

Approved Chemical Handling Procedure

This is a synopsis of the main safety principles for working with chemical agents. Refer to Unit publications or specialist data for further information.

- Be familiar with the safety data on substances you are handling. Check this information on the label of the container and the current safety data sheet (SDS) for the material. Ensure that the SDS is the current version and has been updated with the REACH and GHS requirement to include such revisions as the correct Hazard and Precautionary Statements (which will replace the Risk and Safety Phrases on SDSs by 2015). For more detail on these revised labelling and information requirements see the HSA website at http://www.hsa.ie/eng/Topics/Chemicals/
- Ensure that others are advised of the potential hazards of the substance(s) by ensuring that the appropriate warning signs are posted in the area.
- If the material you are using is particularly hazardous, minimise the hazard(s) in the following way:
 - » Substitute it with a less hazardous material
 - » Minimise exposure by using engineering controls e.g. fume cupboard, use of an isolated work area;
 - » Restrict the use of the substance;
 - » Restrict the number of personnel who use the substance;
 - » Ensure you are properly informed and/or trained in the use of the substance;
 - » monitor exposure levels;
 - » Use appropriate personal protective equipment (PPE) as a supplementary protective measure. PPE on its own is regarded as a "last resort" protective/preventive measure because of its various limitations and must be used in conjunction with the preferred measures above.
- Minimise the volume of substances you keep at your workbench to what is immediately required and at all times keep your work area organised and tidy.
- Ensure that the containers for all substances are properly labelled as to the name and details of the material, hazards and risk phrases/hazard statements (required by UN/EU standard). Also label any intermediate containers you may be using as to the material it contains, its hazards and appropriate risk phrases/hazard statements. Ensure that substances are stored appropriately in terms of their chemical compatibility, physical characteristics and manual handling factors.
- Wear appropriate personal protective equipment. If you are unfamiliar with its use check with your supervisor beforehand. If the equipment is inappropriate or ill fitting it will not provide the required protection.
- In all cases when working with hazardous substances ensure the work area is appropriately ventilated. Specifically where there are vapours or dusts generated, a

fume cupboard, glove box, safety screen as appropriate should be used.

- Minimise the risk of ingesting hazardous substances or personal contamination by taking the following precautions:
 - » No food, drink to be stored, prepared or consumed in the laboratory
 - » Mouth pipetting is prohibited, use a pipette filler;
 - » No smoking at any time in University buildings;
 - » Wash your hands regularly especially before leaving the laboratory, eating/drinking, smoking or applying cosmetics;
 - » Remove your laboratory coat/other specialised protective clothing before leaving laboratory.
- Immediately clean up spillages (where safe to do so) and report them directly.
- Dispose of all waste chemical materials in the approved manner.

Pre-purchase safety considerations:

The purchase of chemicals is a process that should not be undertaken lightly. All purchases of chemicals should contain an element of lifecycle planning for that chemical.

Factors which should be considered include but is not limited to:-

- 1. Appropriateness of sample size. This should take account of the rate of use of the chemical thus giving an expected shelf life for the sample. The shelf life in this context is not simply how long the sample will remain in good condition but also how long the user is prepared to store it. For hazardous material the sample shelf life should be kept short and for less hazardous samples a longer shelf life can be planned for. In many cases larger samples are cheaper but represent a false economy as excess sample represents a storage risk and ultimately additional disposal costs.
- 2. Chemical risk assessment for use and storage. For any chemical before it is purchased the risk associated with it throughout its life should be considered. How will it be stored safely. Is access to the required equipment available to use it safely in the intended application bearing in mind that hazards associated with a chemical can change with physical conditions and application. Once used what if any products will be formed which will require disposal and will they be hazardous and does a facility exist in house to store these prior to disposal.
- 3. Disposal. Virtually all chemicals have an associated disposal cost. In considering this prior to purchase the following should be accounted for. Disposal of the material itself which remains unused. Disposal of byproducts of the reactions to which it is applied. In all cases the purchase of chemicals should take into consideration the realistic disposal cost. The purchaser of the chemical is responsible for arranging its safe disposal (and those of byproducts) including funding this process. All projects and positions should have in place a process by which all chemicals are disposed of prior to completion.
- 4. Where a Unit has a continuous need for particular chemicals (most typically solvents but also relevant to sharps and other items) a central mechanism for disposal may be most convenient rather than every user arranging individual disposal. In that event central ordering of the item can allow the addition of a levy to the cost price to fund

disposal thus allowing funding in advance for the disposal and easily applying the "user pays principle".

- 5. Inventory control. A clear inventory of holdings within a unit allows for substantial risk reduction and is required by other agencies such as the Fire Authority. If an inventory is known chemicals for once off use can be obtained from neighboring groups so the user does not need to purchase large amounts of chemicals only to discover the route is problematic leaving a disposal issue on a now unwanted chemical. The same principle can be applied to occasional use on a small scale allowing researchers to assess a chemicals usefulness prior to purchase. All labs should regularly review their holdings and remove for disposal any chemicals not in regular use. No chemical should be left with a damaged label as a label-less chemical (even an innocuous one) will cost over ten times the disposal cost and probably over 20 times the time cost.
- 6. Disposal. Where a Unit has a regular rate of waste production (e.g. solvents, solid wastes, sharps) they should arrange a similarly regular collection for disposal. In deciding how often a collection is required the hazards associated with waste storage should be considered (i.e. flammability, storage location etc) in determining how much material should be held prior to disposal. The waste containers should be appropriately segregated (advice from disposal company) and should be of a size appropriate to the rate of production. This prevents waste buildup and large hazards and costs. With smaller units or more irregular waste streams they should be planned for and disposed of at regular intervals.