

SAFETY NEWSLETTER
Department of Chemistry, Queen's University
Winter 2017

In the fall term, with all of the new graduate and 4th year undergraduate students in the lab, it's easy for new researchers to get hurt. Here are some recommended practices to keep everyone safe.

1. Glass cuts. Cuts by broken glass are the second most common injury in our department. Here are some tips that will help you avoid such injuries.

- Never use glass objects to apply pressure to anything. Don't use a glass object as a scraper, a press, or a lever. A student recently got hurt trying to flatten a piece of sodium using a glass vial.
- Discard broken glassware or get it repaired.
- When pushing a glass fitting into a pre-holed rubber stopper or rubber tubing, use glycerol to lubricate it and wear cut-resistant gloves (see photo from Fisher).
- Glassware that will contain a vacuum should be taped (vacuum flasks, Dewars, desiccators).



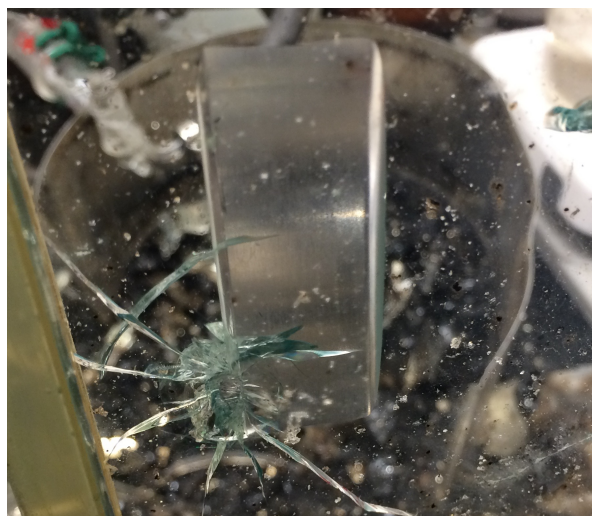
2. Monthly self-inspections. In the first 5 days of every month, every research group and every teaching lab should fill out the self-inspection form and submit it online. If possible, rotate this task so that every group member has a chance to do it. That will educate more people and increase the chances that safety problems will be noticed by somebody. Find the form on our department's safety website (click "Safety Inspection Form").

If your group already has a system for frequent self-inspections, then you don't need to do this. In such cases, the supervisor should notify Heather Drouillard.

3. Safety discussions in group meetings. In research group meetings, why not spend 5-10 minutes each meeting discussing a safety topic? Try a different topic each time. Lots of information about hazards and good safety practices is available online. Such safety discussions can help educate, bring up issues and concerns, and establish a better safety culture.

4. Freeze-pump-thaw degassing. This is a common method for removing air from solvents. However, if done incorrectly, there can be a devastating accident. If you accidentally condense liquid oxygen or liquid argon into the solvent flask when it's cold, the flask could explode when it's warmed up. The shards of broken glass will fly like bullets, breaking or cutting through glass, plastic, or flesh. Even the fume hood sash isn't strong enough to withstand such an accident. See photo of the wreckage after an incident at Chernoff. No-one was hurt but it could easily have been more serious. Follow these tips when freeze-pump-thaw degassing a liquid:

- always have a blast shield between the flask and yourself
- use a round-bottom flask, not a cylindrical Schlenk tube
- never fill the flask more than half-way with solvent



- the hose between your flask and the gas/vacuum manifold should contain vacuum *throughout* the procedure.
- for the detailed procedure, see these websites:
http://depts.washington.edu/eoopic/linkfiles/Freeze_Pump_Thaw.pdf
<http://chemsafety.chem.oregonstate.edu/content/sop-freeze-pump-thaw-degassing-liquids>
http://www.chemistryviews.org/details/education/4308331/Tips_and_Tricks_for_the_Lab_Air-Sensitive_Techniques_2.html

5. Black mold. Check for black mold in or on your lab fridge, especially the rubber gasket around the door. If there is any, clean it up with bleach solution (household bleach diluted with an equal volume of water) and then rinse with water.



6. Spill kits. Have you ever opened one of our spill kits? They're all over the building, but few people have ever looked inside one. Open it up and take a peek. This is what you'll find:

- absorbent pads
- gloves
- absorbent barriers
- instruction sheet

Don't necessarily trust the gloves: they're made of nitrile and will therefore only protect you from chemicals that nitrile is resistant to. For other chemicals, you'll need to get different gloves.



- Risk Assessment:** If it's a large or dangerous spill, evacuate the room and call 36111. If it's a tiny spill posing little risk, notify a colleague and clean it up with your colleague watching. If it's a medium spill or you're unsure how much risk there is, evacuate the room and, while in the hallway, consult with others before deciding what to do.
- PPE and Clothing:** Put on the right type of gloves, a labcoat, and face and eye protection.
- Containment of Spill:** Use the barriers to encircle the spill (if liquid).
- Stop the Source**
- Clean Up**
- Contact Authorities**
- Dispose of Used Material**
- Decontaminate**
- Restock Spill Kit**

Questions or Concerns about Safety?: *If you have any safety concerns or questions, please bring them to the attention of your supervisor. For further information, contact the Safety Committee Chair (currently Philip Jessop, jessop@queensu.ca) or our Safety Officer (Heather Drouillard, Heather.Drouillard@chem.queensu.ca). Suggestions for the newsletter always welcome.*