

INCIDENT – ACRYLOYL CHLORIDE SPILL

AFTER NOTICING AN ODOR, A LAB'S OCCUPANTS FOUND SPILLED CHEMICALS REACTING WITH THE METAL SHELF OF THE FLAMMABLE MATERIALS CABINET UNDER THE CHEMICAL FUME HOOD. ONE LAB MEMBER REPORTED A SLIGHT BURNING IN THE EYES ALONG WITH A STRONG ODOR.

SECURITY EVACUATED THE FLOOR AND SUMMONED THE FIRE DEPARTMENT ALONG WITH THE HEALTH, SAFETY, AND ENVIRONMENT (HSE) MANAGER ON CALL. A SAFETY OFFICER WAS SENT TO REMOVE THE SHELF AND DISPOSE OF THE WASTE.

THE SAFETY OFFICER THEN DISCOVERED THAT A CRACKED BOTTLE OF ACRYLOYL CHLORIDE (FLAMMABLE, TOXIC BY INHALATION, AND CORROSIVE) HAD LEAKED INTO THE METAL CABINET AND CORRODED THE SHELF.

LESSONS LEARNED

- Use caution when investigating strange odors in lab; the olfactory (smell) threshold may be above the amount that would be hazardous. Call HSE (or Security, after hours) for assistance with unknown odors.
- Do not touch chemical containers if stored chemicals seem to be reacting, crystallizing, corroding, etc. Call HSE for assistance at 410-516-8798.
- Store chemicals toxic by inhalation in ventilated storage cabinets or sealed storage devices such as a desiccator. Store all flammable materials in the flammable materials cabinet.

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- When storing chemicals, segregate them by hazard to prevent inadvertent reactions from taking place if there is a leak. Find our blog post on the Stanford Chemical Storage System [here](#).
- Wrapping the neck of chemical bottles with Parafilm or aluminum foil is not effective in stopping vapor emission from the bottles. However, wrapping the threads with Teflon tape is effective.¹

DISCUSSION QUESTIONS

- Are all chemicals in our labs properly stored and segregated?
- How would we deal with strange odors or unexpected chemical reactions?
- How can we connect the lessons of this incident to the importance of exercising the buddy system in the lab?

1. Norton, A. E., Doepke, A., Nourian, F., Connick, W. B., & Brown, K. K. (2018). Assessing flammable storage cabinets as sources of VOC exposure in laboratories using real-time direct reading wireless detectors. *Journal of Chemical Health and Safety*, 25(5), 2–9. <https://doi.org/10.1016/j.jchas.2018.01.001>