

University of Manchester Department of Chemistry

## Procedures and Methods Sheet: 010

# Common destruction and disposal methods for chemical residues

This P&M sheet is 2 pages long.

### Disposal of Unwanted Chemicals

The principal legislation governing waste disposal is contained within The Control of Pollution Act 1974 and The Environmental Protection Act 1990 and their subordinate regulations. The laws seek to reduce the risks not only to employees and the general public but to the environment in its widest context. Laboratory chemicals come under the category of 'special waste' in the Regulations and thus have stringent disposal conditions.

The quantity of chemicals ordered or withdrawn from stores should be kept to an absolute minimum. An expensive and difficult waste disposal problem is largely due to over ordering of chemicals.

### **The detailed arrangements in the Department are as follows:**

#### Harmless Materials

Harmless solids of all types may be contained in a bag, tin or bottle and placed in the laboratory waste bin for collection by cleaning staff. Aqueous solutions of harmless inorganic substances and soluble organic compounds should be neutralised and well diluted before disposal down the drain.

#### **DO NOT DISPOSE OF DOWN THE SINK:**

1. Organic solvents.( Disposal of solvents is covered by P&M006)
2. Heavy metals.
3. Cyanides, sulphides. (Disposal of cyanides is covered by P&M014)
4. Strong acid/alkali.
5. Solids.

#### Harmful or Toxic Materials

1. Obtain a waste disposal form from the main stores.
2. Use a separate form for each category of waste, i.e. solvent, solid or gas, which must accompany the material to be disposed of.

**N.B. ITEMS WILL ONLY BE ACCEPTED UNDER THE FOLLOWING CONDITIONS:**

**CHEMICALS(S) MUST BE IN A SEALED CONTAINER AND CLEARLY LABELLED.**

**ALL MERCK TYPE LABORATORY GAS CYLINDERS MUST HAVE THE SCREWED SAFETY PLUG FITTED. IF THE SAFETY PLUG OR CAP IS LOST, A REQUEST SHOULD BE PUT TO THE MAIN WORKSHOP SUPERVISOR TO MAKE A REPLACEMENT. A CHARGE WILL BE DEBITED TO YOUR ACCOUNT NUMBER.**

Disposal of Waste Solvents is covered in P&M006

### Specialist Notes

Radioactive Chemicals should only be disposed of in accordance with local rules and after consultation with the Departmental Radiological Supervisor.

Empty containers should be inspected to ensure they contain no residues, rinsed with water and the labels removed before being either discarded or returned to the stores for reuse.

Special care should be taken to remove sodium and other reactive drying agents from bottles before returning them to the stores. Disposal of sodium is covered in P&M012

When cleaning out solvent stills be sure to quench sodium, potassium, calcium hydride, or phosphorous pentoxide as prescribed by the relevant Procedures and Methods Sheets. The quenching of sodium and potassium residues presents a particularly dangerous hazard and should be performed with utmost caution.

Strong alkalis should be neutralised before disposal. Strong acids should be neutralised with sodium bicarbonate before disposal.

Always remember that you are generally not the last person to handle the waste and the safety of other people must be a primary consideration.

All waste chemicals which are returned to the stores for disposal must be listed on the special forms available from the stores or on the bulk disposal drums.

Microbiologically toxic heavy metals and their salts, toxic or noxious materials, carcinogens and asbestos should be adequately packed and labelled and returned to the stores for disposal.

Unknown and unlabelled chemicals are expensive and difficult to dispose of since they present unknown hazards so never leave chemicals unlabelled.