# LESSONS LEARNED

## Hydrochloric Acid Spill

A graduate student researcher, working after hours, was moving a new 4-L bottle of concentrated hydrochloric acid from the fume hood cabinet to the fume hood. The bottle slipped from their grasp and shattered, spreading acid and broken glass across the floor.

## What happened?

A graduate student researcher, working after normal business hours, was moving a new 4 Liter bottle of **concentrated hydrochloric acid** from the fume hood cabinet to the fume hood. The bottle slipped from their grasp and shattered, spreading acid and broken glass across the floor. As the bottle was falling the grad student tried to catch it, causing the broken glass to cut his glove and finger, and allowing the acid into their glove. The glove was removed immediately and the finger rinsed thoroughly. Fortunately, proper use of personal protective equipment (PPE) namely a lab coat and goggles prevented any further damage to skin or clothes. The lab was quickly evacuated as a precaution. While the grad student was rinsing their hand, another lab member called their Principal Investigator, and EHS via University Police Dispatch. Later that night, the laboratory directly below the area of the spill experienced a mysterious yellow liquid dripping from their ceiling. This resulted in additional hazardous materials clean up measures in that lab.

## What went right:

- Researcher was wearing proper PPE during the time of the incident: long pants, closed shoes, lab coat, goggles, gloves
- Researcher removed contaminated PPE and rinsed their finger immediately
- Researcher evacuated and secured the lab as a precaution
- Researcher contacted EHS via UUPD, and the lab's PI immediately
- Researcher was not working alone
- Research group had recently completed safety training

## Lessons Learned:

This incident emphasizes proper handling of hazardous materials as well as proper communication between labs. While the members of the lab performed admirably in their response to this incident, these incidents can be prevented and responses to them improved.
The following lessons learned were identified by lab personnel and EHS:

- **Proper container handling:** using two hands, placing one hand underneath the bottle and one on the neck of the bottle or container while lifting or carrying will help prevent dropping the container.
- **Secondary Containment:** Placing the bottle or container into a secondary tub or container that is easier to carry while transporting could have prevented the incident altogether.
- **Resist the impulse:** Refrain from trying to catch a dangerous falling object. Once an object starts to fall, the best course of action is to get out of the way as quickly as possible – never try to catch it.
- **Communication:** Notify occupants of spaces that are adjacent and on lower floors if there is a spill of hazardous chemicals. They may not be impacted but notifying them will help them know to contact someone if they do notice something.
- **Spill Kits and Training:** Every lab on campus is required to have a spill kit on hand appropriate for the chemicals used in the area. Personnel must be trained on the proper use of the spill kit. Having a spill kit on hand allows for quicker and better control of spilled materials and decreases the potential for travel to adjacent areas.
- **Proper storage:** While not a contributing factor for this incident it does emphasize the importance of proper storage of chemicals. In a spill event such as this improperly stored chemicals could have increased the severity of the incident by reacting with the spilled materials
- **Storage location:** Consider ease of removal and handling when choosing storage areas for liquid chemicals (avoid storage in low areas or above eye level)
- **Minimization:** Purchase chemicals in the smallest quantities possible. This was a full 4 liter bottle of acid, the needed amount was significantly less than 4 liters. A smaller container would have been easier to handle and if dropped would have spilled less material.

ENVIRONMENTAL HEALTH AND SAFETY
THE UNIVERSITY OF UTAH
125 South Fort Douglas Blvd, Salt Lake City, UT 84113
**801.581.6590 | oehs.utah.edu**

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