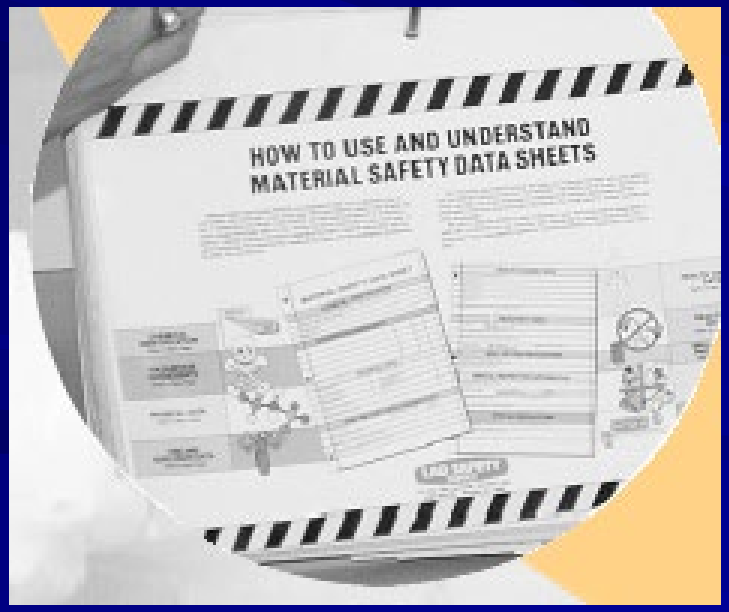
County of Sonoma
Hazard Communication
Employee Training Program



8 CCR 5194

Chemicals in the Office

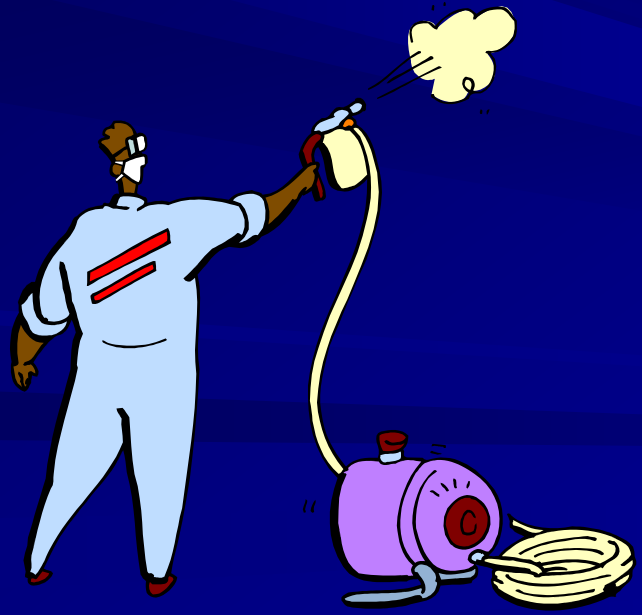
- Toner and ink for copiers and printers
- Paper correction fluid
- White board cleaner
- Cleaning supplies

Chemicals in the Office

- NON-ROUTINE EXPOSURES
- Construction or remodeling activities
  - Paint, adhesives
  - Outside contractors, other Co. departments
- Exposures from other building tenants

- SPECIAL OFFICE ENVIRONMENTS
- Paints or inks in art or design departments
- Ammonia for blueprint machines

Maintenance / Shop Operations



- Paint
- Organic Solvents
- Adhesives, Epoxy Resins
- Welding Fumes
- Asbestos, lead during remodeling

- ***Potential exposure for employees conducting the task and adjacent employees in the area!***

Cal/OSHA Hazard Communication Standard

- Title 8 CCR 5194 (1986)
- Applies to all California employers whose employees may be exposed to hazardous substances
- Includes hazardous substances in the workplace under normal conditions
- Emergency conditions (spill, release)

Cal/OSHA Hazard Communication Standard

Chemical manufacturers must:

- Determine a chemical's hazards
- Provide labels and MSDSs

Employers must:

- Provide a hazard communication program
- Maintain MSDSs
- Train on hazardous materials

Cal/OSHA Hazard Communication Standard

Employees must:

- Read labels and MSDSs
- Follow employer instructions and warnings
- Identify hazards before starting a job
- Participate in training

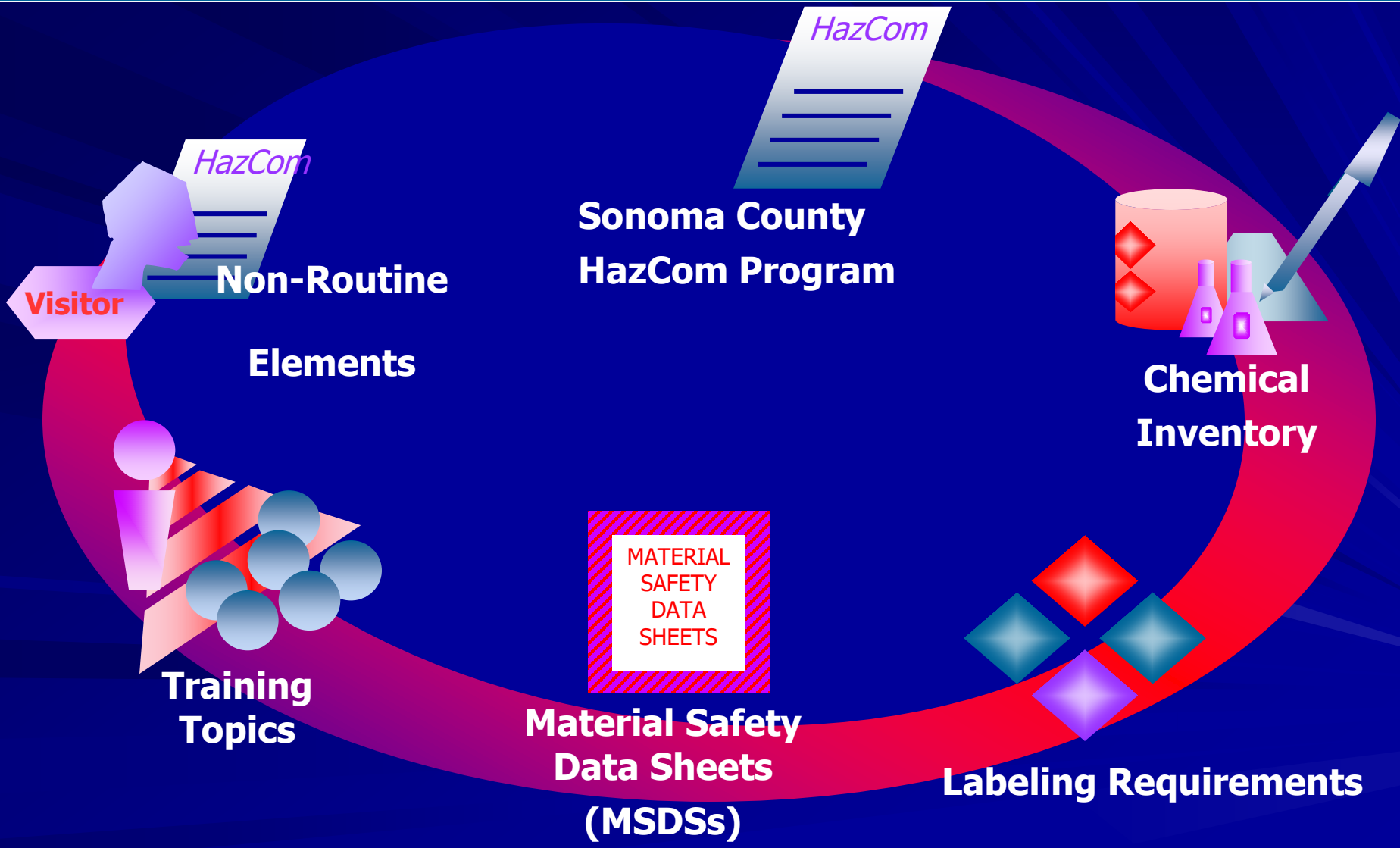
Training Objectives

- Understand types of hazardous substances in your work area
- Read and understand labels on containers
- Access and understand Material Safety Data Sheets (MSDSs)
- Know how to safely use hazardous substances and protect against exposure
- Know what to do in an emergency

Hazard Communication Overview

Video

Hazard Communication Process



Sonoma County Hazard Communication Program

- Responsibilities
- List of Hazardous Substances
- Material Safety Data Sheet Requirements
- Labels and Other Forms of Warning
- Employee Training
- Non-routine Tasks / Contractors
- Recordkeeping
- Periodic Program Evaluation

Department/Facility Information

- Hazard Communication Administrator for our department or facility will:
  - Keep a copy of Sonoma Co. HazCom program
  - Maintain current list of hazardous substances
  - Maintain MSDSs for facility
  - Request MSDS from mfg. or vendor if needed
  - Ensure labels are available and in use

Chemical Inventory

What hazardous substances are in my work area?

Hazardous Substances in Facility

County of Sonoma
Hazardous Substances List

Department/Division/Facility: _____

Date: _____

Product Name	Hazardous Substances *	Date of MSDS	Operation/Work Area

Chemical Hazards

Physical Hazards:

- Flammable / Explosive
- Reactive

Health Hazards:

- Corrosive
- Toxic

Physical Hazards

- Flammable / combustible liquid or gas
- Water-reactive
- Oxidizer (starts or promotes combustion)
- Spontaneously ignites

- ***What hazardous substances do you use that are flammable or reactive?***
- ***Review container labels for some of these products. What precautions are included?***

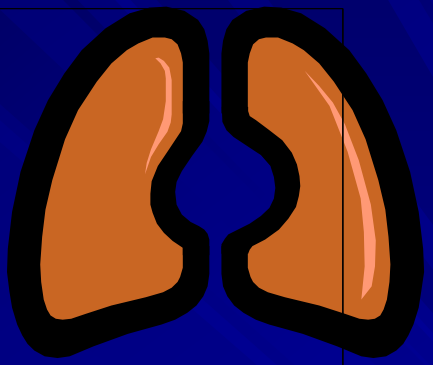
Fire, Reactivity & Explosion

Flash-point

- Temperature where liquid gives off vapor to form an ignitable mixture
- Flammable: Flashpoint < 100^{o} F
- Combustible: Flashpoint > 100^{o} F
- Relative fire risk

Health Hazards

- Corrosives
  - Acids, bases
- Toxics
  - Organic solvents
  - Metals
- Carcinogens
- Sensitizers
- Reproductive Hazards



Corrosive

- *Acids*:
  - Hydrochloric acid
  - Sulfuric acid (in auto and forklift batteries)
- *Bases*:
  - Sodium hydroxide
  - Ammonia hydroxide

What makes a chemical toxic?

Toxicity of a substance is its potential to cause harmful effects.

- Chemical structure
- Absorption into the body
- Body's ability to detoxify the substance

- All chemicals can cause harm. When a small amount can be harmful, the chemical is considered toxic.

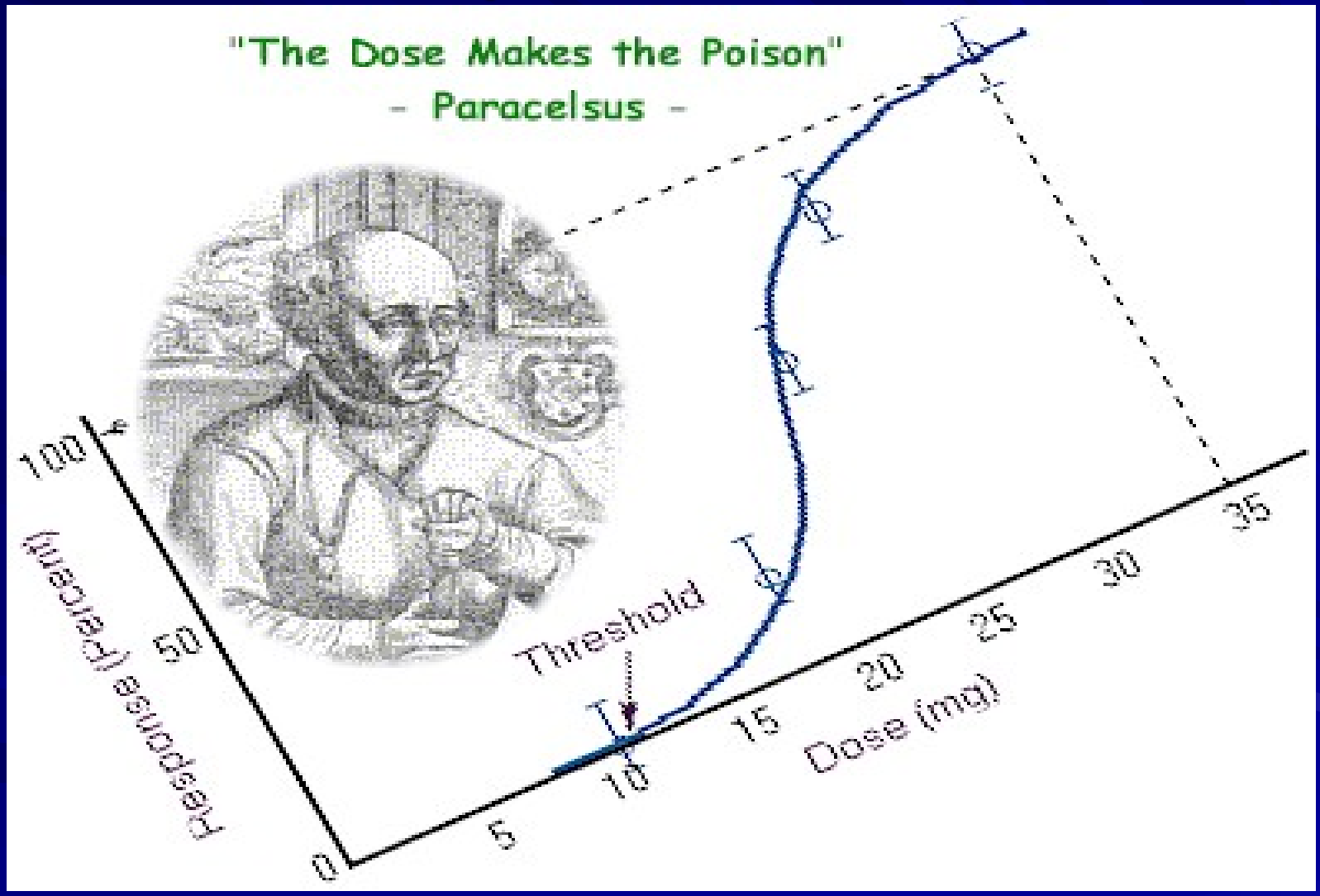
What makes a chemical hazardous?

Hazard determined by :

- Toxicity of the material
- The dose that enters the body

  Dose = Concentration x Time
- Route of exposure
- Reaction, interaction between chemicals
- Sensitivity of the individual

Dose / Response



Local versus Systemic Effects

- Local effects
  - Damage at point of first contact with the body
  - Skin, eyes, nose, throat, lungs
- Systemic effects
  - Damage to internal organs via bloodstream
  - Liver, kidneys, heart, nervous system, reproductive system

Acute versus Chronic Effects

Acute Effects

- Occurs immediately after exposure
- Often high dose over short period

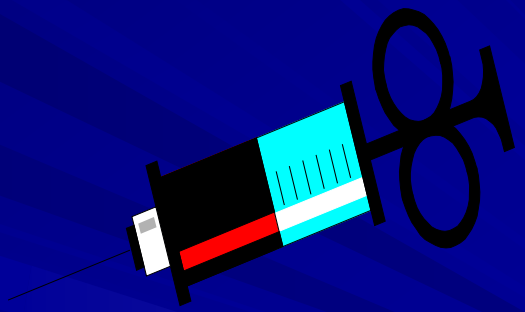
Chronic Effects

- Occurs over time
- Usually small dose over long period

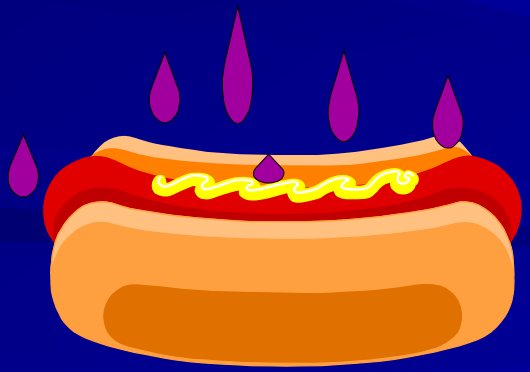
ROUTES OF EXPOSURE

ABSORPTION

INHALATION

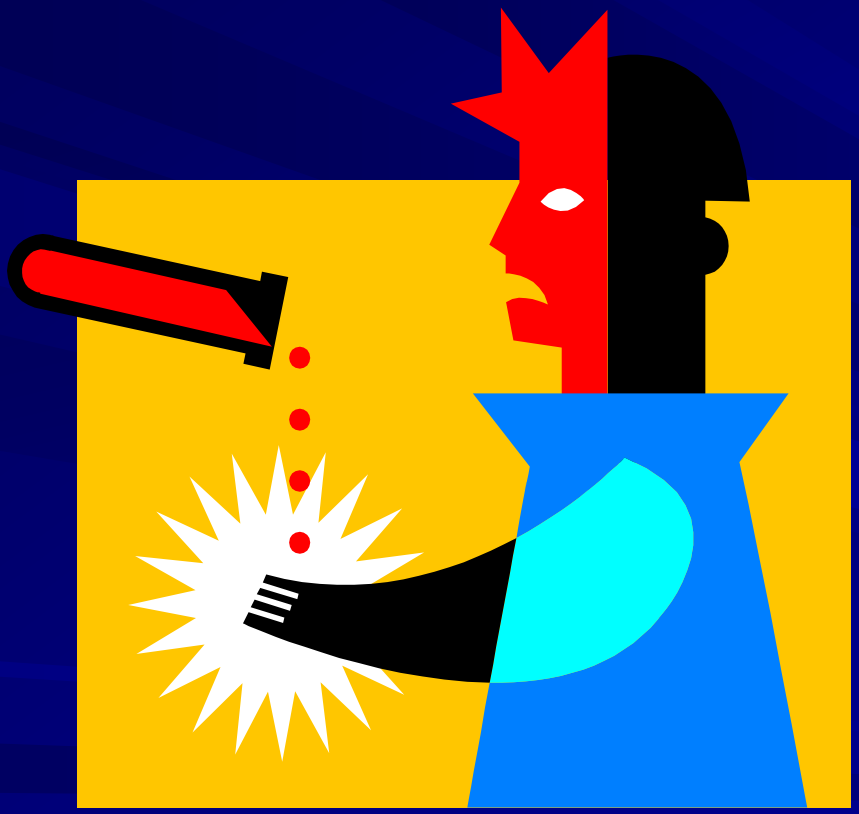


INJECTION



INGESTION

Individual Sensitivity



- Allergic sensitization
- Pre-existing disease
- Medications
- Age, gender
- Stress

Carcinogens

- Few chemicals known to cause cancer
  - 30 human carcinogens
  - 200 animal carcinogens

- Long latency period (10-40 years)
- Cal/OSHA Regulated Carcinogens

Reproductive Hazards

- Cause changes in genetic material
- Birth defects
- Affect ability to conceive children
- Spontaneous abortions

- Limited information on reproductive hazards
- Few chemicals known to produce reproductive effects

Cal/OSHA PEL's
8 CCR 5155

- California employers must control exposures below the PEL's for regulated substances
- PEL's set by the Occupational Safety and Health Standards Board, enforced by DOSH
- PEL's for 600 chemicals
- Reviewed and revised every two years

CONTROLS FOR HAZARDOUS MATERIALS

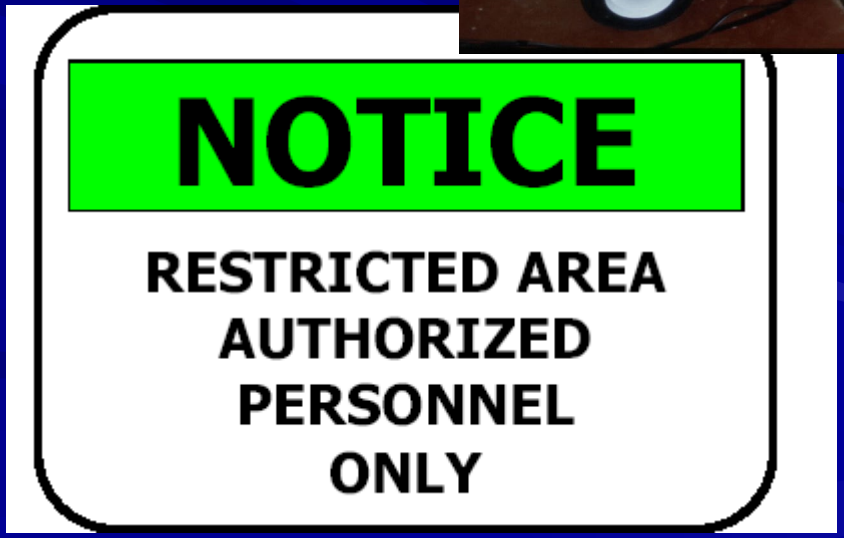
- Chemical Selection and Substitution
- Engineering Controls
- Administrative / Work Practice Controls
- Personal Protective Equipment
- Emergency Procedures
- Emergency Eyewash and Safety Showers

Engineering Controls

- Laboratory Hoods, Glove Boxes
- Enclosed Systems
- Spray Paint Booths
- Local Exhaust Hoods

Administrative Controls

- Written procedures, SOPs
- Designated or restricted areas
- Personal hygiene
- Housekeeping
- Work permits
- Employee training



Personal Protective Equipment

(Last Line of Defense)

Labels

- Original containers must be labeled with identity of hazardous substance
- Hazard warning statements, including Prop 65 if required
- Name and address of mfg. or importer

Primary Labels

Primary Labels must contain:

- **Identity of the material**
- **Signal Words**
  - **Danger! - Highest degree of Hazard**
  - **Warning! - Intermediate degree of Hazard**
  - **Caution! - Lowest degree of Hazard**
- **Statement of Hazards (target organs)**
- **Name, address of the chemical manufacturer, importer, other responsible party**

Primary Labels

Primary Labels must contain:

- **Precautionary measures**
- **Instructions in case of contact**
- **Instructions in case of fire, spill, or leak**
- **Instructions for container handling and storage**

Manufacturer (Primary) Labeling

ACETONE

(Dimethyl Ketone, CAS 67-64-1)

DANGER ! EXTREMELY FLAMMABLE 

Acute: **CAUSES IRRITATION OF EYES, SKIN AND MUCOUS MEMBRANES.**
Chronic: **EXPOSURE TO LIQUID MAY CAUSE DERMATITIS.**

Keep away from heat, sparks and flame. Avoid contact with eyes, skin, and clothing. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

FIRST AID:
IMMEDIATELY CALL POISON CONTROL CENTER OR HOSPITAL EMERGENCY ROOM.

IF CONTACTED: Immediately flush eyes with plenty of water for at least 15 minutes. Wash skin with soap and plenty of water. GET MEDICAL ATTENTION for eyes. Wash clothing before reuse.

IF INHALED: Remove to fresh air. If not breathing, give artificial resuscitation.

IF SWALLOWED: Give water to dilute. CONSULT POISON CONTROL CENTER OR HOSPITAL EMERGENCY ROOM. Never give anything by mouth to an unconscious or convulsive person.

HCL®

530-1

Secondary Labels

- Secondary Labels are required when material transferred from primary container and
  - secondary container will be used longer than 8 hours
  - secondary container will be stored
  - secondary container will be out of the custody of the person who transferred the chemical
- Secondary Labels must contain:
  - **Identity of the hazardous chemical**
  - **Hazard warning statements**

Secondary Labels

Chemical Identity/ Trade Name: Isopropyl Alcohol
Manufacturer: Shell Oil Company
Hazardous Warnings:
Flammable liquid. Irritant. Central nervous system depression.

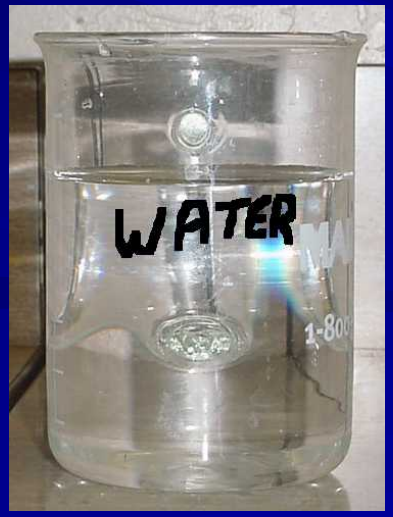
Target Organs:
Eyes, skin, gastrointestinal tract, respiratory system and central nervous system.

Read MSDS for further information and instructions.

Portable Container Exception

- No labels if used to transfer a hazardous chemical from a labeled container AND
- Under the control of and used by the person who actually transfers the chemical AND
- Used within the work shift when it is transferred

Portable Containers
Employee Controlled



Labeling Systems

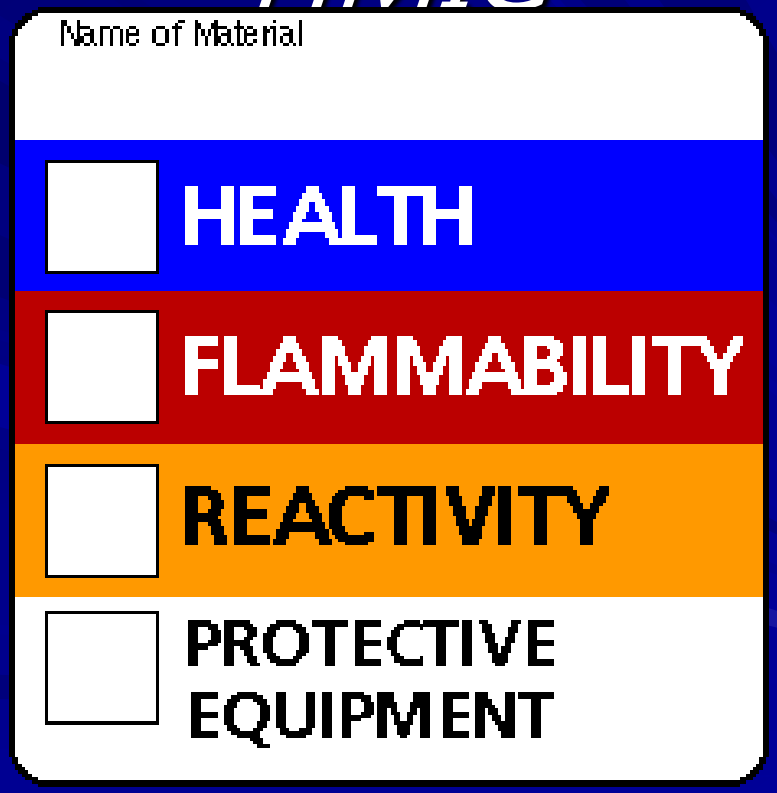
- Several systems have been developed for different purposes:
- NFPA
- HMIS/HMIG/HCMIS

NFPA 704

- Uses diamond-shaped label
- 4 categories of hazards
- Each category is ranked from 0 to 4
  - Fire
  - Health
  - Reactivity
  - Specific Hazard

HMIS III

HMIG



Hazardous Materials Identification Guide (HMIG)


HAZARDOUS MATERIAL
IDENTIFICATION GUIDE
HEALTH
FLAMMABILITY
REACTIVITY
PROTECTIVE EQUIPMENT
4 EXTREME
3 SERIOUS
2 MODERATE
1 SLIGHT
0 MINIMAL
PROTECTIVE EQUIPMENT INDEX
A
B
C
D
E
F
G
H
I
J
K
X
ALDRIN
HEALTH
FLAMMABILITY
REACTIVITY
PROTECTIVE EQUIPMENT

Material Safety Data Sheets

How can I access chemical information at work?

Material Safety Data Sheets

- MSDS for each hazardous chemical
- Request MSDS if not provided by mfg. or vendor
- Keep MSDS accessible to workers on all shifts
- MSDS have content requirements

Section 1. Chemical Product/Company Identification

Address: 31501 Solon Road
Solon, OH 44139

Contact Person:
Emergency Phone Number: (216) 248-500
Phone Number: ( ) -
Fax Number: ( ) -

Written Date: 04/01/1996 Mfr Revised Date:

Synonyms:

Section 2. Composition/Information on Ingredients

ACGIH TLV: TWA STEL Skin
Other Limit
Supplier: TWA STEL
Other Limit
TWA STEL
Other Limit

Seq. 2 CAS:1314-36-9
Yttrium Oxide
Percent By: Wgt: Vol: From 1 To 20
TSCA: OSHA HC:
OSHA PEL: TWA STEL Skin N
Other Limit
ACGIH TLV: TWA STEL Skin N
Other Limit
Supplier: TWA STEL
Other Limit
TWA STEL
Other Limit

Section 2 Composition, Information On Ingredients

Seq. 3 CAS:14808-60-7
Silicon Oxide (Quartz)
Percent By: Wgt: Vol: From 0 To 1
TSCA: OSHA HC:
OSHA PEL: TWA STEL Skin N
Other Limit
ACGIH TLV: TWA 0.1 mg/m3 respir STEL Skin N
Other Limit

Section 3. Hazards Identification

Potential Health Effects By Route of Exposure:

Inhalation: Zirconium oxide and yttrium oxide show low orders of toxicity. Yttrium has been known to produce delayed blood clotting, leading to hemorrhage.

Skin: No applicable information found.

Eyes: Possible mechanical irritation.

Ingestion: No applicable information found.

Chronic Health Effects: None listed.

Target Organ Effects: None listed.

Signs/Symptoms of Exposure: None listed.

Other Health Effects: Zirconium oxide compounds normally contain hafnium dioxide. The toxicity is apparently not altered by the 2-3% of hafnium dioxide, because toxicity was not observed in studies of zirconium oxide.

Medical Restrictions/Conditions Aggravated: None listed.

Immediately Dangerous to Life and Health (IDLH) Level: None listed.

Routes of Exposure:
Inhalation: Y Skin: Y Eyes: Y Ingestion: Y

Carcinogenicity Status:

Section 4. First Aid Measures

Material Safety Data Sheet

Section 4 First Aid Measures

Ingestion: Seek medical advice.

Notes to Physician: None listed.

Other Medical Information: None listed.

Section 5. Fire Fighting Measures

Firefighting Instructions: Not applicable.

OSHA Flammability Classification: None listed.

Section 6. Accidental Release Measures

Section 6 Accidental Release Measures

For transportation emergency, call CHEMTREC at 1-800-424-9300

Section 7. Handling and Storage

Storage: Avoid producing dust.

Other: Remove any dust before performing any work which will

Section 8. Exposure Controls

Respiratory Protection: NIOSH/MSHA-approved dust and/or fume respirator.

Section 9. Physical and Chemical Properties

Odor: None.

Physical State: Solid.

Molecular Formula: None listed.

Material Safety Data Sheet

Section 9 Physical and Chemical Properties

Octanol/Water Partition Coef: None listed.

Water Solubility: Insoluble in water.

Solvent Solubility: No applicable information found.

Other: No applicable information found.

Boiling Point: Not listed deg C/ 7000 deg F

Melting/Freezing Point: Not listeddeg C/ > 4000 deg F

Density/Specific Gravity: 5.6 g/cm3

Vapor Pressure: Not applicable

Vapor Density: Not applicable Standard: Not listed

Evaporation Rate: Not applicable Standard: Not listed

Molecular Weight: Not listed

pH: Not listed

Section 10. Stability and Reactivity

Conditions to Avoid: No applicable information found.

Section 11. Toxicological Information

Acute Toxicity Data by Route of Exposure: None listed.

Section 12. Ecological Information

Section 13. Disposal Considerations

Section 14. Transport Information

Material Safety Data Sheet

Section 14 Transport Information

Department of Transportation Requirements
Identification Number (UN/NA):
Procedures: None listed.

Section 15. Regulatory Information

SARA Section 302: RQ: lbs. TPQ: lbs.
SARA Section 313:
Clean Air Act Section 112: TSCA Inventory:
Clean Water Act Section 311: Clean Water Act Section 307:
SARA Hazard Categories (SARA Sections 311/312):
Acute: Chronic: Fire: Reactivity: Sudden Release:

By CAS Number: 1314-36-9
Yttrium Oxide
CERCLA Section 103: RQ: lbs.
SARA Section 302: RQ: lbs. TPQ: lbs.
SARA Section 313:
Clean Air Act Section 112: TSCA Inventory:
Clean Water Act Section 311: Clean Water Act Section 307:
SARA Hazard Categories (SARA Sections 311/312):
Acute: Chronic: Fire: Reactivity: Sudden Release:

By CAS Number: 14808-60-7
Silicon Oxide (Quartz)
CERCLA Section 103: RQ: lbs.
SARA Section 302: RQ: lbs. TPQ: lbs.
SARA Section 313:
Clean Air Act Section 112: TSCA Inventory:
Clean Water Act Section 311: Clean Water Act Section 307:
SARA Hazard Categories (SARA Sections 311/312):
Acute: Chronic: Fire: Reactivity: Sudden Release:

Federal Regulations: None listed.
State Regulations: None listed.
International Regulations: None listed.

Section 16. Other Information

[illegible], however, Zircoa makes no warranty with respect to the accuracy of the information or the suitability of the

Plan for Emergencies

- Employee exposure to hazardous materials – inhalation, skin contact
- Spills, leaks
- Fires/Explosions

Hazardous Materials First Aid

- Eyes: Flush with water for 15 minutes
- Skin: Wash with soap and water
- Inhalation: Move to fresh air
- Swallowing: Get emergency medical assistance
- Provide MSDS information for emergency medical care

Plan for Emergencies

- Small Spills, Low Hazard Materials
  - Provide appropriate protective equipment
  - Spill kits, absorbents
  - Use proper disposal methods (contact in dept. who handles hazardous waste issues)
- Large Spills, Higher Hazard Materials
  - Evacuate area, call 911
  - If splashed, remove contaminated clothing and begin flushing skin or eyes with water at least 15 minutes

Hazardous Waste Disposal

- Contact person in department or facility with hazardous waste responsibilities to determine status as a hazardous waste
- Completely fill out and attach hazardous waste labels prior to waste accumulation
- Date containers when first waste goes in
- Keep waste in secondary containers properly labeled

Non-Routine Elements of a HazCom Program

1. Temporary employees / County employees from other departments/ Contractors
2. Employees who perform non-routine tasks

   e.g. maintenance tasks, remodeling
3. New employees / New assignments
4. Visitors

Access to Employee Exposure and Medical Records (8 CCR 3204)

- Exposure and Medical Records:
  - Medical Monitoring
  - Air Monitoring
  - MSDSs
- County has 15 days to provide
- Retain records for duration of employment + 30 years
- Record retirement and transfer procedures at the end of the 30 year period