June 9, 2015 (GN)

Hello Everyone,

I would like to share with you the safety incidents/near misses that occurred in FRNY and were reported from April 2015 to date. None of them required medical attention.

1. **April 20, 2015**: After setting up an experiment, a researcher left the reaction unattended and left for a meeting, before making sure that the reaction was set-up correctly and progresses according to the expected temperature profile. When the researcher returned to the lab, he noticed that white smoke was coming from one of the reaction flasks and that the thermocouple adapter on that flask was melted and charred. The reaction was immediately stopped and the reaction vessels allowed to cool down to room temperature. Upon close inspection of the setup, is was determined that the reaction was started (and left unattended) without a final check of the setup and some of the valves were left closed, when they should have been open. Thus, the temperature and the pressure in the reaction vessel increased, leading to damage to the setup, but luckily no explosion due to high pressure. The incident was discussed in a group meeting. **Recommendations:** Please make sure that you follow the set procedures for every task you perform in the lab, regardless of how many times the same experiments have been run. It is imperative to perform a safety review of the setup before starting any experiment and to not leave the experiment unattended (even for a short time) unless you are sure the reaction is progressing as it should. If you choose to leave your reaction unattended (when considered safe to do so), please inform others in the lab and check on the reaction progress regularly so that any anomaly can be detected and addressed early. **Do not work under stress, time constraints, or if tired – these are the common conditions that lead to human error and can ultimately cause safety incidents in the lab.**
2. **May 13, 2015**: This incident happened while a researcher was moving a glass syringe full of TiO2 precursor solution in ethanol from the location where was filled to the place where it was being used, within the same fume hood. As the syringe was being transported with the plunger unsupported, the plunger fell out under its own weight, the end broke and the solution spilled. The spill was cleaned and the sharps were disposed of as contaminated sharps. **Recommendations:** Always hold syringes in horizontal position during transport and secure the plunger and the syringe body. Exercise care with all glass equipment, especially when there are multiple components, joints and/or chemicals involved.
3. **May 20, 2015:** A loosely clamped mercury thermometer dropped and broke inside a beaker. Mercury is a very hazardous chemical, but luckily the spill was small and contained within the beaker. REM was informed, but did not have to assist with the spill cleanup. Purdue tries to reduce the use of mercury on campus and **REM recommends that all faculty, staff, and students using mercury thermometers find suitable non-mercury replacements and replace mercury-containing devices with suitable non-mercury devices, where feasible.** Please follow the link: https://www.purdue.edu/ehps/rem/hmm/mercinfo.htm to read more about the hazards associated with the use of mercury, mercury thermometer replacement benefits and procedures to be followed in case of a mercury spill. **Recommendations:** Please examine your procedures that involve the use of mercury and evaluate the possibility of eliminating or at least reducing the use of mercury. If you decide to replace the mercury thermometers you currently use in your lab, these need to be disposed of via REM, as hazardous waste. If you prefer, you can bring them to me (FRNY G051) and I will make sure they are disposed of correctly.
4. **May 20, 2015:** The use of chipped quartz tubes in a high temperature process was reported. This allowed fumes from the process to leak in the lab. **Please check glass/quartz/Pyrex vessels and all parts of equipment for mechanical integrity before using them.** Using broken, chipped or cracked glass parts as equipment is unsafe and can lead to serious incidents.
5. **May 28, 2015:** This near miss is related to the use of the Millipore water stations in our building. On May 28, 2015, a tank was left unattended while filling with water at one of the stations on third floor. The tank overfilled and water was spilled on the floor. While water is not hazardous, a spill can cause damage to

the lab itself (and instruments) and to the lab(s) below. This is not the first time when there is a water spill due to leaving the Millipore water stations unattended. To prevent this from happening, please do not leave the stations in use unattended. If, by any chance, you have to leave while your tank is being filled, please inform others in the lab and ask them to turn in off, should your tank get full before you return.

6. **May 29, 2015:** While working with some microscope slides, a researcher accidentally chipped the edge of one of the slides, without noticing, and a small piece of glass fell on the working table. Later, the small piece of glass pierced the nitrile protective glove and caused a small cut on the researcher's hand. No medical attention was needed, as the glass slide was not contaminated and the cut was minor (bleeding stopped after washing hands with soap and water and pressing a paper towel on the cut for several minutes). **Recommendations:** Please check for mechanical integrity before using any parts of equipment. Clean thoroughly your work area before starting a new task/experiment and practice good housekeeping to prevent hazards from developing in your lab.
7. **June 7, 2015:** During lab work, a larger drop of ammonium hydroxide (corrosive and irritant to skin) touched the wrist of the researcher handling the chemical (the part between his protective glove and lab coat). The researcher tried to rinse the area with water in the nearby sink, but unwashed glassware blocked the access to the faucet. The researcher had to use the sink in the restroom to clean with soap and water the affected area. **Recommendations:** please practice good housekeeping: do not let dirty glass vessels accumulate in the sink. Wash, dry and put away all cleaned vessels as soon as you finish an experiment. Keep soap near the sink; this can be used to clean hands and decontaminate affected areas on site, should that be necessary.
8. **June 8, 2015**: While cleaning up water on the stairway landing, a staff member slipped, lost his footing, fell over 3 steps and landed on ground floor level. Although the back, elbow and all right side was affected by the fall, it is expected that this incident will not cause the employee to be absent from work. Slips, trips and falls are the leading cause of occupational injuries at Purdue University and 50% of this incidents are caused by unsafe flooring conditions. **Please use caution when walking in the building, especially on rainy days and near the entrances to the building, as those are the most likely areas where falls can happen due to wet flooring.**

I hope that sharing these incidents with you will help prevent similar events from happening in our School!

Sincerely,

Gabriela Nagy
On behalf of the ChE Safety Committee