

LESSONS TO BE LEARNED

Generated from Actual Incidents-Written by EHSO

Issue No. 24

January 4, 2007

Type of Incident: **Mineral oil fire followed by explosion**

What Happened: A researcher was heating a reaction in a hot mineral oil bath using an old hot plate. He left his reaction running in the fume hood to get some samples analyzed in another lab. He thought he had turned off the hot plate, but may have actually turned it up. While he was gone, the mineral oil burned, ignited the entire contents of the reaction dish, and started a localized fire. Three other people in the lab noticed the fire and tried unsuccessfully to put it out using two carbon-dioxide extinguishers. Thinking that dry ice should do the same thing as CO₂, they added it to the fire. The rapid super-cooling caused the glass container to explode and flames burst out of the hood. Two students were burned by the hot oil. Finally, they pulled the fire alarm and the fire department came.

Immediate Cause:

1. Use of mineral oil instead of a high temperature-rated silicone oil.
2. Use of an old, improperly functioning hot plate that could not be calibrated against a temperature chart.

Root Causes:

1. Not repairing or replacing malfunctioning equipment.
2. Leaving an experiment unattended.
3. Lack of knowledge of emergency response procedures.

Corrective Actions:

1. Replace mineral oil with silicone oil.
2. Replace the hot plate.
3. Train all laboratory members on emergency response procedures. In case of fire follow the acronym RACE:
RESCUE anyone in immediate danger of the fire.
ACTIVATE alarm and dial 6-3473 (6-FIRE). Retain phone contact with the UIC Police who will notify the Chicago Fire Department.
CONFINE the fire by closing windows and doors to the fire.
EVACUATE to an area of refuge or **E**XTINGUISH fire only if you have been trained and the fire is small. If you choose to extinguish the fire, be sure you have a safe escape route, with your back to the exit, in case you are unsuccessful in fighting the fire.

(See Section 9.4 of the Chemical Hygiene Plan for response procedures for fires in labs
www.uic.edu/depts/envh)

