Safety Alert – November 2023

Subject: Picric acid, explosive/shock sensitive chemicals and the need for regular assessment/surveillance

Background:

Picric acid is flammable, and when dry is explosive by shock, friction, or rapid heating. It is spontaneously explosive above 500°C. It forms salts with many metals, some of which (lead, mercury, copper, or zinc) are more sensitive to heat, friction, joor impact than picric acid itself.

As part of a chemical stocktake conducted at UNSW, a bottle of picric acid with small quantities of crystals was identified. Normally, water is added to picric acid, otherwise the dry material is a touch sensitive explosive. It is supplied with not less than 30% water by weight and must always be stored wet. Arranging disposal is much more difficult and hazardous when the picric acid is dry. It requires an experienced professional to make the material safe.

CAUTION!

Because of its sensitivity to friction, care should be taken in handling any container of picric acid in which there is, or might be, dry picric acid. It is recommended that if crystals are identified, the container is to be isolated, and the Central Safety Team is to be contacted immediately at: safetysystems@unsw.edu.au

Some examples of other shock sensitive and/or explosive chemicals include nitrocellulose, trinitrobenzene and mercury fulminate.

What happened:

As part of a chemical stocktake here at UNSW, a 250ml bottle of picric acid with small quantities of crystals was identified. Staff isolated the picric acid in a fume hood and contacted their Safety advisor for further advice. The Safety team implemented further protective measures until a specialised contractor was able to safely remove it from campus.

Actions Required:

- Any areas where picric acid, or where other shock sensitive/explosive chemicals, are present should check that they are following the recommendations & inspection checks as detailed in HS716 *Management of Picric Acid Storage* (https://www.unsw.edu.au/content/dam/pdfs/unsw-adobe-websites/planning-assurance/safety/documents-resources/hs-documents/2016-03-HS716-Management-of-Picric-Acid-Protocol-1.pdf) or the local risk management document relevant to their chemical.
- Carry out, and document a risk assessment for any picric acid stored or used.
- Any groups that possess either picric acid, or shock sensitive/explosive chemicals, should reassess whether such chemicals are still required & dispose of them if necessary. Never store quantities more than what is needed.
- Develop and follow a Safe Work Procedure for any use or storage of picric acid.

- Check all Picric Acid stored to make sure it has not dried out. All storage of picric acid must be checked periodically to make sure that it is kept moist. The frequency will depend on storage conditions such as temperature and humidity.
- Never handle dried out picric acid. Seek expert advice from your supervisor or the Safety team.
- Take 2 minutes 2 Be Safe before every task or activity in the lab to make sure you have identified the risks and implemented appropriate controls, if you're working in a team ensure you have communicated the hazards of the task, including personal protective equipment (PPE) requirements.
- Make sure that the PPE you identify as a control in your Risk Management Form is suitable for the task, chemical or material being handled and that these details are transferred to the Safe Work Procedure

Further Information: safety@unsw.edu.au