

## UW SAFETY-RELATED INCIDENTS

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### EXPLOSION AT MORE HALL

On November 29, 2016, a student was rinsing glassware as part of a silanization process with a mixture of toluene and dichlorodimethylsilane. Against usual lab procedure, the glassware was placed in an oven at 450°C before the solvent was allowed to fully evaporate. The student left the area and at some point later an explosion occurred within the oven. Damage to the oven was evident, but no one was injured as a result. Had the student been in the area at the time of the explosion, injuries from the force of explosion or emanating heat may have occurred.

Flammable liquid residues will ignite if heated to their autoignition temperature, even without a source of ignition. The lab's protocol called for the glassware to be completely dry before being put in the oven, but this was not done by the student. It is important to always follow standard procedures, which are in place to prevent these types of incidents.

### FIRE AT MARY GATES HALL

On August 10, 2016, an occupant activated a fire alarm pull station after noticing smoke on the second floor. This was followed by waterflow alarms in the building. It was determined that the cause of the fire was a nine-volt rechargeable battery which had ignited. Heat from the battery ignited nearby combustibles and the heat generated was sufficient to activate a sprinkler head. Occupants were allowed to reenter the building to retrieve personal belongings, but access to the ground floor of the building was limited due to lingering odors and high carbon monoxide levels.

There were no injuries, but property damage consisted of wetted carpeting, walls, floors, and ceilings; water and fire damage to most of the room contents; and smoke residue and odor through the rooms and surrounding areas. It is believed that an internal fault of the battery caused shorting which led to overheating and fire. There are no recommendations that might have prevented this incident.

### HAND INJURY AT CABRINI TOWER

On July 8, 2016, a clinic received a shipment of research media in a sealed container packed with dry ice. Upon opening the package, an employee noticed the container was bulging and placed it behind a Plexiglass shield in an unoccupied room. The employee put on safety glasses and thick gloves and attempted to loosen the lid to slowly release the pressure within the container. The container exploded and injured the employee's hand, resulting in partial amputation.

The container used for shipping the contents in dry ice did not have any ventilation holes, which are needed for dry ice packaging to prevent pressurization from off-gassing. Even though the employee who opened the package was wearing protective equipment, it still was not sufficient to protect the employee from the hazards of the inappropriate container used to ship the dry ice. If a bulging shipping container is received, 911 should be called to respond and no attempt to open the container should be made.

## **BURN INJURY AT MOLES-HOFFMAN TRAILER**

On July 6, 2016, a former lab member arrived to clean glassware that had been sitting unwashed for six months. He had difficulty removing residue from a flask and added chloroform to it. He then heated the chloroform, unsealed, in an oil bath at 160°C. The flask exploded and splashed oil onto his hands, arms, and lab coat. He removed the lab coat and rinsed his arms under cold water. An ambulance was called and he was treated for thermal burns.

No major injuries resulted from this incident because it was conducted in a fume hood and the person was wearing a lab coat and goggles. However, people who are no longer employees should not be allowed to work in the lab and glassware should be cleaned in a timely manner and not left sitting for months. Chloroform is not usually used as a cleaning agent and should not be heated up in an oil bath.

## **EXPLOSION IN WILCOX HALL**

On May 9, 2016, a graduate student, working alone in a lab in Wilcox Hall, stored a solution of 70% nitric acid wash in the fume hood as waste. She tried to dissolve acetates using ethanol, hydrochloric acid, and water for an experiment. Unable to get the acetates to completely dissolve, she discarded the solution by pouring it into the nitric acid wash container in the fume hood. Nitric acid reacts violently with alcohols and organic materials, among many other compounds, and the student's actions resulted in an explosion in the fume hood. The explosion shattered the glass container of nitric acid wash as well as other containers in the fume hood. A visible white gas began forming from one of the containers, which the student chose to remove and set on the floor.

Gas and odors spreading from the container prompted people to evacuate the area, pull the fire alarm, and call 911.

No injuries were reported from this incident, but it did result in evacuation of the entire building, road closure, vehicle inaccessibility to other buildings, as well as response from local news crews and over 51 emergency personnel. Proper handling, storage, and disposal of nitric acid are key to avoiding such incidents in the future. Chemical reactions should never be removed from the fume hood.

## **WELDING EYE INJURY AT FLUKE HALL**

On May 20, 2016, an employee was exposed to a welding flash in the lobby of Fluke Hall. The employee notified a supervisor and then was sent to the emergency room at UW Medical Center. The employee was treated and released but reported residual symptoms associated with the flash. Welding was occurring in the public corridor outside of the Fluke Hall first floor construction area in a space separated from the main lobby of the building.

The welding was on materials located near the ceiling of the first floor. Shielding had been erected directly beneath the work area but not to the sides, allowing the welding to be visible through fixed glass from the Fluke Hall lobby.

The contractor had made an attempt to erect welding flash shielding around their work area. However, the shielding was not complete and occupants located remotely from the

immediate area of work had a clear view of the welding taking place. The fixed glass in the partitions and glass in the door should have provided some protection from ultraviolet light radiation exposure. However, clear glass would not prevent dazzle from the bright light.

## **CHEMICAL SPILL IN HITCHCOCK**

On February 2, 2016, a lab worker in Hitchcock Hall dropped a bottle containing about 250 ml of b- mercaptoethanol. The lab staff immediately tried to clean up the spill, absorbing most of the material with spill pads. The cleaned up debris was bagged and placed in a fume hood across the hall. Within 30 minutes, the smell was pervasive in the south end of the building. EH&S's Environmental Programs team was contacted, as well as the UW Police Department and the UW Emergency Management, so they would be aware of the issue. Facilities Services responded and custodial services was notified that they should not work in Hitchcock that evening. The odor was very strong on the 3rd floor and less so on the lower levels. Undergraduate labs scheduled for that evening were cancelled due to the odor. At least one occupant left complaining of a headache in the evening.

About six floor tiles appeared to be damaged or the finish removed.

When health effects are associated with strong odors, EH&S advises reporting occupants to evacuate the building and call 911 if the odor is strong, especially if a gas odor is present. When recognizable or reoccurring odors are detected, such as exhaust or natural gas, occupants should refer to Facilities Services to inspect the problem.

EH&S staff will respond and inspect if unknown or chemical odors occur or health concerns are associated with the odor.

## **CHEMICAL SPILL IN CHEMISTRY BUILDING**

On January 22, 2016, a custodial staff person noticed a liquid spill on the floor of a room in the Chemistry Building. The custodian immediately left the room and contacted the UW Police Department, who requested an Seattle Fire Department response. Seattle Fire Department responded with hazardous materials (haz mat) staff as there was no way to identify the spill materials. It was later discovered that a researcher was working late in the lab and spilled mineral oil while transferring it to a waste container. He went to sleep in another room of the building, leaving the spilled mineral oil to drip onto the floor, where it was discovered by custodial staff in the morning. There was a waste container with the same liquid dripping down its sides on the bench.

Lab staff should be reminded of proper spill response procedures and cautioned not to leave such situations for others to discover and possibly misinterpret. Although the material spilled constituted a very low hazard, leaving it without cleaning it up resulted in a large haz mat response, involving a number of Seattle Fire personnel and equipment, disrupting operations throughout the rest of the building and campus, as well as impacting traffic on Stevens Way. Building occupants should not sleep in the building. The Chemistry Building is not classified as a residential occupancy and does not have the required safety features to detect incipient fires and warn occupants with adequate sound pressure to ensure they promptly wake up.