### Highlighted Chemistry Department Safety Policies

<table>
<thead>
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<th>Must have secondary containment for transporting liquids using approved means review the Procurement, Distribution and Storage section of the Safety Manual <a href="https://z.umn.edu/cse-chemical-transport">https://z.umn.edu/cse-chemical-transport</a></th>
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<tr>
<td>Water lines must be secured. A re-circulating pump is the preferred method. Water aspirators need approval by Safety Committee see <a href="https://z.umn.edu/cse-lab-water">https://z.umn.edu/cse-lab-water</a></td>
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<td>[ N^- = N^+ = N^- ] Azide synthesis is limited to 5 g. Organoazides must have a C/N ratio &gt;3 (at least 9 carbons). “Rule of 6” 6 carbons atoms per functional group. A request to synthesize more than this amount must be approved by the safety committee prior to any work being done on a larger scale.</td>
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| LiAlH₄ or LAH Familiarity can breed complacency. Do not use as a drying agent for solvents that are hygroscopic and may contain high concentrations of water, such as methyl ethers and tetrahydrofuran; fires from reaction with damp ethers are often observed. Predrying these solvents with a less efficient drying agent, followed by LiAlH₄ treatment is recommended.” (Prudent Practices pg 139)

LAH is heat sensitive. High temperature with LAH is very risky; you can easily make AlH₃, which can then explode. |
| Use dry ice/acetone or other cooling combination instead of liquid nitrogen (LN). LN is generally not necessary for most freeze pump thaw applications. If intending to use LN, you must provide justification to your PI for why cooling below -78 °C is necessary, how you will prevent air from inadvertently being condensed, and how anyone should respond if it is. PI must approve and a current SOC must be posted. |
| Each PI must have a policy for when safe operating cards are required. Know your group’s requirements |
| NO hazardous materials in the trash or down the drain!

Keep waste closed. A flip top funnel or drilled caps are acceptable [https://z.umn.edu/cse-HW-keep-closed](https://z.umn.edu/cse-HW-keep-closed).

Liquid waste must be kept in secondary containment. Label with “hazardous waste”, start date, and contents. Chemicals collected together must be compatible.

FYI at UMN it is Not necessary to separate halogens.

Dispose regularly (at least once a semester). |
| Vacuum pumps exhaust must reach ventilation equipment and have all guards in place. Failure to vent properly results in cabinet explosions [z.umn.edu/vacuumpumps](z.umn.edu/vacuumpumps) |
Hot plates set max temp 25° C lower than the flash point of the material being heated. Unplug when not in use. Recommend use of a jack and boss head clamp. [https://z.umn.edu/dehs-fs-hotplate](https://z.umn.edu/dehs-fs-hotplate)

Smelly stuff: Thiols, sulfides, selenides, amines, phosphines, butyric acid, and valeric acid.

Odors can become very disruptive to the department if best practices are not followed. Report any potential problems promptly and be familiar with [http://z.umn.edu/stench](http://z.umn.edu/stench)

Full Chem Policies are listed in the Chemistry Safety Manual and faculty SOP available at [https://chem.umn.edu/safety](https://chem.umn.edu/safety)

Researchers, students & other lab workers are expected to:

- Know who their lab safety officer (LSO) is
- Report any use of a fire extinguisher to their LSO, who completes an LER and contacts the main office
- Report any hazardous spill that occurs on the lab floor or outside their lab to the LSO
- Report and respond to any odor issues promptly
- Contact their PI, lab safety officer, or the Department Safety Committee if they have any concerns or wish to vary from these departmental requirements
- Close and label all their materials. Regularly clean their area and dispose of materials
- Use only approved secondary containment when transporting liquids
- Use SOCs
- Unplug hot plates when not in use
- Keep vacuum exhaust in fume hood
- Not use water aspirators. Secure all water lines. Use a re-circulating pump
- Use dry ice /acetone instead of liquid nitrogen
- Not synthesize more than 5 g of any azide
- Know they do not have to attempt to quench or neutralize materials for hazardous waste disposal.

Researchers, students & other lab workers have been told:

- The Chemistry Department is committed to safety for all students, faculty, staff, and post-doctorates, both inside and outside of our laboratories.
- Each individual is expected to continuously foster an ongoing culture of safety in our department.
- If a person fails to follow these departmental safety standards their laboratory use privileges may be reduced or revoked.