GENERAL LABORATORY SAFETY TRAINING

WVU Shared Research Facilities  2015
GENERAL LAB SAFETY

• Dress
  – No open toed shoes
  – Appropriate attire
    • Personal Protection Equipment (PPE) as needed
• Behavior
  – No running
  – No food or drink (**Never!**)
• Cleanliness
  – Multiuser environment
• Use common sense
CHEMICAL HYGIENE PLAN

PURPOSE:
• provide information that supports the procedures, equipment and protocols
• protection of users and staff from safety and health effects of hazardous chemicals and materials
• to be in compliance with Occupational Safety and Health Administration (OSHA).

Where is it?  Posted in the lab by the door
CHEMICAL HYGIENE PLAN - CONTENTS

• Cover page
  – Lab plan, safety diamond, emergency contact numbers
  – Emergency shutdown procedure and evacuation
• Lab overview
  – Description of the lab, map of facilities, equipment list
• Chemical safety information
  – Including PPE requirements
• Chemical and gas inventory
• All SDS sheets
• Standard Operating Procedures (SOPs)
CHEMICAL HYGIENE PLAN

• The CHP is continually updated
• Posted visibly in the lab
• University policy requires every laboratory user to read the CHP prior to laboratory use
FIRE SAFETY

- Extinguisher
  - http://sharedresearchfacilities.wvu.edu/safety/srfSafetyMain.html

- Cleanroom
  - Always evacuate

“That is just negative data storage room, focus here.”
• Evacuation
  • Shut down any laboratory equipment and process that pose a danger if left unattended. However, leave immediately if in peril
  • Immediately evacuate the building using the nearest stairwell
  • Do not reenter the building until authorized to do so

• All fires must be reported immediately regardless of size or cause. Call 911 (9-911 on campus phone). If chemicals are involved, make sure that the fire department is so advised.
GAS HANDLING - DANGERS

Compressed Gas

- Flying fragments penetrate eyes and skin
- Compressed gas can damage skin, eyes and ears
- Use lowest pressure for the task
- Wear eye and skin protection

Flammable or Toxic Gases

- Ex: propane, ammonia, silane, chlorine, tetrafluoroethane
- When working with or on a flammable compressed gas cylinder use spark-free tools
GAS CYLINDER HANDLING

• Compressed and liquefied gases may be combustible, explosive, corrosive, poisonous, inert or a combination of hazards
• Specific characteristics of each gas (read the MSDS)
• Store and handle with valve cap on
• Never lift a cylinder by the valve cap
• Store upright and secure to prevent them falling over
• Never roll a cylinder on its side, use a hand truck or a secure system
• Secure with chain or belt above midpoint but below shoulder

• Always keep away from heat sources, combustibles and electrical systems
• Wear eye protection when working with regulators and gauges
• DO NOT try and repair a leaky cylinder, report it immediately
CRYOGENICS HANDLING

- Liquid nitrogen
  - Adequate ventilation is required
- Wear Personal Protective Equipment (PPE)
  - Insulated gloves, apron and face shield
- Transfer of cryogenics
  - must only be done in approved open containers (i.e. dewars)
  - must be conducted slowly
  - Less than 80% full volume to minimize boiling and splashing of the cryogenic fluid
- All cryogenic systems are equipped with pressure relief devices to prevent excessive pressure build-up
CRYOGENIC DANGERS & BURNS

- Liquid nitrogen is $-320^\circ F$ ($-195^\circ C$)
- Causes severe frostbite and eye damage
- Cryogenic liquids and their boil-off vapors rapidly freeze human tissue and cause common materials to become brittle
- Always wear proper PPE
- Do not rub skin
- Treat with warm water bath
- Can cause oxygen-deficient conditions
- May cause an explosion of a sealed container
- Evacuate in the case of a large spill
# SHARPS & BROKEN GLASS

<table>
<thead>
<tr>
<th>When do sharps injuries occur:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>During use</td>
<td>41%</td>
</tr>
<tr>
<td>After use/before disposal</td>
<td>40%</td>
</tr>
<tr>
<td>During and after disposal</td>
<td>15%</td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
</tr>
</tbody>
</table>

CDC: NaSH, June 1995-December 2003
SHARPS & BROKEN GLASS DISPOSAL

- Use all safety devices on sharps, blades and needles
- Never recap a used needle
- Dispose of all sharps and broken glass in properly labeled “sharps” receptacle
- Do not throw away with the normal trash!!
SRF ACCESS REQUIREMENTS

• Start at srf.wvu.edu
  – InfoCenter>
  • Where to Start>
    – CORES training / billing form (supervisor)
    – User Agreement
    – General Lab and Chemistry Safety Training (this one)
    – Other trainings (ask / register)
COMMUNICATION

• Who should be allowed in the lab?
  – Trained users and authorized staff only
  – Do not allow people into lab, refer them to the lab manager

• In case of emergency…. 
  – Call 911  (9-911 from campus phone)
  – Call emergency contact numbers listed on door placards, logbooks or Chemical Hygiene Plan

• In case of suspicious behavior…..
  – Call campus police (304) 293-3136
COMMUNICATION

• Reporting
  – In the event of any accidents, incidents or spills please let SRF managers and staff know immediately!!

• Contact us anytime
  – Srf.wvu.edu

• Twitter
  🦅@WVU_SRF