

Hello Everyone,

I would like to share with you the safety incidents reported to me from August, 2016 to date. Some near misses were also reported, such as broken glass vessels, damaged laboratory equipment, uncapped needles and unchained gas cylinders found in the lab, etc. The general recommendations at the end of the document has relevant information to prevent these near misses from happening again.

1. September 16, 2016: Chemical burn to eye

Description: This incident happened during the cleaning procedure of a substrate for the Atomic Force Microscope (AFM). AFM substrate was cleaned with ethanol, shaken dry (in the fume hood) and then dried further with a nitrogen gun to reduce ringing and streaking effects. Despite most of the visible liquid being removed by shaking, a drop of ethanol went under the safety glasses during the use of the nitrogen gun, and reached the researcher's eye.

Action: The researcher used the eyewash station and rinsed eyes for 15 min and received medical attention from ROCC for further washing and professional attention.

Recommendations: Splash goggles, not just safety glasses, should be worn when using nitrogen gun to dry samples. During the nitrogen gun drying phase, the substrate should be kept far from the face and positioned at an angle outwards, while the nitrogen gun should be pointed away from eyes.

2. October 6, 2016: Chemical burn to left hand (undergraduate researcher)

Description: This incident was reported to me by REM, on October 7, and investigated on October 13. On the day of the incident, an undergraduate researcher was working alone in the lab just after 6 pm. The student heated Epon Resin 1001F and 4,4'-Diaminodiphenylsulfone (in 100 mL beakers) to 200 degree C in the oven for 30 min. After the two compounds totally melted, the student removed the samples from the oven. Initially, the student attempted to use thermal gloves, but they proved too bulky for this task. The thermal gloves were removed and a pair of crucible tongs were used to take the samples out of the oven. The student wore safety glasses, but no lab coat and no chemical resistant gloves or any other hand protection for this task.

The student mixed the two melted chemicals on the bench, in front of the oven and attempted to move the beaker with this mixture to the fume hood, using the same crucible tongs. On the way to the fume hood, the tongs moved and the beaker slipped. The hot liquid mixture in the beaker poured on the student's left hand, which was not protected by any kind of personal protection equipment (PPE) (thermal gloves or chemical resistant gloves).

Action: The burned area was washed immediately under cold water for 5-10 min and the supervising graduate student was notified about the incident. Under the cold water, the resin solidified on student's hand, having a white, crystal-like appearance. The student went for medical attention to PUSH. As the facility was closed, the student called 911 for help.

Upon arrival, the emergency personnel asked for the SDSs of the chemicals involved, but the student was not aware of their location and admitted they didn't read the SDS before starting to work with the chemicals. The location of the SDSs on the door post was noted as "SDSs stored electronically, contact ... (name of graduate student and email address)" and the student claimed they did not have access to the records, although printed copies were also present in the lab.

The student removed by hand the solidified resin on the skin and, following the emergency personnel's recommendation, went to the Urgent Care of Indiana University Health on Sagamore Pkwy, where was treated for second degree burns to the left hand.

Recommendations: Replace bulky thermal gloves with gloves that provide both protection from heat and dexterity, like silicone gloves or insulated neoprene gloves. Make sure undergraduate students are trained properly and confident in performing a task before they are allowed to work unsupervised. Ensure that everyone has unrestricted access to the SDS records and that the students read and understand the information in the SDS for the chemicals used in their experiments. Never work alone in the lab.

Some lessons learned and general recommendations:

1. Undergraduate students should be supervised at all times when working in the lab and only be allowed to perform a task without supervision when the mentor graduate student is sure they are trained and confident in performing the task safely.
2. Read and understand the information in the SDS for the materials you work with and be aware of the hazards associated with their use.
3. Always wear the recommended PPE when working in the lab. Make sure the PPE used provides adequate protection from hazards and the necessary dexterity to avoid safety incidents.
4. Never work alone in the lab. It is recommended that at least two people be present in the lab when experiments are performed.
5. Ensure unrestricted access to all SDSs of the chemicals present in the lab.
6. Always follow the standard operating procedures and pay close attention to details.
7. Never leave uncapped needles on the bench top or in the fume hood. Dispose of sharps, including razor blades and needles, following Purdue's waste disposal procedures.
8. Make sure that all gas cylinders in the lab are secured properly.
9. Ensure students, including undergraduate researchers, know and follow the incident report protocol.
10. Report any safety incidents or near misses to the group safety officer and to the safety committee chair, and discuss them in your group meetings. Sharing this type of information is key in increasing safety awareness.

In response to the second incident reported in this document, the ChE Safety Committee will develop some guidelines on storage of electronic copies of SDSs. These guidelines will be made available to everyone in the School.

Please continue to report any safety incidents and near misses that occur in your work area; sharing them with everyone in our School will raise the safety awareness and prevent similar situations from happening.

Sincerely,

Gabriela
On behalf of the ChE Safety Committee