



SAFETY ALERT

RISK MANAGEMENT & SAFETY

Uncontrolled Chemical Reaction

Event: Uncontrolled Chemical Reaction
Date: February 2015
Category: Chemical Reaction
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Description:

An uncontrolled chemical reaction occurred outside of a lab after a researcher was preparing old potassium metal containers for waste pickup. The researcher noticed that some potassium was above the oil line in one bottle and added oil from an old container of potassium metal under oil. The researcher noticed some bubbling in the container that did not appear to be stopping. The researcher carried the bottle down the stairs and placed it outside where a fire occurred and small pieces of potassium were sprayed in the snow.



Findings:

- Researcher was wearing gloves and eye protection but was not wearing a lab coat.
- Bottle of mineral oil/potassium was “inherited” when researcher moved into the lab and was over 50 years old.
- Oil had a layer of water from the potassium oxidized into potassium hydroxide which is hygroscopic (absorbs water).
- Researcher did not want the reaction to occur in lab hood, so researcher carried the reacting bottle down the stairs and placed it in the snow.
- Heat of reaction melted snow around the bottle.

Root Causes:

- [Safe Handling of Time Sensitive Materials procedure](#) was not adhered to.
- There was no written procedure for handling old potassium/sodium in the hood.
- There was no written procedure for emergency “quenching” of water reactives.

Recommended Actions:

- Review lab for other containers of time/reactive materials and handle as described in [Safe Handling of Time Sensitive Materials Procedure](#)
- Develop a written procedure to include use of a hood when working with reactive metals including emergency response.
- Train personnel on the new procedure.