



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 handling of corrosives Location: Chemistry

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

Identified Hazard / Aspect: Personal injury upon exposure to workers, property damage through spillage/accidental release and/or reaction of incompatibles.

## 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	
Exposure to worker (personal injury)	6	0.3	5	9	M
Property damage through spillage	6	0.3	2	3.6	M
Reaction through mixing of incompatibles eg. acids/bases etc.	6	0.1	5	3	M

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

### 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

**Storage & Transport:** Corrosive substances in bottles of 1lt or greater must be transported in a plastic winchester carrier. Corrosives must be stored separately in a designated cupboard or on open shelves, ensuring segregation of acids and alkalis, hypochlorites (Class 8), cyanides (Class 6.1), flammable solids (Class 4.3) and segregation of oxidizing agents (Class 5.1) and combustible materials (Class 3). (Segregation =reasonable space or physical barrier separating incompatibles, vertically and horizontally). Some acids are incompatible with other acids, e.g. Acetic acid (sub risk class 3) and Nitric acid (sub risk 5.1), so the MSDS should be consulted. Class 8 packages shall be kept away from sources of heat, kept securely closed when not in use, kept in such a manner as to avoid spillage, and kept in secondary plastic trays to avoid corrosion of metal storage shelves due to drips or spills. Containers of some substances such as Trifluoroacetic acid may



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need to be placed in a ziplock bag to prevent fumes "breathing" through the bottle from destroying labels on other bottles.

**Use:** Corrosives should be used with constant regard to the danger they pose to health, particularly the ones with a sub risk of class 6.1, and their reactivity with other compounds. NOTE: The corrosive effect of Class 8 substances on tissues may be delayed for some time before symptoms are detected. If treatment is delayed, this can add to the seriousness of injuries caused.

Appropriate spillage-retention measures should be provided at locations where packages are likely to be opened or their contents transferred or diluted. Water must never be added to acids because splattering may occur, always add acid to water. Work with corrosives should be conducted in a fume hood to prevent exposure by inhalation.

Small chemical spills must be immediately cleaned up. Sodium bicarbonate spill kits are present in all labs and mobile spill stations for neutralising corrosive spills. Sodium carbonate is also available from the Chemistry Store if required. The neutralised material can then be collected with a brush and pan, and transferred to a clean, sealable plastic container for disposal. For major spills, contact the Safety Officer.

**PPE:** Lab coat, safety glasses, appropriate gloves (minimum length of 25cm, to leave no space between glove and lab coat) and closed shoes to be worn at all times. PVC is suitable for protection against many corrosive substances but consult with the MSDS for appropriate gloves to use. A full face shield should be considered when using more aggressive corrosives. After use, all personal protective equipment should be cleaned with water or appropriate solutions, e.g. 5% sodium carbonate (soda ash) solution if contaminated with an acid or 5% sodium bisulphate solution if contaminated with an alkali. Gloves should be periodically checked for leaks.

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

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

**Risk Control Measures Completed**

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