HAZCOMM & Lab Safety
College of Dental Medicine

Research Safety Specialist
Environmental Health and Safety

COLUMBIA UNIVERSITY
Environmental Health and Safety

www.ehs.Columbia.edu
Purpose of Training

- Crucial for a safe work place
- Policy/procedures may vary
- Required by Occupational Safety & Health Administration (OSHA)
- To understand your rights & responsibilities
- Participate in safety programs and take appropriate action
Training Outline

Roles & Responsibilities (Training)

Hazard Identification

Hazard Control Methods & PPE

Emergency Procedures
Roles & Responsibilities

Columbia University & PI

- Identify Hazards
- Provide Personal Protective Equipment (PPE)
- Provide Information
- Provide Training
- Including task specific training

You

- Ensure your own safety
- Report hazards
- Use Personal Protective Equipment (PPE)
- Follow procedures
- Get Trained
- Promote a safe, healthy & environmentally sound workplace
Roles & Responsibilities: EH&S

Consultants
- Technical Guidance
- Institutional Health and Safety Program Development
- Laboratory Inspections and Surveys
- Conduct Research Safely in Compliance with Regulations

Services Provided
- General Safety Training
- Hazardous Waste Disposal
- Emergency Response
- Hazard Assessments
- Laboratory Commissioning and Decommissioning
- Laboratory and Equipment Clearances
Agenda

Roles & Responsibilities (Training)

Hazard Identification

Hazard Control Methods & PPE

Emergency Procedures
Hazard Identification: Regulatory Introduction

Columbia University laboratories and dental clinics must comply with rules set by the following regulatory bodies:

- **New York City**
  - Fire Department *(FDNY)*
  - Department of Environmental Protection *(DEP)*
  - Department of Health and Mental Hygiene *(DOHMH)*

- **New York State**
  - Department of Environmental Conservation *(NYSDEC)*

- **Federal**
  - Department of Labor: Occupational Safety and Health Administration *(OSHA)*
  - United States Environmental Protection Agency *(USEPA)*
Hazard Identification: OSHA Hazard Communication Standard

- You have a right to know about the hazards you may be exposed to and how to protect against exposures.
- The classification of chemical hazards and the dissemination of safety information to personnel working with chemicals.

(29 CFR 1910.1200)
Hazard Identification: Recognizing & Evaluating Hazards

Signs

Labels

COLUMBIA UNIVERSITY
Environmental Health and Safety

Research Safety
www.ehs.Columbia.edu
Hazard Identification: Pictograms & Hazards

Physical Hazards
- Flammable
- Compressed Gas
- Oxidizing
- Corrosive
- Explosive

Health Hazards
- Health Hazard
- Corrosive
- Skin Irritant
- Toxic

Reference Tools
http://www.osha.gov/dsg/hazcom/ghs.html

Environmental Hazards
- Environmental Hazard
Hazard Identification: Safety Data Sheets (SDS)

1. Identification
2. **Hazard Identification**
3. Composition
4. **First Aid Measures**
5. Fire-fighting measures
6. Accidental release measures
7. **Handling & Storage**
8. Exposure Controls
9. **Physical & Chemical Properties**
10. Stability & Reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information
Hazard Identification: Using ChemWatch

- Columbia’s online source for safety data sheets
- Available from any computer on the CU network

Hazard Identification: Routes of Exposure

How might you be exposed to a chemical hazard?

- **Inhalation**
- **Absorption**
- **Ingestion**
Hazard Identification: Routes of Exposure
Hazard Identification: What’s Wrong With This Picture?
**Hazard Identification: Routes of Exposure**

**Injection: Puncture/Laceration**

- Sharps, Needles, razor blades, and glass, can cause cuts, lacerations, and punctures.

- All needles, syringes and blades must be discarded in rigid sharps containers regardless of the status of biological contamination.

- Limit use, do not recap needles.

- Do not remove needles from syringes.

- Do not bend, break, or manipulate syringes.
Hazard Identification: Chemical Health Hazards

➢ **Acute Health Effects:**
  - An exposure to a hazardous material with immediate symptoms but is often reversible
  - Headaches, dizziness, burns from corrosive chemicals and/or rash

➢ **Chronic Health Effects:**
  - Prolonged or repeated exposure to hazardous materials may lead to irreversible damage with symptoms that are not immediately apparent
  - Cancer, mutation, and/or reproductive effects
Agenda

- Roles & Responsibilities (Training)
- Hazard Identification
- Hazard Control Methods & PPE
- Emergency Procedures
Hierarchy of Hazard Control Methods

- **Elimination**: Physically remove the hazard
- **Substitution**: Replace the hazard
- **Engineering Controls**: Isolate people from the hazard
- **Administrative Controls**: Change the way people work
- **PPE**: Protect the worker with Personal Protective Equipment

[Hierarchically arranged controls diagram](https://www.cdc.gov)
Hazard Control Methods: Elimination & Substitution

Mercury Dental Filling vs Resin Composite
Hazard Control Methods: Engineering Controls

HVAC system, Fume hoods and Machine guards
Hazard Control Methods: Administrative Controls

- Policies, procedures, effective communication and best work practices designed to ensure the safety of personnel
- Consult an experienced staff or faculty member before modifying a protocol or designing a new experiment
Gases in cylinders are under high pressure and compressed gas cylinders can be destructive to life and property if damaged.

Seek instruction from an experienced person before handling compressed gas cylinders.

**Always secure cylinders to a stable mount.**

Remove regulators and apply cap when the cylinder is not in use.

It is important to segregate incompatible gases.
  - Example: Compressed oxygen tanks separated from flammable gases by 20 feet.
Hazard Control Methods: Administrative Controls - Housekeeping

- Do not place or store items on top of cabinets, light fixtures & radiators
- Do not block aisles and exits
- Maintain tidy workstations
Hazard Control Methods: Administrative Controls

- Proper storage and segregation of hazardous materials.
- Proper chemical container labeling.
Hazard Control Methods: Personal Protective Equipment (PPE)

MUST BE WORN AT ALL TIMES IN THE CLINIC:
- Proper work attire (long pants/skirt, closed shoes)
- Scrubs
- Lab coats/aprons
- Safety glasses/goggles
- Protective gloves
Hazard Control Methods: Personal Protective Equipment (PPE)

When working in the lab & clinic you must wear PPE & proper attire or you will be asked to leave the immediately.
Hazard Control Methods: Personal Protective Equipment (PPE)

General Areas

- Wearing gloves on elevators is NOT permitted
- Never Touch elevator buttons or door knobs with gloves
- Always remember to remove your gloves when you leave your work station
- Remember to remove disposable gowns before leaving clinical areas
- Never step outside of VC with gowns & gloves
Agenda

- Roles & Responsibilities (Training)
- Hazard Identification
- Hazard Control Methods & PPE
- Emergency Procedures
### Emergency Procedures: Reporting Laboratory Emergencies

<table>
<thead>
<tr>
<th>Campus</th>
<th>Public Safety from a Campus Phone</th>
<th>Public Safety from a Personal Phone</th>
<th>EH&amp;S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Center</td>
<td>(212) 305-7979</td>
<td>(212) 305-8100</td>
<td>(212)305-6780</td>
</tr>
</tbody>
</table>

- Provide:
  - Name & UNI
  - Location (building, room)
  - Phone number
  - Incident details
  - Any Personal injury
Emergency Procedures: Equipment

Eye Wash Station

Fire Extinguisher

Keep Clear of Obstruction!
Emergency Procedures: Using an Eye Wash

Wash a contaminant out of the eye by providing a continuous flow of water.

- Activate the eye wash station and enable "hands-free" operation.
- Gently position your eyes into the water stream.
- Flush your eyes for a full 15 minutes.
- Test it weekly – Do not wait for an emergency!
Emergency Procedures: Spills

Manageable

Call Facilities to mop up spills of non-hazardous materials

Examples:
- Water
- Bleach
- Other disinfectants

Small amounts of low hazard chemicals & biological spills can be managed by you!

Unmanageable

Call EH&S at (212) 305-6780 with:

- Chemical identity if known
- Volume
- Location
- Your name, UNI, and telephone number

Please visit the EH&S Website to review this and other help emergency response videos

http://ehs.columbia.edu/LabEmergencyResponseVideos.html
Emergency Procedures: Personal Contamination

- Flush contaminated eyes, face, arms, and body area with copious amounts of water
- Remove contaminated clothing
- If there are no visible burns, wash gently with soap and warm water
- Seek medical attention, if necessary
- If there are no visible burns, wash gently with soap and warm water
- Inform your supervisor
<table>
<thead>
<tr>
<th>Campus</th>
<th>Hours</th>
<th>Employees</th>
<th>Public Safety Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUMC</td>
<td>Business-Hours</td>
<td>Workforce Health &amp; Safety Harkness Pavillion</td>
<td>(212) 305-7979</td>
</tr>
<tr>
<td></td>
<td>After-Hours</td>
<td>NYPH Emergency Depart. First Floor of the Vanderbilt Clinic (VC)</td>
<td></td>
</tr>
<tr>
<td>Campus</td>
<td>Hours</td>
<td>Students</td>
<td>Student Health Services</td>
</tr>
<tr>
<td>CUMC</td>
<td>Business-Hours</td>
<td>Student Health Services</td>
<td>(212) 305-3400</td>
</tr>
</tbody>
</table>

**Spills and Emergency Procedure:**
Where to go for Injuries & Health Emergencies

---

**OCCUPATIONAL EXPOSURE – DO THIS NOW:**
1. Immediately cleanse the injury (soap and water for skin), and
2. Promptly notify your attending or preceptor to arrange for prompt counseling and testing of the source patient.
3. Come to the Student Health Service immediately for assessment, counseling, and any indicated medications.
4. If the Student Health Service is closed, call the physician on call (212) 305-3400 and immediately go to the Emergency Room for evaluation. Follow-up with SHS the next day.
Reminder

- Be familiar with the location of emergency equipment
- Address manageable spills as soon as they occur
- If this cannot be done immediately, mark off the area and ALERT those around you
- Take Action! Call Facilities or EH&S immediately

**SAFETY FIRST/SAFETY ALWAYS**
Thank you!