

LESSONS TO BE LEARNED

Generated by EHSO from Actual Incidents

Issue No. 2

July 10, 2001

- Type of Incident:* **Drying oven explosion and fire**
- What Happened:* A post-doc researcher was processing several polymer samples, dissolved in ethanol. The process required evaporating the ethanol from open beakers to leave the polymer residue. This was usually done at room temperature in the chemical fume hood. Late in the afternoon, he was in a hurry to have the experiment completed, so he decided to accelerate the ethanol evaporation by using a drying oven. There was no written SOP for the procedure. An hour into the evaporation, and with the lab empty, the ethanol vapors found an ignition source in the thermostatic switch for the oven, creating an explosion and fire. The oven was clearly labeled as not being suitable for use with flammable solvents. This ignited the flammable vapors, and in the enclosed oven, created an explosion and fire.
- Immediate Cause:* Running the oven at 60^C equated to 140^F, well above the flash point for the solution.
- Root Causes:* With no SOP, specific instructions on drying were not available - employees were left to their own devices to carry out the experiment. Also, the post-doc was confused about flash points. He claimed that the flash point of his ethanol solution was 70^c when in fact it was 70^F.
- Corrective Actions*
1. Ensure that Standard Operating Procedures are written and disseminated to all employees and students.
 2. Ensure accountability of supervision to require that proper procedures are enforced, including proper use of equipment and observance of signs and labels..
 4. Ensure that all employees and students understand the need to avoid being in a hurry and taking unauthorized short cuts.
 5. Ensure that proper "Unattended Operations" procedures are implemented in accordance with the *UIC Chemical Hygiene Plan*.

