Portland Community College
Environmental Health & Safety
EH&S
Laboratory Safety
Introduction

Environmental, Health & Safety (EH&S department & staff)

Course Objective
To help provide employees/faculty/staff with an overview of the regulations applying to their laboratory, as well as important safety considerations they will encounter, this Course is designed to review the fundamentals of laboratory safety.

Upon completion of the Course, PCC employees should:

Recognize the most recent OSHA regulations affecting their laboratory environment.
Know what basic personal protective equipment is available to them and when it should be used.
Understand the importance of good housekeeping in the laboratory.
Be able to recognize various ventilation controls, and know when they should be used.
Know the importance of being able to read a Safety Data Sheet (SDS), recognize chemical labeling and know how to store chemicals correctly.
Know the basic actions to take in emergency situations, including the use of safety showers and eye washes.
Compliance

OSHA
Lab Safety
Hazard communication,
Laboratory chemical hygiene,
Hazardous waste management
Emergency response
Lab Safety, Health and Environmental Risk Exposures

Chemical
Biological/Sharps
Fire
Hazardous Waste/Spills
Chemical – Hazard Communications

Chemical Purchasing & Management
Labeling
Safety Data Sheets
Chemical Usage

PCC Hazard Communication Plan: Chapter 8 of Health and Safety Manual
PCC Chemical Hygiene Plan: Chapter 9 of the Health and Safety Manual

Both located on the PCC Safety & Risk Services intranet site
Chemical – Hazard Communications

Chemical Purchasing/Storage

Documentation

- All chemicals go through approval process when submitted through MSDSonline
- Prior approval required for all radioactive materials or equipment with radioactive materials.
- Purchases of all new particularly hazardous substances require the completion of CHP Appendix C Approval Form which is basically a “safety plan” for use of that chemical.
- Particularly hazardous substances for PCC are based on the following GHS classifications:
  - Acute Toxic, 1 and 2
  - Germ Cell Mutagen, 1a, 1b
  - Reproductive Hazard, 1, 2
  - Carcinogen, 1, 2

Storage Locations
Chemical – Hazard Communications

Department Responsibilities:

- Train employees on specific chemicals
- Safety data sheets (SDS) are submitted to MSDSonline and approved prior to purchase of chemicals.
- Must have the correct manufacturer’s SDS for each chemical
- Must not purchase any chemical without an OSHA GHS compliant label and SDS
- All chemicals must be marked with the received date. –observe storage time limits for peroxide formers
- Conduct annual inventory to verify SDS available for each chemical on the shelf.
- Chemical Hygiene Plan requires an annual review of integrity of chemicals and their containers
- Maintain an SDS backup so SDS are always readily available to employees
- Chemicals are labeled and stored correctly
Employee Responsibilities:

Read and follow safety data sheets and chemical labels
Use appropriate safeguards for each chemical, including personal protective equipment
Follow personal hygiene practices for eating, drinking, handwashing
Good lab housekeeping
Return chemicals to proper storage area
Wipe down work areas
Follow safety signage
Know the location and proper use of all emergency equipment
Report and properly respond to chemical exposures and releases
Follow waste storage and disposal procedures
Chemical – Hazard Communications

Labeling

When do you need workplace labels at PCC? Immediate use containers for experiments are not required to be labeled but stock or storage containers must be labeled.

Does this label meet OSHA workplace label requirements?

Departments should phase out HMIS and NFPA labeling of workplace containers.
Chemical – Hazard Communications

Safety Data Sheets
MSDSonline
Lists of hazardous chemicals by location
View safety data sheets for products PCC employees use or are exposed to
Search to view health and physical hazards of chemicals (GHS classification) by location
Chemical – Hazard Communications

Safety Data Sheets - MSDS ONLINE

There are several ways to access PCC’s safety data sheet inventory using MSDSonline:

1. No password or login needed
2. Shortcut icon on classroom podiums, PC’s, labs
3. Link on the PCC Intranet
4. Designated URL (Web page) – must have exact web address to have access outside of PCC internet, for use with mobile devices

https://msdsmanagement.msdsonline.com/company/fbaa552b-9486-47db-8dd3-7c5b26b499f5/
Chemical – Hazard Communications

Safety Data Sheets
Laboratory Chemical Hygiene – Chemical Usage
Personal Protective Equipment

OSHA Employer requirements:

Employers must assess the workplace hazards and select PPE for employees. We will discuss location specific PPE that is available
Employer pays for PPE. (there are some exceptions)
PPE must be available that fits each affected employee
PEE must be provided, used, and maintained in a sanitary and reliable condition
Must regularly inspect and maintain PPE
Ensure employee are wearing PPE for identified tasks

Train employees on:

When PPE is necessary
What PPE is necessary
How to properly don, doff, adjust, and wear PPE
The limitations of the PPE
Proper care, maintenance, useful life and disposal of PPE

Cheryl Arpan, EH&S Manager - August 25, 2017
Laboratory Chemical Hygiene - GHS

Globally Harmonized System uses specific criteria to standardize how physical and chemical hazards are expressed on chemical labels and safety data sheets

<table>
<thead>
<tr>
<th>Physical Hazards:</th>
<th>Health Hazards-acute and chronic:</th>
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</thead>
<tbody>
<tr>
<td>Explosive</td>
<td>Acute toxicity</td>
</tr>
<tr>
<td>Flammable</td>
<td>Specific target organ toxicity</td>
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<tr>
<td>Oxidizer</td>
<td>Skin corrosion or irritation</td>
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<tr>
<td>Self reactive</td>
<td>Serious eye damage or irritation</td>
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<tr>
<td>Self heating</td>
<td>Respiratory or skin sensitization</td>
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<tr>
<td>Pyrophoric</td>
<td>Aspiration hazard</td>
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<tr>
<td>Organic Peroxide</td>
<td>Germ cell mutagenicity</td>
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<tr>
<td>Water contact emits flammable gas</td>
<td>Carcinogenicity</td>
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<tr>
<td>Corrosive to metal</td>
<td>Reproductive toxicity</td>
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<td>Pressurized gases</td>
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<tr>
<td>Combustible dust</td>
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<td>Simple asphyxiants</td>
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Laboratory Chemical Hygiene – GHS Pictograms

- **Exploding Bomb**: Explosives, Self Reactive, Organic Peroxide
- **Flame**: Flammable, Self Reactive, Pyrophoric, Self-Heating, Emits Flammable Gas, Organic Peroxides
- **Flame Over Circle**: Oxidizers
- **Gas Cylinder**: Gases Under Pressure
- **Skull and Crossbones**: Acute Toxicity (Fetal or toxic)
- **Corrosion**: Skin Corrosion/Burns, Corrosive to Metals, Serious Eye Damage
- **Health Hazard**: Carcinogenicity, Respiratory Sensitizer, Reproductive Toxicity, Target Organ Toxicity, Mutagenicity, Aspiration Toxicity
- **Exclamation Mark**: Skin & Eye Irritant, Dermal Sensitizer, Acute Toxicity (Harmful), Narcotic Effects, Respiratory Tract Irritant, Harmful to Ozone Layer (Not mandatory)
- **Environment**: Aquatic Toxicity
Laboratory Chemical Hygiene

GHS Chemical Label Examples

1-Chloro-2,4-dinitrobenzene

- Danger
- Precautionary Statements
- Supplier Information

Cheryl Arpan, EH&S Manager - August 25, 2017
Laboratory Chemical Hygiene
Laboratory – Waste & Spills

Waste Disposal/Spills

The rules change when chemicals become waste.

What is a waste?
  Served its purpose
  It’s not longer usable
  Discarded or abandoned
Laboratory – Waste & Spills

Types of Regulated Waste at PCC
Laboratory – Waste & Spills

Types of Regulated Waste at PCC
Laboratory – Waste & Spills

Types of Regulated Waste at PCC
Lab Waste Disposal

Chemical
Biological
Laboratory Emergency Response

Injury/Illness

Cheryl Arpan, EH&S Manager - August 25, 2017
Bloodborne Pathogens

Exposure Control Plan
Laboratory Emergency Response

Fire
What’s Next?

Commitment to safety
Engagement in safety programs & activities
Access resources/remain knowledgeable