

Handling Air-Reactive Chemicals

Lab Safety Incident
University of Utah – February 2018

Incident: In February 2018, an incident in the University of Utah's Chemistry Department led to chemical burns for two lab personnel. This incident involved air-reactive chemicals that combust when exposed to air. In this incident, the researcher conducting the experiment and their spotter, who had a fire extinguisher, each received burns. The figure shows the lab coat and burns resulting from the accident. In this case, the researcher was wearing a flame-resistant lab coat or more serious injury could have occurred. Unfortunately although the researcher's nitrile gloves did not melt, second-degree burns were still incurred. These burns may have been prevented if fire-resistant pilot gloves had been used.

Hazard: Handling air-reactive chemicals presents a risk of fire and researcher injury. The impact of incidents may increase if nearby hazardous materials are involved..

Safety: Researchers must not work alone while handling air-reactive chemicals. A spotter should be nearby with readily available fire extinguisher. Researchers should use flame-resistant (FR) personal protective equipment (PPE). Researchers must be informed what PPE to use and its use must be reinforced by the work area supervisor. Build larger margins into safety. For example, this fire resulted when the plunger of a 5 mL syringe came out while drawing 4.6 mL of the chemical. Adopting the practice of filling syringes only to 60 percent of capacity when working with air-reactive chemicals reduces the risk of incident. Using a longer syringe or cannula is another way to reduce risk by increasing the margin for safety. Chemical manufacturers such as Sigma-Aldrich provide technical guidance for the handling of reactive

Contact the Office of Research Safety at ext. 8-6114 or labsafety@uthsc.edu for additional information about chemical safety, the use of PPE or for an assessment of exposure to hazardous chemicals.

Figure 1.2 A Burn-Scarred Lab Coat Prevented Further Injury to a Chemistry Researcher. A flame-resistant lab coat prevented injury to the researcher's torso during a February 2018 incident involving an air-reactive chemical. However, their gloves did not prevent second-degree burns.



Source: Chemistry Department Safety Officer Meeting

Photo Credit: [A Performance Audit of the University of Utah's Lab Safety Practices](#)