

To: Department of Chemistry Community

From: Yale Environmental Health and Safety

We are all saddened by the terrible accident that recently occurred at UCLA, in which a young chemistry researcher was fatally burned in an accident involving an alkyl lithium compound. This type of reagent is commonly used in chemistry laboratories, but is extremely hazardous and the potential for serious accidents is great if strict handling procedures are not followed. Because of this, we are asking your help in taking the following steps to protect against such a tragic accident occurring here at Yale.

- 1) Lab coats and safety glasses must be worn at all times when working with hazardous chemicals in the laboratory. This needs to be enforced by the Principal Investigator and followed by each member of the laboratory. The researcher killed in the accident was not wearing a lab coat and her sweater immediately ignited when splashed with the t-butyllithium. A lab worker in an adjacent laboratory reportedly extinguished the fire with his lab coat.
- 2) Never work alone when handling highly hazardous chemicals such as organic lithium reagents. Always let others in the laboratory know you are working with these solutions.
- 3) All Chemistry Department laboratories have a safety shower nearby. Be sure to know where the safety showers are and the procedures to follow in the event of an emergency. Immediately assist any person who is on fire to the nearest emergency shower and contact 911. Stay with the person until help arrives. Be sure to keep them under the shower for 15 minutes and remove any clothing to ensure all chemical is washed from the body. Note that there are private safety showers in the rest rooms in CRB for follow-up decontamination.
- 4) Organic lithium compounds are normally purchased in a highly flammable solvent such as hexane or pentane. Because these compounds will react spontaneously with moisture in the air, they cannot be exposed to the atmosphere. They are purchased primarily from Sigma Aldrich in special "Sure/Seal" bottles that allow the reagent to be dispensed through a syringe or double-tipped needle inserted through a hole in the cap. The Teflon/elastomer liner in the cap will self seal to protect against atmospheric exposure. However, these cannot be stored for very long after initial use, as there may be leakage after a while and the reagent will degrade. Therefore, any unused portion of reagent left in the bottle should be disposed of as hazardous waste after 1 month.
- 5) In order to avoid an excessive amount of chemical waste, only purchase the amount that you plan to use for each experiment. Any purchase over 100 ml bottle will need to be authorized by Yale Environmental Health and Safety.
- 6) Yale EHS highly recommends that you order these reagents from Sigma Aldrich, which has their patented Sure/Seal bottle. Contact us if you desire to use a different vendor for these reagents.
- 7) All Principal Investigators must review the safe procedures for handling highly reactive reagents such as these with their lab members. Everyone should be familiar with the Aldrich technical bulletins AL-134 "Handling Air-Sensitive Reagents" and AL-164 "Handling Pyrophoric Reagents".

- 8) Work inside the fume hood with the horizontal sash positioned in front of you to protect you from any splash that may occur. All of the hoods in CRB and KCL have horizontal sashes. If your fume hood does not have a horizontal sash, we recommend using a splash guard positioned in front of the bottle when drawing the liquid into the syringe.
- 9) Please go through your inventories and dispose of any opened containers of these reagents that you are not planning on using in the near future. Our office is prepared to go to each lab to pick up any unneeded chemicals for disposal.

More information on these and other safe chemical handling requirements can be found in the Yale University Chemical Hygiene Plan. We will also be sending a campus-wide alert regarding this accident soon to determine which other laboratories on campus may be working with these reagents, but wanted to notify you first because of their common use in the Chemistry Department. Thank you for your prompt attention to this matter.

Paula Labbie Castagna, MS, CIH
Industrial Hygienist/Safety Advisor
Yale Environmental Health & Safety
203-737-2124

LAS note on 10/23/09 -- this was forwarded to me on 1/27/09 by Dr. Schweitzer, who received it from Pete Reinhardt, who received it from Ms. Castagna