

# HEALTH SAFETY & WELLBEING

## Incident Alert

### Risks associated with use of pyrophoric chemicals

#### OVERVIEW

A small fire occurred in a research laboratory due to a chemical reaction involving trace amounts of a pyrophoric substance. The fire originated in a biohazard waste bin, likely resulting from the unintended presence of pyrophoric residue in discarded materials. Although no injuries occurred, the incident highlights the critical importance of appropriate risk management, formal training, and waste handling procedures when working with pyrophoric substances.

#### HAZARDS

Pyrophoric substances can:

- Ignite spontaneously upon contact with air
- React violently with water, producing flammable hydrogen gas
- Pose toxic and corrosive health risks

They are primarily classified under Dangerous Goods (DG) Classes:

- **Class 4.2** – Substances liable to spontaneous combustion
- **Class 4.3** – Substances which, in contact with water, emit flammable gases



Under the GHS, these substances can be classified as Pyrophoric Solids or Liquids Category 1 or Category 2. The Safety Data Sheet (SDS) and the product label must be consulted for information on the specific hazards.

Examples of pyrophoric chemicals include:

- Borohydrides (e.g., lithium borohydride, potassium borohydride, calcium borohydride, sodium borohydride)
- Metal hydrides (e.g. lithium aluminium hydride, calcium hydride)
- Alkali metals and alkali metal reagents (e.g. lithium, sodium, potassium, solutions of lithium alkyls)

#### KEY LEARNINGS:

- Always treat pyrophoric chemicals as high-risk materials. Even trace amounts can ignite if mishandled or improperly disposed of.
- Formal, documented training is essential. Verbal instructions alone are insufficient for high-risk chemical tasks.
- Proper disposal procedures are critical. Contaminated consumables or leftover solutions must be disposed of in clearly defined and appropriate waste streams.

#### ACTIONS AND RESPONSIBILITIES FOR MANAGING THE RISK

Laboratories and Workshops where pyrophoric substances are used must:

- Develop and implement risk assessments and Safe Work Instructions (SWIs) covering storage, handling, disposal, and spill response for highly reactive chemicals.
- Review the SDSs register all hazardous substances and Dangerous Goods in your Chemwatch manifest immediately upon receipt or introduction into the laboratory.
- Establish documented, competency-based local training procedure for all users of high-risk chemicals, including pyrophoric substances.

#### ADDITIONAL RESOURCES:

- [Chemical Management Information Page](#)
- [Chemwatch Information Page](#)
- [Risk Management and Safe Work Instructions Information Page](#)

**More Information:** Please contact the Monash Health Safety & Wellbeing team [hsw@monash.edu](mailto:hsw@monash.edu)