HEALTH AND SAFETY

Material from Lever Fabergé

Click on the links for the following documents:

- Lever Fabergé Pocket Safety and Environmental Guide – LF1 and LF2
- Lever Fabergé, Leeds, Laboratory Code of Practice – LF3 and LF4

Material from GlaxoSmithKline

GlaxoSmithKline work with many different chemicals. Some chemicals are more hazardous than others, but all chemicals must be handled with care. Companies like GlaxoSmithKline have strict 'codes of practice' for the use of chemicals. One of the most hazardous of all chemical groups are the cyanides. These are extremely poisonous. The GlaxoSmithKline code of practice for cyanides is provided as an example.

GlaxoSmithKline
CONTROL OF HAZARDOUS SUBSTANCES

COSHH – CHEMICAL ASSESSMENT
CODE OF PRACTICE: CYANIDES
Version 2 – July 1997

CYANIDES
The term 'cyanide' refers to any compound which may liberate hydrogen cyanide. In particular, the cyanides of sodium, potassium and copper (I), sodium cyanoborohydride, trimethylsilyl cyanide, cyanogen bromide, cyanohydrins and cyanoformates (eg ethyl cyanoformate) are included. Other metallic cyanides should be treated with similar precautions.
An unplanned release of cyanide in either solid, liquid or gaseous form may require prompt medical attention to those persons who have been exposed. Swallowing cyanide compounds or breathing in hydrogen cyanide gas in high concentrations can be rapidly fatal.
At lower concentrations, or when cyanide has been absorbed through the skin, the following warning signs may occur:
a) Irritation of eyes, nose and throat;
b) Dizziness, nausea, vomiting, general weakness, headache, flushed or occasionally pale skin, palpitations;
c) A feeling of suffocation followed by deep breathing, which may lead to unconsciousness, cessation of breathing and cardiac arrest. The breath may have a characteristic smell of almonds.

PROPERTIES

Sodium and potassium cyanides are supplied as white granules or crystals which are deliquescent. Either is suitable as a reagent, although sodium cyanide is more free flowing and less deliquescent than the potassium salt. They also have differing solubilities in organic solvents which may be important in some procedures. These salts, or their solutions, form hydrogen cyanide when treated with acids; carbon dioxide is sufficiently acidic to release this toxic gas, the odour of which is similar to that of benzaldehyde (many people cannot detect the odour). Solutions of sodium or potassium cyanide are absorbed through skin.

ASSESSMENT

Department/Research Unit Heads must identify cyanide substances which are likely to be used and assess which of these can foreseeably present a risk of cyanide poisoning. Hydrogen cyanide must not be used for fumigation purposes. The following conditions will apply for the use of those cyanides which present a risk of cyanide poisoning:

1. Storage, Issue and Return of Cyanides

Before any work is carried out using cyanides, a nominee of the Department/Research Unit Head must authorise the use of cyanide. Cyanides must be kept in a locked cupboard in a ventilated room in a chemical store and can only be withdrawn after authorisation has been obtained. Cyanide must be returned to the store immediately after the required amount has been weighed out. A record must be kept of the user, the date of withdrawal and return of the cyanide, the amount used and cross-reference to the experiment or lab notebook/page number.

2. Notification of Cyanide Experiments

Before carrying out an experiment involving the use of cyanide, the appropriate manager (e.g. Lab Head) must be informed who will ensure that the proper precautions have been identified. These will include:
(i) It MUST be established that the Occupational Health Department (or a suitably trained and qualified first aider approved by Occupational Health) and members of the Emergengy Team are able to provide emergency cover before an experiment involving cyanide is commenced. If this support is not available in full, no experimental work may be carried out. Means must be available to summon assistance in an emergency.
Occupational Health will ensure the availability of oxygen when responding to an emergency call.

(ii) A Merckoquant cyanide test kit (used to check that cyanide residues have been destroyed) should be collected from the Chemical Store. This kit must be stored securely if retained in the laboratory overnight but must be returned to the Chemical Store on completion of the experiment.

(iii) Instructions detailing "Immediate Action in an Emergency" must be displayed outside the laboratory in which the experiment is being carried out together with "Cyanide in Use" notices, the identity of the fume cupboard being used, experimental details and the emergency number. The Occupational Health Department will be responsible for the preparation of the Instructions.

(iv) The Occupational Health Department must be notified once practical work with cyanide is complete. If an experiment involving cyanide is to be left on overnight, the Occupational Health Department must be notified before 5.00pm. The Occupational Health Department must be re-notified the following day when work is resumed. If an experiment continues overnight there must be no practical work outside the time that emergency medical cover is available. Practical work must not restart until Occupational Health has once again been notified.

3. Standard Procedures
All experiments involving cyanide must be carried out in a fume cupboard from which work by non-essential personnel is excluded.
Suitable gloves must be worn. The apparatus should be set up in a tray which would contain the reaction mixture should the apparatus break. Every precaution must be taken to avoid spillage of cyanide and a sufficient supply of sodium hypochlorite solution must be to hand.

4. Emergency Procedures
a) Persons in the vicinity must summon assistance from Occupational Health and Emergency Team.
b) In the event of an uncontrolled release of cyanide, the area must be evacuated.
c) If it is suspected that a person has been exposed to cyanide the following actions will be taken:
(i) The person will be removed from the area by a member of the Emergency Team (using Breathing Apparatus if necessary).
(ii) Contaminated clothing will be removed and affected areas copiously washed with water.
(iii) Emergency medical treatment will be administered by trained individuals and/or Occupational Health Staff.
Spillages, unless very small, should be dealt with by members of the Emergency Team.

5. Health Surveillance
Health surveillance for work with cyanides is not required under the controlled conditions described in this risk assessment. Any symptoms suspected to be due to exposure to cyanides must be reported to the Occupational Health Department and line managers.

6.Risks to new and expectant mothers

The control measures described in this risk assessment are considered to minimise risks to new and expectant mothers. However, female staff who perform this work, who suspect or confirm that they are pregnant must consult Occupational Health immediately to review their work arrangements.

7. Disposal

Untreated cyanide waste must not be disposed to drain or into waste bins. Solids and solutions which contain cyanides must be treated with an excess of dilute alkaline sodium hypochlorite for 24 hours. The presence of excess hypochlorite in these liquors can be tested for using starch iodine paper; when hypochlorite is present in excess, the solution will turn starch iodine paper blue. The absence of cyanide should be confirmed using the Merckoquant test kit. Glass apparatus used in the cyanide experiment should be decontaminated by soaking in alkaline (pH 10) dilute sodium hypochlorite for at least 24 hours.

Treated solutions should be stored in a vented container and not allowed to go to the drain. They MUST be treated as hazardous aqueous waste, be kept separate from other aqueous waste and be disposed of by the procedure described in Code of Practice issued under the Environmental Protection Policy.

8. Records

Department/Research Unit Heads will maintain a record of cyanides used subject to this Code of Practice and, when appropriate, also initiate Local Rules which detail the implementation of this Code of Practice. [When practical, arrangements may be made on an inter-Departmental, Divisional or Directorate basis.]

Code of practice for cyanides contributed by GlaxoSmithKline.