Lab Safety Officer Meeting
April 17, 2013 at 1:30 pm

Chemical Segregations in Chemical Use Planning Forms (CUPF)

As discussed in the previous LSO meeting, it is acceptable to complete one CUPF for a group of chemicals exhibiting similar hazardous properties, as opposed to an individual CUPF for each and every chemical. However, within these groups, there are some chemicals that need individual hazard assessments due to unique hazards. Below are examples of chemicals that should not be included in a Group Hazard CUPF and should have their own forms OR Standard Operating Guidelines.

**Inorganic Acids:**
- Boron trichloride (gas)
- Hydrofluoric acid
- Titanium tetrachloride
- Phosphorus pentoxide
- Sulfur trioxide (group with oxidizing acids)
- Super acids
  - Aqua regia
  - Piranha solution

**Oxidizing Acids:**
- Perchloric acid

**Organic Acids:**
- Benzyl chloride
- Picric acid solution
- Tetrachloroethane
- Chloroacetic acid
- Fluoroacetic acid

**Oxidizers:**
- Bromine
- Hydrogen peroxide (35% concentration or greater)

**Flammable / Combustible Liquids:**
- Flammable and Toxic
  - Allyl alcohol
  - Carbon disulfide
  - Ethylene dichloride
  - Furfural
- Flammable and Corrosive
  - Butyl amine
  - Diethyl amine
  - Furfurylamine
  - Morpholine
  - Triethylamine
- Flammable, Toxic and Corrosive
  - Dimethyl hydrazine
  - Hydrazine
  - Methyl hydrazine
- Other
  - Carbonyl sulfide (gas)

**Gases (separate into categories):**
- Flammable
  - Acetylene
  - Butadiene
  - Butane
  - Ethane
  - Ethylene
  - Hydrogen
  - Methane
  - Propane
  - Silane
  - Vinyl chloride
- Toxic/Flammable and Toxic
  - Arsine
  - Carbon monoxide
  - Diborane
  - Ethylene oxide
  - Formaldehyde
  - Germane
  - Hydrogen sulfide
  - Sulfur tetrafluoride
- Non-flammable/non-toxic
  - Argon
  - Carbon dioxide
  - Compressed air
  - Helium
  - Nitrogen
• Other Gases
  o Group 1
    § Ammonia
    § Phosgene
    § Sulfur dioxide
  o Group 2
    § Chlorine
    § Nitric oxide
    § Nitrogen dioxide
  o Hydrogen fluoride
  o Nitrous oxide
  o Oxygen

Water Reactives, Pyrophorics, Explosives:
• Flammable Solids
  o Magnesium metal
  o Phosphorus
  o Picric acid (wet)
  o Trinitrotoluene
• Spontaneously Combustive
  o Sodium hydrosulfite
• Water Reactive/Dangerous When Wet
  o Calcium hydride
  o Calcium metal
  o Lithium aluminum hydride
  o Potassium metal
• Water Reactive/Dangerous When Wet
  o Sodium borohydride
  o Sodium hydride
  o Sodium metal

• Other Reactive Materials
  o Dinitrophenol

Toxics and/or Environmental Hazards
• Arsenic and compounds
• Benzene
• Benzidine
• Beryllium and compounds
• Cadmium
• Carbon tetrachloride
• Carcinogens and potential carcinogens (as a group)
• Chemotherapy agents (as a group)
• Chromium (VI)
• Controlled Substances
• Cyanogen, cyanogen bromide, cyanogen chloride
• Cyanide and compounds
• Dimethyl mercury
• Lead
• Methylene chloride
• Methylene dianiline
• Naphthylamine (beta)
• Nitrobenzene
• Nitrophenol
• Osmium tetroxide
• Uranyl compounds
• Thorium compounds
• Vinyl chloride
Standard Operating Procedures (SOPs)

SOPs may be necessary for operations that involve hazards more complex than can be described in a CUPF. These chemicals have unique properties that make them particularly hazardous to handle, store, or dispose. SOPs are used to describe the specific procedures for handling, storing, and disposing of chemicals for a given procedure. Readily available guidelines may be used to create a SOP tailored for your laboratory.

Sections to be included in an SOP:
• Description of process, procedure, or hazardous materials
• Potential Hazards (Physical and Health)
• Engineering Controls (e.g. fume hood, glove box, down draft table)
• Work Practice Controls (e.g. Designated Workspace)
• Personal Protective Equipment (PPE)
• Special Handling Procedures
• Transportation and Storage
• Spill/Accident Procedures
• Waste Disposal
• Training
• Procedure (General and Specific)

The order for these sections can be rearranged and others may be necessary depending on the chemical.

Example Standard Operating Guidelines on the Web:

Chemical Safety Summaries from *Prudent Practices in the Laboratory*:  
(use the arrows at the top to scroll through the pages)

NJ Right to Know Factsheets:  

Duke University:  
http://www.safety.duke.edu/OHS/chemsopsTemplates.htm
## UVM Employee Injuries Oct 12-Apr 13

<table>
<thead>
<tr>
<th>Department</th>
<th>Injury Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terrill</td>
<td>Reaction due to multiple building issues</td>
</tr>
<tr>
<td>Singapore</td>
<td>Fell leading to injury</td>
</tr>
<tr>
<td>Given</td>
<td>Fell and fractured foot</td>
</tr>
<tr>
<td>Given</td>
<td>Repetitive motion injury</td>
</tr>
<tr>
<td>Cook</td>
<td>Custodian exposed to chemical disposed in trash.</td>
</tr>
<tr>
<td>Given</td>
<td>Carpal tunnel &amp; Right shoulder pain due to repetitive motion</td>
</tr>
<tr>
<td>Jeffords</td>
<td>Slipped and fell leading to back injury</td>
</tr>
<tr>
<td>Jeffords</td>
<td>Slid down hill, strain to shoulder</td>
</tr>
<tr>
<td>Marsh Life</td>
<td>Fell down stairs; injury to arm, legs, wrist, shoulder</td>
</tr>
<tr>
<td>Given</td>
<td>Chemical exposure to hand; not wearing gloves</td>
</tr>
<tr>
<td>Given</td>
<td>Chemical exposure to leg; dropped tube</td>
</tr>
<tr>
<td>Jeffords</td>
<td>Leg fell through snow, contusion and strain to leg</td>
</tr>
<tr>
<td>Pomeroy Barn</td>
<td>Tripped and fractured elbow</td>
</tr>
<tr>
<td>Stafford</td>
<td>Chemical exposure from leaking equip.</td>
</tr>
<tr>
<td>HSRF</td>
<td>Back pain</td>
</tr>
<tr>
<td>Given</td>
<td>Rat bit researchers finger</td>
</tr>
<tr>
<td>Given</td>
<td>Laceration to hand from broken glass</td>
</tr>
<tr>
<td>Williams</td>
<td>Laceration to finger from hand tool</td>
</tr>
<tr>
<td>Cook</td>
<td>Laceration to finger from broken thermometer</td>
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<tr>
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<td>Needle stick with chemical exposure</td>
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<tr>
<td>Cook</td>
<td>Burned hand after grabbing hot ring holding beaker of boiling water</td>
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## Incidents on UVM Campus Oct 2012-Apr 13

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<tr>
<th>Department</th>
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<tr>
<td>Cook</td>
<td>Fire in sandbucket from unknown origin; fire extinguisher used</td>
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<tr>
<td>Williams</td>
<td>Possible gasoline odor; no source found</td>
</tr>
<tr>
<td>Stafford</td>
<td>Strong acetone-like odor; no source found</td>
</tr>
<tr>
<td>CRF</td>
<td>SOS call for a spill; freezer failure lead to ice melt</td>
</tr>
<tr>
<td>Delehanty</td>
<td>Building mechanical issued lead to HVAC in Cosmo lab to be shutdown</td>
</tr>
<tr>
<td>Votey</td>
<td>Refrigerator left open leading to bottle explosion</td>
</tr>
<tr>
<td>Given</td>
<td>Lab sink clogged with decontaminated bio waste</td>
</tr>
<tr>
<td>Cook</td>
<td>Natural Gas odor; shut off valve found leaking</td>
</tr>
<tr>
<td>Cook</td>
<td>Building evacuated due to chemical odor (gas); source not found that day</td>
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<tr>
<td>Cook</td>
<td>Natural gas odor; gas spigot left open overnight</td>
</tr>
<tr>
<td>Jeffords</td>
<td>Poor seal on oven lead to smoke in building</td>
</tr>
<tr>
<td>Williams</td>
<td>Irritations due to residual smoke damage, chemical odorants, and painting</td>
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<tr>
<td>Williams</td>
<td>Possible arson lead to fire in custodial closet</td>
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<tr>
<td>Jeffords</td>
<td>RM&amp;S notified of a leak from an incubator</td>
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<tr>
<td>Perkins</td>
<td>Diesel odors from lab doing tailpipe emissions research</td>
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<tr>
<td>Stafford</td>
<td>Drain for photographic developer backed up causing flooding of 2nd and 3rd floor</td>
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<tr>
<td>Cook</td>
<td>Strong odor in lab determined to be from poorly cleaned spill</td>
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<tr>
<td>Aiken</td>
<td>Sewer gas odor due to dried drain traps</td>
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<tr>
<td>Cook</td>
<td>Chemical order received was contaminated with unknown liquid</td>
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<td>Chlorine-like odor; no source found</td>
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Stretching for Injury Prevention

Neck and Shoulders

Back

Legs and Lower Body Stretches

Wrist

Chest, Shoulders and Fingers

Stretching Tips
- Always stretch within your comfortable limits - never to the point of pain.
- Take your time. The long sustained, mild stretch reduces unwanted muscle tension and tightness.
- If you are stretching correctly, the stretch feeling should slightly subside as you hold the stretch.
- The benefits come from regularity. Stick with it and see how you feel in a few weeks.
- Hold each stretch for at least 15 seconds and don’t bounce through the stretch.
- Breathe easily and try to relax as you increase the stretch.
- Tune into your body and focus on the muscles and joints being stretched.

The highlighted exercises have been chosen by your health and fitness consultant for you given your current needs and requirements.
Before you do any work in the garden, do a few minutes of easy stretching. This will help get your body ready to work efficiently without the usual tightness and stiffness that results from this kind of work. Stretch to reduce muscle tension and make work easier.

1. 10–15 seconds (page 59)
2. 10–15 seconds each leg (page 79)
3. 10 seconds each leg (page 79)
4. 10–15 seconds (page 54)
5. 10 seconds each leg (page 54)
6. 3–5 seconds 2 times (page 46)
7. 10–15 seconds (page 46)
8. 10 seconds each arm (page 44)
9. 8–10 seconds each side (page 44)
10. 5–10 seconds (page 49)
11. 8–10 seconds each side (page 8)
12. 8–10 seconds each side 2 times (page 46)

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