

Chemical Safety and the Control of Substances Hazardous to Health

Purchase of Chemicals

The Department's Chemical Safety Officer must be informed when a chemical is ordered that has not previously been used by an individual or the individual's research group. Suppliers are required to provide health and safety information on all their products. Ask for such information if it is not supplied so that you understand the hazards and risks associated with any chemicals with which you work.

Registering of Chemicals and Chemical Processes under the Control of Substances Hazardous to Health Regulations (COSHH)

Before work commences on a new chemical process advice must be obtained from the Department of Physics Chemical Safety/COSHH Officer (named in the Statement of Safety Organisation or Safety Committee lists elsewhere in this handbook) as to whether a risk assessment under COSHH is required. Advice may also be obtained on work procedures and the necessary risk controls if these are unclear.

Disposal of Unwanted Chemicals

The University operates a number of waste disposal schemes as detailed in University Policy Statement S5/11 and personnel working in the Department of Physics should make full and appropriate use of them.

The instructions and application form to dispose of unwanted, but identifiable, non-radioactive chemicals can be found on the Department's Health and Safety Website <http://www2.physics.ox.ac.uk/staff/health-and-safety/safety-forms>

The disposal of radioactive chemical waste by the Department of Physics is not allowed and only the University Radiation Protection Officer can dispose of this type of waste. Contact the Senior Radiation Protection Supervisor for the department for details.

Chemical Spills

Chemical spillage kits for emergency use are available from the Department of Physics East and West Site stores. The used spillage material should be disposed of as detailed for the disposal of unwanted chemicals. If a spillage or breakage involves *mercury* immediately contact the following for advice and assistance:

Physics Safety Office

Tel 73407 or 73936

Glassblowing Workshop (Department of Biochemistry)

Tel 75286

Laser Dyes and Saturable Absorbers

Laser dye and saturable absorber chemicals, including associated solvents etc., are highly toxic and must be stored, used and disposed of accordingly. All laser dye and saturable absorber premix solutions should be prepared in a fume cupboard. The worker should use the appropriate personal protective equipment (PPE) for the chemical techniques and risks involved i.e., laboratory coat/overall, correct type of gloves to give protection against the chemicals being used and suitable eye/face protection.

Disposal of all laser dye and saturable absorber solutions including any such contaminated materials (paper tissues/blue roll etc.) must be made through the University's chemical waste disposal scheme, see above.

NB. A risk assessment under the Control of Substances Hazardous to Health is required for all work with laser dye and saturable absorber chemicals (see University Policy Statement [S6/14](#), COSHH, and contact the Chemical/COSHH Officer for details).

Fume Cupboard Facility for 'General Chemistry'

Fume cupboards are available for 'general chemistry' in room 374 of the Clarendon Laboratory. These fume cupboards may only be used after making prior arrangements with Dr P. Dharmalingam.

General Chemistry Rules

Some members of the Department may have had little or no experience in handling or using chemicals. The following information provides local rules based on legislation, University Policy [S3/01](#) and good chemical laboratory practice.

- 1) Consideration should always be given as to whether an alternative less hazardous chemical could be used to the one being ordered.
- 2) Before using a chemical the Material Safety Data Sheet (MSDS) (available from the supplier) should be consulted and all hazards associated with its use identified. If hazards are identified then a risk assessment will be necessary. It may also be necessary to make an assessment under the Control of Substances Hazardous to Health Regulations (COSHH). COSHH assessments may only be made by the Departmental Chemical Safety Advisor (named in the Statement of Safety Organisation and Safety Advisory Committees listed elsewhere in this handbook). The risk and/or COSHH assessment will provide information regarding the safe use of the chemical. Chemicals already in use within a research group should have been assessed and any risk and/or COSHH assessment should be found in the group's Health and Safety folder.
- 3) General chemical laboratory procedures require the wearing of a laboratory coat, eye protection in the form of chemical safety glasses (or goggles) and suitable gloves. The use of many chemicals may require more extensive protection in the form of an appropriate face mask, full-face shield, rubber apron etc. The level of protection required will be stated on the MSDS and in any associated risk/COSHH assessment.
- 4) Many chemicals release fumes or produce dusts that are harmful. These fumes or dusts may be classified for example as irritating, toxic or sensitising and will have an associated exposure limit. The use of a chemical fume cupboard or local exhaust ventilation system is the recommended form of protection from exposure. The risk/COSHH assessment will provide information on the type of extraction to be used.
- 5) Certain chemicals have been identified as requiring special first aid provision (e.g. cyanide, hydrofluoric acid, phenol) with special precautions having to be in place before they may be used; new users must contact the Departmental Chemical Safety Advisor before commencing work.
- 6) When using a chemical it is important that all containers that contain it, or any other solution made from it, are properly labelled. Long-term storage of certain solutions may result in hazardous by-products and it is therefore recommended that all chemicals and solutions that are no longer required be disposed of as soon as possible via the appropriate route (please refer to the department's waste disposal chart for further information). All chemical spillages should be cleaned up immediately following the recommendations in the MSDS or COSHH assessment and disposed of safely via the appropriate route. It

is the responsibility of the user to make sure that chemicals are safely disposed of once they have finished working with them.

Further information on any aspect of safety can be obtained from the Physics Chemical Safety Officer, the Physics Area Safety Officer or the University Safety Office.

Control of Substances Hazardous to Health

The Control of Substances Hazardous to Health Regulations (COSHH) provide the legal framework for controls on exposure to hazardous substances arising from work activities. A COSHH assessment is carried out in addition to the normal risk assessment where there is a potential risk of exposure to substances hazardous to health. This includes chemicals, biological agents, dusts and any other substances that are hazardous to health. Details of the COSHH regulations may be found in the University Policy Statement [S6/14](#).

Before work commences on a new chemical process advice must be obtained from the Department of Physics Chemical/COSHH Officer (named in the Statement of Safety Organisation or Safety Committee lists elsewhere in this handbook) as to whether a risk assessment under COSHH is required. Advice may also be obtained on work procedures and the necessary risk controls if these are unclear.

Once it has been determined that a procedure requires a written COSHH assessment then a COSHH form is produced, within Physics this provided by the Chemical/COSHH officer in consultation with experimentalist. The form includes information on the hazards identified from the procedure, engineering (e.g. fume hoods, glove boxes etc.) and personal protective equipment control measures, relevant emergency procedures, and waste disposal. COSHH forms require the signature of the Head of Department's nominee, and the signature of the supervisor for any procedures to be undertaken by undergraduate or graduate students.

The assessment is intended to be a working document and it must be reviewed if there is evidence that it is no longer valid.

It is good practice to carry out regular reviews of COSHH assessments. As an absolute minimum, assessments must be reviewed every five years, but higher risk procedures should be kept under close scrutiny and reviewed more frequently.