

Lessons Learned

Management of Lithium, Sodium, and Potassium Metal

What happened?

A small fire occurred in a laboratory fume hood in a Stanford University laboratory as a result of a researcher quenching pieces of lithium (a water-reactive metal) in water. The small fire was left to burn out in the fume hood. No injuries were sustained and there was minimal damage to the fume hood.

What was the cause?

While transferring individual pieces of lithium to a beaker of water, multiple pieces of lithium (approximately 15 grams) were accidentally added to the beaker simultaneously due to clumping of the metal. The resulting fire caused the beaker to break and spill water on another bag containing 15 grams of lithium metal, which also caught on fire.

What was done correctly?

- The lab notified both the Palo Alto Fire Department and Stanford EH&S.
- Proper street clothing, a lab coat, gloves, and safety glasses were worn during the incident.
- Lab operations were conducted in the fume hood and the sash was pulled down when fire started.

How can this be prevented?

- An alternative to quenching of alkali metal is to have EH&S pick up unneeded alkali metal as a hazardous waste, provided that the metal is stored under mineral oil and/or an argon atmosphere.
 - Attach a completely filled out waste tag found at <http://wastetag.stanford.edu/>
 - Submit a pickup request and describe the container's location in the comments section.
 - If quenching of alkali metal is necessary, consult with EH&S at (650) 723-0448.
- Ensure that a Class D fire extinguisher is available prior to beginning work with alkali metals.
 - Contact the Stanford University Fire Marshal's Office at (650) 723-0448 to obtain a class D fire extinguisher.
- Ensure that a standard operating procedure (SOP) approved by the Principal Investigator is established for the operation:
 - An SOP template for work involving alkali metals can be found here: <http://web.stanford.edu/dept/EHS/cgi-bin/lcst/docs/15-084.docx>
 - Additional guidance on developing SOPs is available at: <http://chemtoolkit.stanford.edu/TemplateSOP>

Resources

[SU Information on Alkali Metals](#) (Contains additional guidance on safe handling of alkali metals)

For further assistance, consult with your Principal Investigator or contact SU Environmental Health and Safety at 723-0448. Additional guidance on laboratory safety practices can be found in Stanford's Laboratory Chemical Safety Toolkit at <http://chemtoolkit.stanford.edu>.