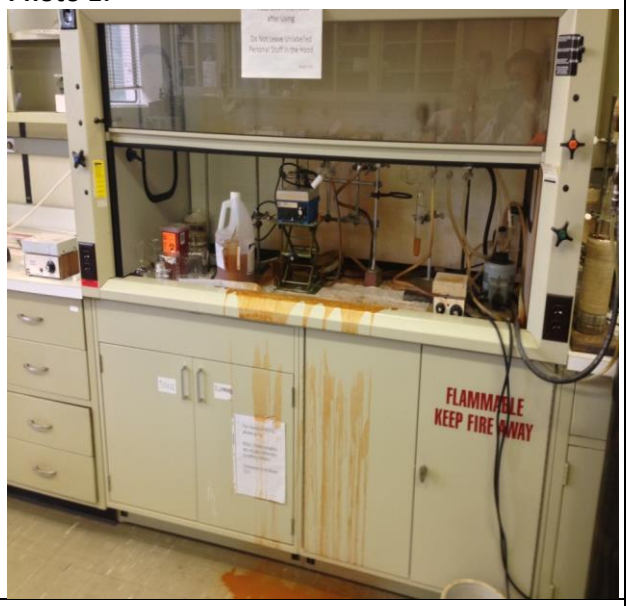
UNIVERSITY OF NOTRE DAME

SAFETY ALERT

Incident Type: Uncontrolled chemical reaction resulting in over pressurization of a waste container
Date: June 4, 2013
RMS Contact: Lisa Phillips, bognar.6@nd.edu

Incident Description:
A post doctorate was requested to dispose of three expired bottles of Tetrahydrofuran (THF). The post doctorate opened the bottles and comingled the THF with a bottle of waste solvent which they understood to contain THF. This was accomplished in a laboratory hood. The waste container was returned to a secondary containment pan outside of the laboratory hood. Approximately 45-60 minutes later the student recognized a reaction (color change and bubbling) inside the 4 Liter plastic waste jug. The container was placed inside the laboratory hood and the sash closed. A few minutes later the container ruptured releasing the contents of the bottle into the lab and a small amount on the floor in front of the lab (Photo 1). Attachment 1 shows the reaction.

Photo 1:



Findings:

- The expired THF bottles were discovered during LISP Joint Assessment.
- During the LSIP assessment RMS instructed the PI to tag the bottle with a waste tag and dispose through RMS.
- The PI instructed the post doctorate to dispose of the chemicals but did not convey how to dispose of the material.
- The post doctorate completed the required laboratory safety training.
- The post doctorate stated he was wearing the appropriate PPE during the waste transfer.
- The emergency process was followed properly.
- The post doctorate was unaware of the proper methods to dispose of expired chemicals that may contain peroxides.

Root Causes:
The over pressurization of the container was caused by a chemical reaction from mixing the expired THF (possibly containing peroxides) with other waste solvents.
The management system causes include:

1. Training – The post doctorate was unaware of the proper disposal process for expired chemicals or materials possibly containing reactive materials.
2. Procedural – A procedure outlining the proper methods of handing and disposing expired chemicals or chemicals containing reactive materials is not available.
3. Communication – The post doctorate was not informed of the proper method of disposing reactive materials.
4. Procedural – A procedure outlining the process to decommission laboratories does not exist.

5. Procedural – A procedure outlining the process for a PI taking over a used lab does not exist.

Recommended Actions:

1. Develop procedure or process for handling expired chemicals.
2. Train students for this PI on process for handling / wasting expired chemicals.
3. Develop decommissioning process for labs and present to Office of Research/Deans.
4. Communicate laboratory decommissioning procedure to affected personnel.
5. Develop process / check list for new PI taking over used lab.
6. Communicate process for PI's taking over a used laboratory.
7. Advise the Academy to communicate to all PI's to check their chemical storage areas for expired materials and properly dispose by applying a waste tag and contacting RMS.

Safety Alert Actions:

1. Communicate this Alert as appropriate.

Attachment 1: