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
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: ______________

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Hazardous Substances *</th>
<th>Date of MSDS</th>
<th>Operation/Work Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 $< 100^\circ$ F
- Combustible: Flashpoint $> 100^\circ$ 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

**pH Scale**

- Lemon juice: 1
- Tomato Juice: 3
- Pure Water: 7
- Baking Soda: 9
- Caustic Soda: 14
- Battery Acid: 1
- Vinegar: 2
- Black coffee: 5
- Sea Water: 8
- Milk: 10
- Household Ammonia: 13
- Oven cleaner: 14
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
  \[ \text{Dose} = \text{Concentration} \times \text{Time} \]
- Route of exposure
- Reaction, interaction between chemicals
- Sensitivity of the individual
Dose / Response

"The Dose Makes the Poison"
- Paracelsus -
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

INHALATION

ABSORPTION

INGESTION

INJECTION
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
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.
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
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
### Hazardous Materials Identification Guide (HMIG)

<table>
<thead>
<tr>
<th>1</th>
<th>H</th>
<th>CHEMICAL NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>F</td>
<td>Isopropyl Alcohol</td>
</tr>
<tr>
<td>0</td>
<td>R</td>
<td>COMMON NAME</td>
</tr>
<tr>
<td>C</td>
<td>PE</td>
<td>IPA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MANUFACTURER</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADE Chemicals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DATE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Today</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Seq. 2</th>
<th>CAS: 1314-36-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yttrium Oxide</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent By:</th>
<th>Wgt:</th>
<th>Vol:</th>
<th>From</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSCA:</td>
<td></td>
<td></td>
<td>1 To 20</td>
</tr>
<tr>
<td>OSHA PEL:</td>
<td></td>
<td></td>
<td>Skin N</td>
</tr>
<tr>
<td>ACGIH TLV:</td>
<td></td>
<td></td>
<td>Skin N</td>
</tr>
<tr>
<td>Supplier:</td>
<td></td>
<td></td>
<td>Skin N</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Seq. 2</th>
<th>CAS: 14808-60-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon Oxide (Quartz)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent By:</th>
<th>Wgt:</th>
<th>Vol:</th>
<th>From</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSCA:</td>
<td></td>
<td></td>
<td>0 To 1</td>
</tr>
<tr>
<td>OSHA PEL:</td>
<td></td>
<td></td>
<td>Skin N</td>
</tr>
<tr>
<td>ACGIH TLV:</td>
<td></td>
<td></td>
<td>Skin N</td>
</tr>
<tr>
<td>Supplier:</td>
<td></td>
<td></td>
<td>Skin N</td>
</tr>
</tbody>
</table>

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
Section 5. Fire Fighting Measures

Firefighting Instructions: Not applicable.
OSHA Flammability Classification: None listed.

Section 6. Accidental Release Measures

For transportation emergency, call CHEMTREC at 1-500-424-8333.

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.
Eye Protection: Safety glasses.

Section 9. Physical and Chemical Properties

Odor: None.
Physical State: Solid.
Molecular Formula: None listed.

Section 10. Stability and Reactivity

Chemical Stability: Product is stable.
Conditions to Avoid: No applicable information found.

Section 11. Toxicological Information

About Toxicity Data by Route of Exposure: None listed.

Section 12. Ecological Information

Section 13. Disposal Considerations

Section 14. Transport Information
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.
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