

HAZCOM & Lab Safety



**Research Safety Specialist
Environmental Health and Safety**

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**)

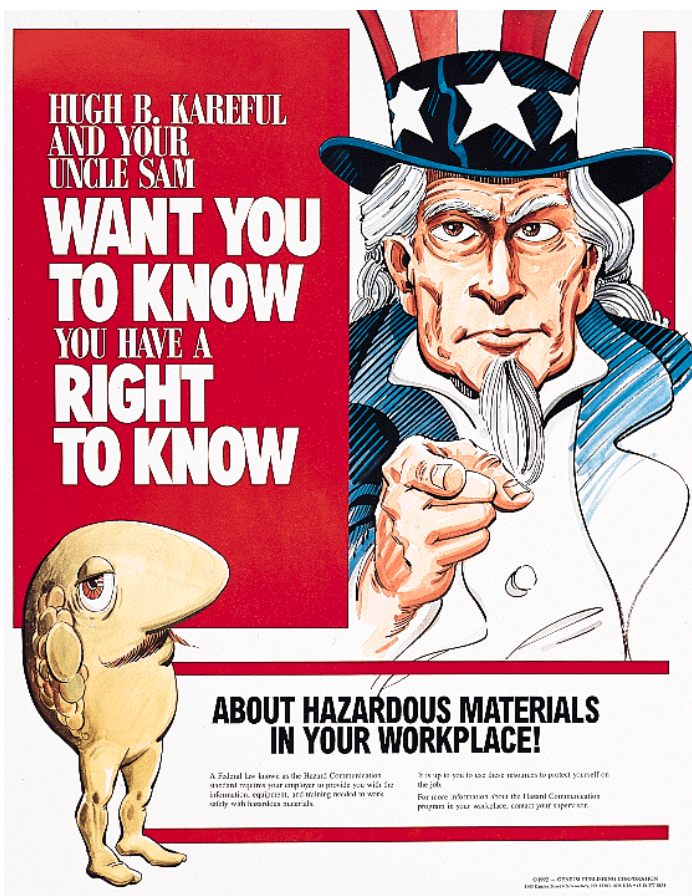
➤ **New York State**

- Department of Environmental Conservation (**NYSDEC**)

➤ **Federal**

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

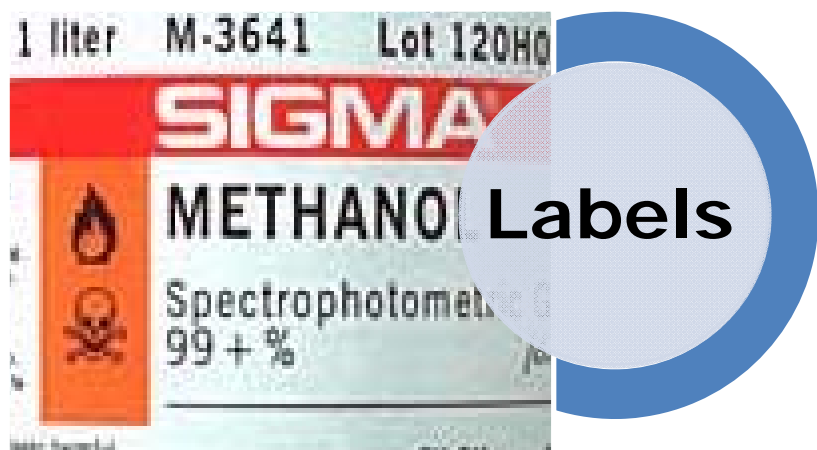
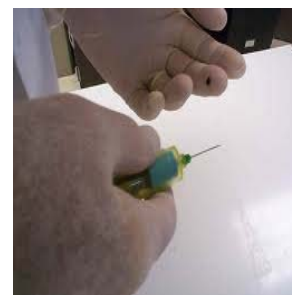
Hazard Identification: OSHA Hazard Communication Standard



- 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



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)

Powered by
Chemwatch

METHANOL
ChemWatch Company

Chemwatch: 1230
Version No: 5.1.1.1
Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Chemwatch Hazard Alert Code: 3

Issue Date: 01/01/2013
Print Date: 10/18/2014
Initial Date: Not Available
S.GHS.USA.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING


Product Identifier

Classification of the substance or mixture

CHEMWATCH HAZARD RATINGS




	Min	Max
Flammability	3	3
Toxicity	3	3
Body Contact	3	3
Reactivity	1	1
Chronic	0	0

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme



GHS Classification Flammable Liquid Category 2, Acute Toxicity (Oral) Category 3, Acute Toxicity (Dermal) Category 3, Acute Toxicity (Inhalation) Category 2, STOT - SE Category 1

Label elements

GHS label elements			
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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

Available:

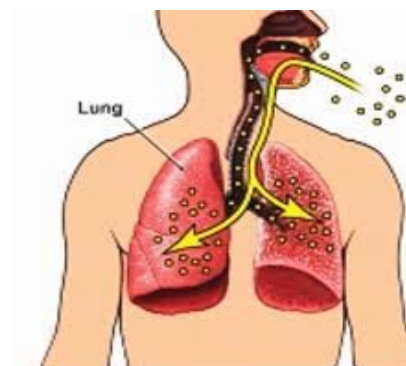
<https://research.columbia.edu/content/safety-data-sheets>



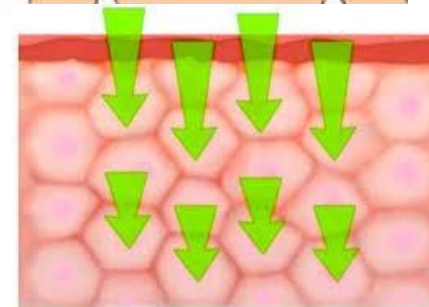
Hazard Identification: Routes of Exposure

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?

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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

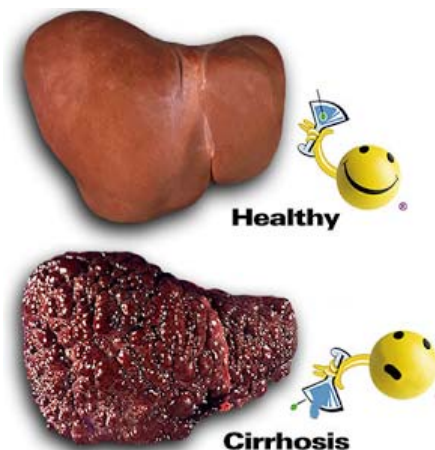
➤ Acute Health Effects:

- 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

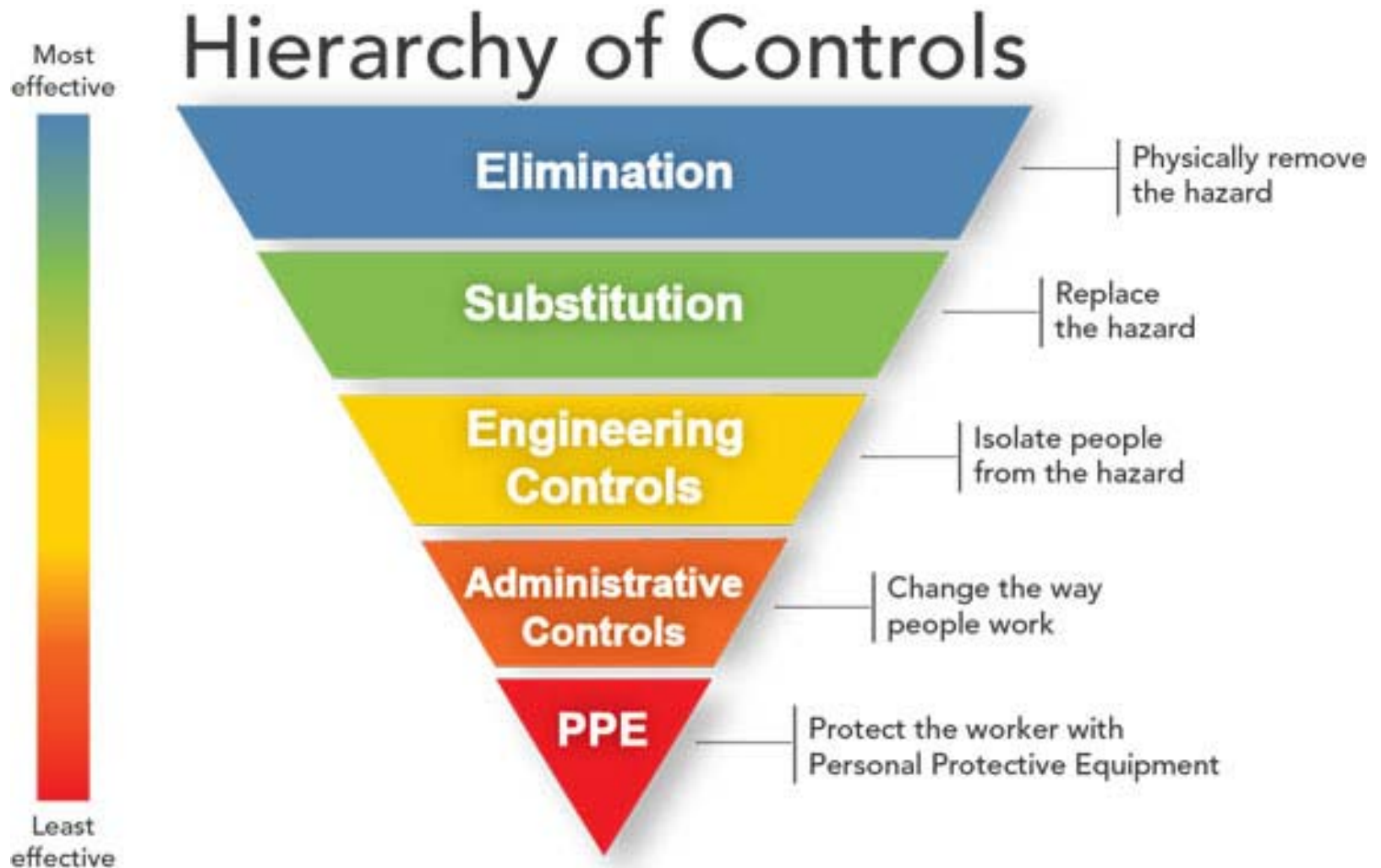


Hazard Control Methods & PPE



Emergency Procedures

Hierarchy of Hazard Control Methods



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



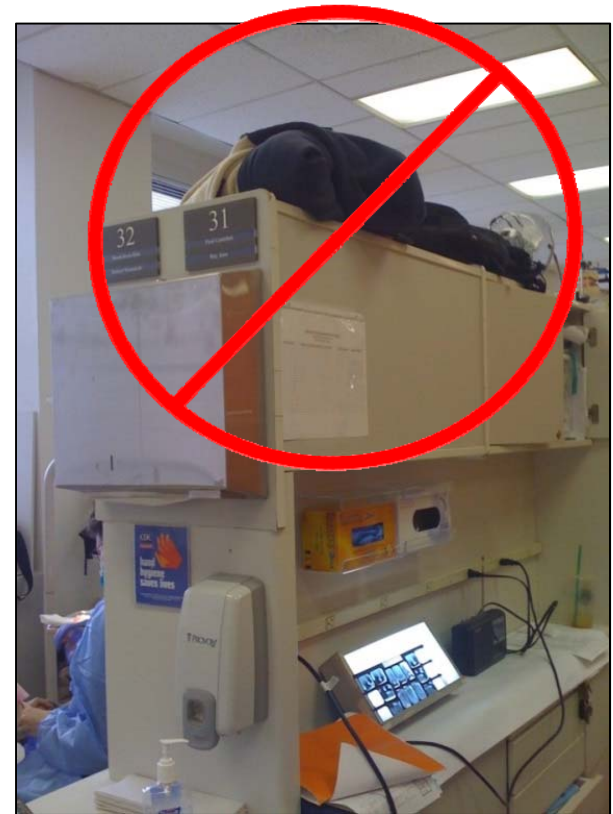
Hazard Control Methods: Administrative Controls - Compressed Gases

- 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

Reporting Fire, Smoke Conditions or Personal Injury			
Campus	Public Safety from a Campus Phone	Public Safety from a Personal Phone	EH&S
Medical Center	(212) 305-7979	(212) 305-8100	(212)305-6780

➤ 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 contaminated eye by providing a continuous stream of water.

- Activate the eye wash by providing a continuous stream of water.
- Gently position your head back and open your eyes.
- Flush your eyes for at least 15 minutes.
- **Test it weekly!**



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Activate the eye wash by providing a continuous stream of water.

Gently position your head back and open your eyes.

Test it weekly!

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

<https://research.columbia.edu/content/laboratory-emergency-response>


Emergency Procedures: Spills & Emergency Response

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

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

Campus	Hours	Employees	Public Safety Contact
CUMC	Business-Hours	Workforce Health & Safety Harkness Pavillion	(212) 305-7979
	After-Hours	NYPH Emergency Depart. First Floor of the Vanderbilt Clinic (VC)	
Campus	Hours	Students	Student Health Services
CUMC	Business-Hours	Student Health Services	(212) 305-3400



Student Health Service
at Columbia University Medical Center

**Occupational Exposures
Are a Medical Emergency!**

See instructions on back.

For appointments & emergencies contact
(212) 305-3400 www.cumc.columbia.edu/student/health

**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!

