

SAFETY NEWSLETTER
Department of Chemistry, Queen's University
Fall 2018

1. Safety Bloopers. Check out these recent photos from Chernoff. Can you identify the safety problems? (*Answers on next page*)



2. Labcoats

Do you use flammable liquids or gases? If yes, then think about the type of labcoat you wear. The usual polyester/cotton labcoats won't protect you from fire. Tests showed that holding a small flame to fabric cut from a cotton or polyester/cotton labcoat makes it catch fire in 3 s and be completely consumed by fire in 20-25 s. Flame-resistant cotton ("FR") and Nomex don't catch fire even after prolonged contact with flame, but do blacken. The photos below show what each cloth looks like after 11 s. Which would you rather have against your body?



Poly/cotton

cotton

FR cotton

Nomex

(1st and 3rd photos from Northwestern University. Other photos from Jessop lab)

Labcoat types currently available through Science Stores are the following:

- polyester/cotton (in stock) – resistant to acid but not fire. Melts as it burns.
- cotton (in stock) – not resistant to acid or fire. Doesn't melt as it burns.
- flame-resistant cotton (special order) – resistant to fire
- Nomex (special order) – resistant to fire and acid

3. Why you shouldn't work alone

Who will hear your cry for help if you're injured? Who will be your backup if you need to fight a fire? Who will guide you to the eye-wash station if you get chemicals in your eyes? Don't work alone in the lab. It's just not worth it.

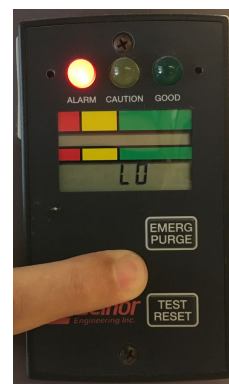
4. Fume hood alarms. Recently, after a power failure, the fume hood fans were off but the fume hood alarms didn't sound. Why? There were two problems. First, some of the alarms had been permanently muted, which isn't allowed. Second, some of the flow monitors in the alarms were out of calibration, so they indicated good flow even when the flow was insufficient. They are going to be replaced. It's therefore a good time to remind everyone of the proper use of these alarms.



- *Temporarily muting* the alarms is permitted. If the alarm is sounding while you temporarily need the sash wide open, hit "TEST RESET" briefly to mute the alarm. The mute symbol (Ⓜ) will appear (see upper photo). Do not leave the area until you've confirmed the mute symbol has disappeared.

- *Long-term muting* of the alarm is illegal. If you find that your fume hood alarm is showing the mute symbol, report it to Heather Drouillard.

- *Every month or so*, check that the alarm is functioning properly. Put your finger over the central hole to block the air flow (see lower photo). Soon, the red light should glow, and a short time later the alarm should sound. If it doesn't sound, then the alarm air flow monitor needs to be recalibrated. Send a request to Heather Drouillard in the main office.



- The "EMERG PURGE" button is an extra feature that doesn't work with our type of fume hoods.

5. Gloves

Gloves will protect you from some solvents and liquids but not others. To find out which gloves are appropriate for your experiment, refer to glove compatibility charts. Select the glove that will best resist the solvent, not the solutes, that you're using.

https://www.ansellpro.com/download/Ansell_7thEditionChemicalResistanceGuide.pdf

<https://www.coleparmer.com/safety-glove-chemical-compatibility>

Examination-style gloves are very thin and offer little protection. Only use them for very benign chemicals with only minor splash potential and no risk of immersion.

Chemical-resistant gloves available in Science Stores:

- powder-free nitrile (regular and exam-style)
- powder-free latex (exam-style only)
- silver shield (regular only)
- neoprene (regular only)
- Viton (by special order)
- poly(vinyl alcohol) (by special order)

6. Answers to the blooper photos. a) The strap is frayed so badly that it will not prevent the gas cylinder from falling over. b) Never stand on a chair, especially one with casters. c) Periodic acid is a strong oxidizer and an acid. Hydrazine is a reducing agent and a base. Oxidizers should never be stored with reducers. Acids should never be stored with bases. Mixtures like this are used as rocket fuel. (No, these photos were not staged.)

Questions or Concerns about Safety? Please bring them to the attention of your supervisor. For further information, contact the Safety Committee Chair (Philip Jessop, jessop@queensu.ca) or our Safety Officer (Heather Drouillard, Heather.Drouillard@chem.queensu.ca). Suggestions for the newsletter are always welcome.