

Poison Ivy

Poison Oak

Poison Sumac

Avoiding Cuts/Scratches by Thorn Bushes

- Always wear gloves. Leather gloves are best.
- Wear a long sleeve shirt and long pants. Clothing made of thicker cloth is better.
- Wear work shoes or boots. Do not wear sandals or open-toed shoes.
- If you are cutting bushes, wear eye protection and a safety hard hat.

Factors Leading To Heat Stress

- High temperature and humidity;
- Direct sun or heat;
- Limited air movement;
- Physical exertion;
- Poor physical condition;
- Some medicines;
- Inadequate tolerance for hot workplaces.

Danger: Heat Stroke Can Kill!

NIOSH Fatal Fact

A 30-year old landscape mowing assistant collapsed and died at the end of a day of caring for residential lawns. A typical day's work consisted of mowing, edging, trimming with a weed whip, and finishing with a back-pack blower.

Cause of death: **Heat stroke!**

Heat Stress Victim

Preventing Heat Related Illness

- Know signs/symptoms of heat-related illnesses.
- Block out direct sun or other heat sources.
- Use cooling fans/air-conditioning.
- Drink lots of water; about 1 cup every 15 minutes.
- Wear lightweight, light colored, loose-fitting clothes.
- Avoid alcohol, caffeinated drinks, or heavy meals.
- Rest periodically in a cool area.

Sun Exposure

- Too much sun can cause severe burns
- While working in the sun wear:
  - Sleeves and long pants as a barrier to the sun
  - A wide-brimmed hat for head and face protection
  - A sunscreen with at least SPF 15, reapply every 2 hours
  - Sunglasses to protect the eyes

Additional Heat/Sun Information

- http://www.osha.gov/Publications/osha3154.pdf
- http://www.osha.gov/OshDoc/data_Hurricane_Facts/heat_stress.pdf
- http://www.osha.gov/Publications/osha3166.pdf
- http://www.osha.gov/OshDoc/data_Hurricane_Facts/working_outdoors.pdf
- http://www.osha.gov/dts/osta/otm/otm_iii/otm_iii_4.html
- http://www.cdc.gov/niosh/hotenvt.html
- 01/01/1995 - Protecting Workers in Hot Environments

Cold Stress

- The harmful effects of **hypothermia**, **frostbite**, and **trench foot** may arise for any worker exposed to high winds and cold temperatures.
- Wet conditions exacerbate these effects.
- Hypothermia (body temp. at or below 95°F)
  - Symptoms: Fatigue, uncontrolled shivering, slurred speech, irritable, bluish skin, clumsy.

Preventing Cold Stress

- Personal protective clothing (three layers)
  - Outside layer to block the wind
  - Middle layer of wool or synthetic fabric
  - Inner layer of cotton to allow ventilation
  - Cover hands and face and wear a hat

- Use an on-site source of heat, such as air jets, radiant heaters, or contact warm plates.

Additional Cold Stress Information

- http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FACT_SHEETS&p_id=186

Solutions for Health Hazards

- Mechanical Ventilation
- Respirator Selection & Use and PPE clothing
- Housekeeping
- Hygiene and Facility Practices
- Medical Requirements
- Training

Summary

- OSHA's Hazard Communication Standard is based on a simple concept - that employees have both a need and a right to know the hazards and identities of the chemicals they are exposed to when working
- Many health hazards exist when working in the landscaping industry:
  - Chemicals, heat, cold, insects, plants, and mold
- Observe the working area for these potential hazards
- Be ready at any time to respond to an emergency situation
- Always be alert to hazards at the work site