



This form is to be used in conjunction with the Environment Health and Safety Manual Procedure 3.2 Hazard Identification, Assessment and Control - Application.

Information of Activity

Activity: Storage and use of toxic substances Location: Chemistry

Identified by: G. Papadopoulos Date: 4/12/06

Identified Hazard / Aspect: Exposure to acutely toxic substances, death from a single dose, irreversible effects, irritation, and cumulative effects.

Risk Analysis matrix – level of risk

Identified Hazards	Risk Assessment			Risk Score	Risk Level
	Exposure (E)	Likelihood (L)	Consequence (C)	E x L x C	
Release and exposure of toxic substances through inhalation, absorption, ingestion or injection.	3	0.3	10	9	M

Definitions						
Exposure	E	Likelihood	L	Consequence	C	Risk Score
Continuously	10	Almost Certain	1.0	Catastrophic	20	E >20 H >10 M 3-10
Frequently	6	Likely	0.6	Major	10	Hierarchy of Risk Controls Elimination is a permanent solution and should be attempted in the first instance. Substitution involves replacing the hazard or environmental aspect by one of lower risk. Engineering controls involve physical barriers or structural changes to the environment or process. Administrative controls reduce hazard by altering procedures and providing instructions. Personal protective equipment last resort or temporary control.
Occasionally	3	Possible	0.3	Moderate	5	
Infrequently	2	Unlikely	0.1	Minor	2	
Rarely	1	Rare	0.05	Insignificant	1	

LEGEND

E: extreme/significant risk; immediate action required; must be managed by senior management with a detailed plan, notify RMO immediately.

H: high risk, senior management attention needed, detailed research and management planning at senior levels

M: moderate risk, management responsibility must be specified; manage by specific monitoring or response procedures

L: low risk, manage by routine procedures; unlikely to need specific allocation of resources

Details of Risk Controls to be Taken

Risk Controls: (These should be determined by both the person(s) identifying the risk and the responsible manager and HSR or Environmental Representative). When determining risk controls refer to Hierarchy of Risk Control. Some examples are operating manuals, safe work procedures, licenses, permits to work, training and instruction etc

Note: This is a generic risk assessment, suitable for a wide range of chemicals. However, more specific risk assessments should be carried out by the user before using chemicals of high toxicity.

SUPERVISION: Reactions using a chemical of high toxicity must only be undertaken by experienced handlers. Postgraduate students using them for the first time must only do so under the complete supervision of their academic supervisor. Procedures using these materials must never be attempted by an untrained person or by someone working alone, and must never be attempted out of normal working hours or over the lunch period when trained First Aiders may not be available.

If a safer alternative is available and its use is reasonably practicable then this must be substituted. If use of a safer alternative substance is not reasonably practicable, then adequate control of exposure must be ensured. All users of toxic substances must be fully aware of the hazards associated with using the substance and of the route by which the particular substance can enter the body, whether by inhalation, ingestion, penetration of the skin or absorption through mucosal surfaces or eyes. This will require a



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thorough reading of the MSDS and other sources of information. The preferred method of controlling exposure is by total containment of the substance or process if possible. The number of people likely to be exposed to the toxic substances and the duration of their exposure must be kept to a minimum. Only the minimum amount of the toxic substances necessary may be used. This applies also to stored material which should be kept to a minimum.

STORAGE: Toxic materials must be stored in closed containers that are clearly labeled and marked with a hazard diamond. Preferably, Class 6.1 chemicals should be stored in locked, ventilated cupboards fitted with trays to contain spillage and clearly marked with a hazard diamond. When stored on open shelves they should be segregated from oxidizers, acids, hypochlorites and other incompatibles (Check drug and poison schedules for storage requirements). Schedule 7 poisons such as metal cyanides and bifluorides should be stored in the Chemistry Store safe (see Metal Cyanide RA).

Very toxic materials that are normally stored in glass containers may be transported only within robust, secondary containers large enough and capable of containing any spills arising from breakage.

USE: Very toxic material may be used only within a fume-hood that has been tested in the last six months and is above minimum standard.

Great care must be taken to avoid spreading contamination from the site of use. This will involve the following precautions:

- Material may be weighed only within an adequate fume-hood or other well ventilated enclosure,
- Care must be taken to avoid contaminating the exterior of containers. Any such contamination must be cleaned off within the fume-hood before returning to it's place of storage and the cleaning material disposed of as chemical waste,
- Care must be taken to avoid the formation of airborne dust or processes that may give rise to aerosols,
- Apparatus must be cleaned within the fume-hood and any washings, including solvent, carefully stored as waste. Alternatively, any very toxic residues may be chemically destroyed. If this is the case, the procedure for destruction must be written down as part of a separate Risk Assessment,
- Spills etc. within the fume-hood must be cleared up carefully and any materials used disposed of as chemical waste,
- Gloves must be disposed of as chemical waste. Users must never touch door handles, light switches or telephones with (assumed contaminated) gloves or wear such gloves outside of the laboratory. Gloves should be removed using the proper "surgical" procedure to avoid skin contamination,
- Users must practice careful hygiene and wash and dry hands thoroughly before leaving the laboratory.
- The use of "sharps" in procedures should be avoided because of the additional danger of self-injection. Disposable "sharps", including broken glass must be decontaminated before disposal and the washings treated as chemical waste.
- Waste material must be securely stored and clearly labeled prior to disposal. Toxic materials must never be disposed off by the waste solvent route.

Toxic substances must never be used out of normal hours or over the lunch period when trained first-aiders may not be available. Reactions using toxic substances must never be attempted by someone working alone.

PPE: Lab coat, glasses, appropriate gloves and closed shoes to be worn at all times. Consult with the MSDS for appropriate gloves to use.

Person assessing the risk: G. Papadopoulos Date: 4/12/06

Authorised by: Prof. K. Ghigino Planned completion date:

Risk Control Measures Completed

Actions by: G. Papadopoulos Completed (Initials & date): 4/12/06