College of Dental Medicine
HAZCOMM and Environmental Health & Safety

Jessica Phippard, Senior Research Safety Specialist

September 8, 2016
Why 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
Topics Covered In Training

- Roles and Responsibilities
- Hazard Identification and Controls
- Hazardous Materials
- Emergency Procedures
Roles & Responsibilities

Columbia University

- Identify Hazards
- Provide PPE
- Provide Information
- Provide Training
  - Including task specific training

You

- Ensure your own safety
- Report hazards
- Use PPE
- Follow policies/ procedures
- Get Trained
- Promote a *Culture of Safety*
The Role of EH&S

Consultants

- Technical Guidance
- Intuitional Health & safety Program Development
- Laboratory Inspections & Surveys
- Advise on how to conduct research safely and in compliance with applicable regulations

Services Provided

- General Safety Training
- Hazardous Waste Disposal
- Emergency Response
- Hazard Assessments
- Laboratory Commissioning and Decommissioning
- Laboratory & Equipment Clearances
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Regulatory Information
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)*
OSHA Hazard Communication Standard

- 29 CFR 1910.1200
- You may be exposed to hazardous chemicals in the workplace and have a right to know about the hazards they may pose, and how to protect against exposures.
- The classification of chemical hazards, and the dissemination of safety information to personnel working with chemicals.
Recognizing & Evaluating Hazards

Signs

Labels

Pictograms
### GHS: Pictograms & Hazards

<table>
<thead>
<tr>
<th>Health Hazard</th>
<th>Flame</th>
<th>Exclamation Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carcinogen</td>
<td>Flammable</td>
<td>Irritant (skin and eye)</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>Pyrophoric</td>
<td>Skin Sensitizer</td>
</tr>
<tr>
<td>Reproductive Toxicity</td>
<td>Self-Heating</td>
<td>Acute Toxicity (harmful)</td>
</tr>
<tr>
<td>Respiratory Sensitizer</td>
<td>Emits Flammable Gas</td>
<td>Narcotic Effects</td>
</tr>
<tr>
<td>Target Organ Toxicity</td>
<td>Self-Reactives</td>
<td>Respiratory Tract Irritant</td>
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<tr>
<td>Aspiration Toxicity</td>
<td>Organic Peroxides</td>
<td>Hazardous to Ozone Layer</td>
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<table>
<thead>
<tr>
<th>Gas Cylinder</th>
<th>Corrosion</th>
<th>Exploding Bomb</th>
</tr>
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<tbody>
<tr>
<td>Gases Under Pressure</td>
<td>Skin Corrosion/Burns</td>
<td>Explosives</td>
</tr>
<tr>
<td></td>
<td>Eye Damage</td>
<td>Self-Reactives</td>
</tr>
<tr>
<td></td>
<td>Corrosive to Metals</td>
<td>Organic Peroxides</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flame Over Circle</th>
<th>Environment</th>
<th>Skull and Crossbones</th>
</tr>
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<tbody>
<tr>
<td>Oxidizers</td>
<td>Aquatic Toxicity</td>
<td>Acute Toxicity (fatal or toxic)</td>
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(CODM 2nd Year 2016)

GHS: Pictograms & Hazards

Columbia University
Environmental Health and Safety
<table>
<thead>
<tr>
<th></th>
<th>Section</th>
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<tbody>
<tr>
<td>1</td>
<td>Identification</td>
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<td>2</td>
<td>Hazard Identification</td>
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<td>3</td>
<td>Composition</td>
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<td>4</td>
<td>First Aid Measures</td>
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<td>5</td>
<td>Fire-fighting measures</td>
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<td>6</td>
<td>Accidental release measures</td>
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<td>7</td>
<td>Handling &amp; Storage</td>
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<tr>
<td>8</td>
<td>Exposure Controls</td>
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<tr>
<td>9</td>
<td>Physical &amp; Chemical Properties</td>
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<td>10</td>
<td>Stability &amp; Reactivity</td>
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<td>11</td>
<td>Toxicological information</td>
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<td>Ecological information</td>
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<td>13</td>
<td>Disposal considerations</td>
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<td>14</td>
<td>Transport information</td>
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<td>15</td>
<td>Regulatory information</td>
</tr>
<tr>
<td>16</td>
<td>Other information</td>
</tr>
</tbody>
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New SDS! Check it Out
Using ChemWatch

- Columbia’s online source for safety data sheets.
- Available from any computer on the CU network.
- http://www.ehs.columbia.edu/sds.html
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Chemical Hazards
Chemical Hazards: Routes of Exposure

How might you be exposed to a chemical hazard?

- Inhalation
- Absorption
- Ingestion
Chemical Hazards: Routes of Exposure

- **Injection**

![Injection Image]

CODM 2nd Year 2016
Chemical Exposure: Health Effects

- **Acute effects** – Sudden, traumatic effects
  - Headaches, dizziness, burns from corrosive chemicals, rash

- **Chronic effects** – Slow, gradual effects not readily perceivable until long after the initial exposure
  - Cancer, mutation, reproductive effects

Not all chemical exposures will show immediate effects!
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Physical Hazards
Physical Hazards: Machine Shop Safety

- Machine Shop VC-8-218
Physical Hazards: Machine Shop Safety

- Pre-Clinical Lab – VC-8-215 Hand Tools
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Controlling Hazards
Hierarchy of Controls

- Elimination
- Substitution
- Engineering
- Administrative
- Personal Protective Equipment (PPE)
Controlling Hazards

- Mercury Dental Filling vs Resin Composite

- Elimination

- Substitution

Mercury Dental Filling vs Resin Composite
Controlling Hazards

Engineering Controls

Elimination

- HVAC System
- Fume Hoods
- Machine Guards

Substitution

Engineering

Administrative

Protective Equipment
Controlling Hazards

Administrative Controls

- **Elimination**: Policies, procedures, effective communication and best work practices designed to ensure the safety of personnel.
- **Substitution**: Consult an experienced staff or faculty member before modifying a protocol, or procedure.
- **Engineering**: Policies, procedures, effective communication and best work practices designed to ensure the safety of personnel.
- **Administrative**: Consult an experienced staff or faculty member before modifying a protocol, or procedure.
Controlling Hazards

Administrative Controls

- Proper storage and segregation of hazardous materials.
- Proper chemical container labeling.

![Image showing examples of open containers and missing labels]
Controlling Hazards

Administrative Controls: Compressed Gases

You must label, store, and use cylinders of gases, such as oxygen, nitrous oxide, and propane according to published standards.

- Always in the upright position
- All compressed gases restrained
  - Chained to a wall
  - Or using a Cart
- Must be capped if not in use
- Do not hang items on them

- Conditions which may threaten your physical safety
Controlling Hazards

Administrative Controls: Housekeeping
Controlling Hazards

- Elimination
- Substitution
- Engineering
- Administrative
- Personal Protective Equipment (PPE)

**MUST BE WORN AT ALL TIMES IN THE CLINIC:**

- Proper Work Attire
- Scrubs
- Lab coats/Aprons
- Safety glasses / goggles
- Protective gloves
Controlling Hazards: Proper Work Attire

When working in the lab & clinic you must wear PPE & proper attire or you will be asked to leave the immediately.
Controlling Hazards: PPE
Controlling Hazards: 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
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Emergency Management
Emergency Equipment

- Showers, eyewashes, spill supplies, and fire extinguishers need to be unobstructed
- Don't wait for an Emergency
  - Test eyewashes weekly

Keep Clear of Obstruction
Emergency Management

Reporting Laboratory Emergencies

- Provide:
  - Name & UNI
  - Location (Building, Room)
  - Phone Number
  - Incident Details
  - Any Personal Injury

<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>
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!
Emergency Management

Chemical Emergencies - Manageable Spills

- Please visit the EH&S Website to review this and other help emergency response videos.
  
- [http://ehs.columbia.edu/LabEmergencyResponseVideos.html](http://ehs.columbia.edu/LabEmergencyResponseVideos.html)
Chemical Emergencies - Unmanageable Spills

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

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

- 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.
- Inform your supervisor. If there are no visible burns, wash gently with soap and warm water.
## Spills and Emergency Response

Where to go for Injuries and Health Emergencies

<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 Department - First Floor of the Vanderbilt Clinic (VC)</td>
<td></td>
</tr>
</tbody>
</table>
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 & ALERT people around you.
- Take Action!! Call Facilities or EH&S immediately.

**SAFETY FIRST/SAFETY ALWAYS**
The Office of Environmental Health & Safety (EH&S) and the College of Dental Medicine (CDM) work in collaboration to address patient, student, clinician and environmental safety. The cornerstone of this collaboration is a robust annual staff and student training program. Each year, EH&S delivers 12 hours of safety and environmental management training to more than 400 CDM staff and students. The training covers topics such as laboratory and occupational safety, hazard communication, environmental stewardship, waste management, bloodborne pathogens and fire & life safety. In addition, CDM has clinical policies and procedures specifically established to address these topics as it relates to clinical care. These are available through the CDM intranet website.

The effectiveness of CDM’s environmental management programs is the result of a continued commitment to environmental protection and being adaptable to change in an ever-changing environmental climate. For years EH&S and CDM have been partnering to recycle dental materials such as mercury-containing scrap dental amalgam, lead foils and silver recovery. In 2009, when NYSDEC enacted regulations for installing and managing amalgam separators in dental facilities, CDM was already prepared for the May 2008 implementation date in existing facilities having spent significant time with EH&S researching various separator technologies before the NYSDEC rule was ever written. Presently, the CDM has four amalgam separator units installed which are equipped to remove at least 99% of mercury from dental wastewater discharges from the clinic. This equipment, in conjunction with chair side trap collection, results in dental amalgam removal efficiency upwards of 99.97%.

Beyond mercury, EH&S and CDM partner to ensure the proper operation and management of several silver recovery systems which are employed to help filter contaminants from the radiographic processing effluent before it enters the wastewater. Along with silver from the processing, EH&S also recycles the lead foil collected by CDM from the dental X-ray packaging. More information regarding EH&S’s recycling information such as silver.
Thanks for your attention!