Chemical Safety Management

Information Sheet: Cyanides

Purpose

The purpose of this information sheet is to guide workers and supervisors in general precautions, storage and emergency responses for cyanides. The information should be read in conjunction with the Health Safety and Wellbeing (HSW) Chemical Safety Management Procedure.

Q1 Are there any reference materials I should read before working with cyanides?

Refer to the SafeWork Australia Guide for Preventing and Responding to Cyanide Poisoning in the Workplace 2020 which includes information on the hazards of cyanides, routes of exposure, workplace exposure standards, biological monitoring for cyanides, control of risks, storage, disposal, responding in an emergency, first aid and cyanide emergency kit contents.

Q2 Why do cyanides warrant special care?

Hydrogen cyanide gas and cyanide salts are among the most rapidly acting of all known poisons, and even small amounts can kill. Onset of symptoms after exposure is very rapid (within a few minutes). Symptoms and signs of mild cyanide poisoning include headaches, giddiness, nausea, and vomiting (if the cyanide has been ingested). The person has difficulty breathing, a sense of suffocation and a feeling of general weakness with heaviness of arms and legs. This may then be followed by seizures, loss of consciousness and cardiac arrest.

Cyanide salts are odourless when dry and when damp they may have a slight odour of bitter almonds. However, relying solely on your sense of smell to detect the presence of cyanides is not advisable, as this sense can quickly become fatigued, and not everyone is able to detect its odour.

Hydrogen cyanide gas, as well as being extremely toxic is also highly flammable.

Exposure of cyanides to strong oxidisers such as nitrates and chlorates may cause fires and explosions.

Q3 What should be considered before starting any experiment with cyanides?

Refer to the SafeWork Australia Guide for Preventing and Responding to Cyanide Poisoning in the Workplace 2020 and the safety data sheet (available through Chemwatch).

- Consider and evaluate alternative methods that don't involve the use of cyanides.
- A full risk assessment and safe operating procedure (including first aid and emergency spill procedures) must have been completed and authorised prior to any work commencing involving the use of cyanides, in accordance with the Hazard Management Procedure (refer to sections 3.2 and 4.1 for authorisation process).
- Anyone using the chemical must have been instructed and assessed as proficient, in accordance with the risk assessment and safe operating procedure (including first aid and emergency spill procedures). Refer to the HSW Provision of Information, Instruction and Training Procedure for further information.
- Consider if health surveillance programs (e.g. biological monitoring, air monitoring) is required to monitor workers' exposure to cyanides (refer to the SafeWork Australia Guide for Preventing and Responding to Cyanide Poisoning in the Workplace 2020).
- Consider what facilities, personal protective equipment and signage are required (refer to question 4).
- Consider the requirements for disposal of waste or products containing cyanides (refer to question 8).
- Develop an emergency response plan and discuss with your local first aid officer any first aid treatment required.

Q4 What facilities, personal protective equipment and signage are required when using cyanides?

Refer to the SafeWork Australia Guide for Preventing and Responding to Cyanide Poisoning in the Workplace 2020 and the safety data sheet (available through Chemwatch).

The facilities that are required include:

- an emergency shower and eye-wash facility within the immediate work area
- a fume cupboard with fully functional extraction rate, and, depending on the volume, a scrubber.

The signage which may be required on the entry are warning signs, restricted access signs, and personal protective equipment requirements signs.

The personal protective equipment required includes:

- impervious gloves (e.g. PVC)
- protective apron and rubber boots
- a face shield (if there is the possibility of being splashed)
- for emergency situations, the appropriate respiratory equipment for the concentration of cyanide dust or gas that may be in the air (complying with Australian Standard AS 1716 Respiratory Protective Devices).

Q5 What general rules should be used when handling cyanides?

- Cyanides are only to be handled by a trained person who is proficient as described in the risk assessment (including in the emergency procedures) and has implemented the appropriate control measures.
- Do not work with cyanides alone or after hours.
- Undertake all processes in a fume cupboard.
- Do not store respiratory equipment, clothing, or other protective equipment where cyanides are kept.
- Remove clothing immediately if wet or contaminated. Any contaminated clothing should be stored safely in closed containers until laundered or disposed of via chemical waste. Under no circumstances should this clothing be taken home.
- No eating, drinking, touching your face or exposed skin whilst using cyanides.
- Wash hands and equipment immediately after use and store clean items well away from cyanides.
- Decontaminate the work area on completion of work and return any unused cyanide to a locked cupboard.

Q6 How should you store cyanides?

Refer to the SafeWork Australia Guide for Preventing and Responding to Cyanide Poisoning in the Workplace 2020.

- Keep workplaces dry as reaction of cyanides with water can produce the highly toxic and flammable gas, hydrogen cyanide.
- Prevent contact with acids or acid fumes as hydrogen cyanide may be produced.
- Prevent contact with strong oxidising agents (e.g. nitrates, nitrites, peroxides and chlorates).
- Small quantities of cyanides are to be stored separately in a locked poisons cupboard.
- For large quantities, contact the HSW Team for advice.

Q7 What should you do in the event of an emergency involving cyanides?

Refer to the SafeWork Australia Guide for Preventing and Responding to Cyanide Poisoning in the Workplace 2020, which contains information on emergency response plans, leaks and spills, fire, workplace first aid procedures, cyanide emergency kit, and antidotes.

- Follow your emergency response plan using only workers who are trained and proficient in the response.
- Emergency services can assist with clean-up for any spills that are beyond the ability of workers to conduct safely.
- In all cases of cyanide exposure, even if the worker appears to recover quickly, they are to be taken to the nearest medical facility for assessment and monitoring by a medical practitioner.

Q8 How can cyanides and waste be disposed?

Do not dispose of cyanide or waste down the drain. They must be disposed of via the University's chemical waste contractor.

Q9 Where do I obtain further information on working with cyanides?

If you require further information, contact the HSW Team.