

DURHAM UNIVERSITY

DEPARTMENT OF CHEMISTRY

NOTES OF GUIDANCE FOR THE USE OF CYANIDES

These notes form **Special Code of Practice A** of the Chemistry Safety Policy. A copy of this document is issued to every person wishing to use cyanides [defined as CN<sup>-</sup> containing compounds and HCN].

A ACCOUNTABILITY

1. Cyanides are Schedule 1 poisons and as such are classified as "restricted" chemicals. All use of cyanides is registered. The register is stored on DUO in the 'Chemistry Safety' module (*Codes of Practice and Risk Assessments > Special Codes of Practice in the Safety Policy > Notes of guidance for the use of cyanides (S-COP A)*). Before starting any work the form at the end of this document must be completed and signed off. The staff member responsible for S-COP A will sign once satisfaction is received that the user has understood this document.
2. Cyanides are stored in the poisons cabinet in CG004. The key for the poisons cabinet is kept in Chemistry Stores and will not be issued without a signed in-date copy of the form at the end of this document.
3. All work involving cyanides must be conducted in a designated area within the users laboratory and precautions must be taken to protect other lab users, for example by displaying safety signs and informing other users of the hazards and the area of these hazards.
4. Registration confers on the user the duty of storing unused cyanide securely in CG004, transporting it to point of use safely in secondary containment, using it sensibly, and disposing of residues safely.
5. Work must not be started before a risk assessment has been conducted and signed off by the supervisor and the staff member responsible for S-COP A (Dr Connor Sibbald).
6. Users of cyanides must know what to do in the event of an accident and include this information in their risk assessments including evacuation routes and decontamination procedures.

B PRECAUTIONS IN USAGE

1. HYDROGEN CYANIDE
  - a. Strict care must be exercised in the storage, usage and disposal of hydrogen cyanide, because it is very flammable and highly toxic. Hydrogen cyanide has a Workplace Exposure Limit [WEL] of 10 mg m<sup>-3</sup> (10 min) and an occupational exposure limit of 5 mg m<sup>-3</sup>, above which such effects as headache, nausea, vomiting, dizziness, rapid breathing, feeling of suffocation, unconsciousness and convulsions may occur. Hydrogen cyanide combines with methemoglobin in the body and results in death by asphyxiation. In solution or as a gas, hydrogen cyanide can be absorbed by the eyes and skin as well as inhaled or swallowed.
  - b. Commercial hydrogen cyanide is stabilised with phosphoric acid and on no account should any attempt be made to distil this compound. Never leave hydrogen cyanide to evaporate in a fume hood: always destroy with an excess of sodium hypochlorite solution (solids) or calcium hypochlorite (liquids) before disposal.
2. IONIC CYANIDES AND THEIR SOLUTIONS
  - a. Cyanides and their solutions liberate hydrogen cyanide in the presence of acids (smell of bitter almonds).

C FIRST AID

1. The following persons have attended a course in the treatment of poisoning by cyanide:

	Room	Extension
Mr Malcolm Richardson	CG015	42017
Miss Kerry Strong	CG193	43662/42041

A user must consult one of the persons listed above before beginning work, and that person **must** be available whilst the work is being conducted.

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2. Special equipment is available for the treatment of poisoning by absorption, inhalation and ingestion of cyanide.

**Medical oxygen** is outside rooms CG004 and CG209.

3. Treatment

- (a) **The first action must always be to call Fire and Rescue**, followed by specialist first aiders, stating the number of casualties and whether they are conscious or unconscious. A safety data sheet describing the chemical involved must be available to provide to the emergency services if needed.
- (b) Access to the area around the incident must be minimised.
- (c) Remove contaminated clothing - place in a polythene bag then seal and label it. Alternative clothing is available from the Stores. **The University Hospital of North Durham does not have the facilities to decontaminate, so this must be carried out in the Department.**
- (d) If the casualty is conscious, treatment should be self-administered wherever possible. The user must be trained for such treatments beforehand. If the casualty is conscious and has:
- (i) inhaled cyanide - keep warm and at rest, administer oxygen if necessary *via* the oxygen mask. Monitor progress;
  - (ii) ingested cyanide - treat as for (i);
  - (iii) eyes at risk - irrigate for at least 15 minutes then treat as for (i);
  - (iv) skin at risk - shower for at least 15 minutes then treat as for (i);
- (e) If the casualty is unconscious and still inside the laboratory, **no-one apart from Fire and Rescue should enter the area of the incident unless they have been trained to do so and a dynamic risk assessment has established that there is no risk from cyanide exposure;**
- (f) If the casualty is unconscious can be accessed without risk to the person giving assistance:
- (i) establish an airway, breathing and circulation;
  - (ii) place in the recovery position;
  - (iii) administer oxygen *via* the oxygen mask (**specialist trained first aiders only**);
  - (iv) provide a safety data sheet to the emergency services describing the chemical involved.
- (g) If breathing has ceased (**specialist trained first aiders only**):
- (i) open the airway;
  - (ii) commence mechanical resuscitation with oxygen (**NOT mouth to mouth**), using a mask and bag;
- (h) Report the incident using the report forms in room CG018.

Dr Connor Sibbald  
08 October 2019

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(This section is to be completed, detached and handed in to the Chemistry Office, or submitted electronically to chem.safety@durham.ac.uk)

DURHAM UNIVERSITY - DEPARTMENT OF CHEMISTRY.

I have consulted Dr Sibbald, read the Notes of Guidance for the Use of Cyanides and retain a copy for reference and I agree to follow the recommendations when handling cyanides.

No. of the room where the substance will be (a) used: \_\_\_\_\_ (b) stored: CG004

This form is valid for (supervisor to indicate; time periods apply from the signature date, max. 1 month):

**a single use**

**1 day**

**1 week**

**1 month**

User's signature: \_\_\_\_\_

Date: \_\_\_\_\_

User's name (print): \_\_\_\_\_

Supervisor's signature: \_\_\_\_\_

Date: \_\_\_\_\_

DSC signature: \_\_\_\_\_

Date: \_\_\_\_\_