



CS CoP007 – Storage of chemicals

The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) require risks from the indoor storage of Dangerous Substances to be controlled by elimination or by reducing the quantities of such substances in the workplace to a minimum and providing mitigation to protect against foreseeable incidents.

It is recognised that for practical purposes where flammable liquids are used, there is likely to be a need for a limited quantity to be stored in the workroom/working area. It is the responsibility of the employer / dutyholder when carrying out their risk assessment required under DSEAR Regulation 5, to justify the need to store any particular quantity of flammable liquid within a workroom/working area.

The reception, storage and distribution of chemicals must be the responsibility of authorised persons only. Only the minimum amount of chemicals should be purchased for each work project thus preventing unnecessary accumulation of chemicals. Where there remains an excess of a chemical on the completion of a project, unless that chemical is a common reagent that is likely to be used without delay by a colleague, it should be properly disposed of via the School of Chemistry's waste disposal service.

Relevant Colleges and/or Schools must implement systems to prevent situations arising in which potentially hazardous materials, of either unknown or known composition, accumulate to form a growing residue for disposal. Disposal procedures must be planned to prevent, for example, research groups moving on, and leaving such residues behind for their former School to deal with.

- In order to minimise the risk of a serious laboratory fire, the maximum amount of flammable reagents and solvents etc., stored in any one laboratory must not exceed 50 litres.
- Reasonable quantities of flammable reagents and solvents may be kept in the open laboratory in suitable closed vessels of volume not greater than 500ml; these small quantities are excluded from the 50 litre storage limit suggested for each room.
- All chemicals, other than those small amounts in use, must be stored in proper fire resistant chemical storage cupboards on drip trays and the external of the cupboard appropriately signed with a hazard warning sign(s) (black on yellow) relevant to the hazardous properties of the stored chemicals. Storage cupboards or bins must be constructed of materials that ensure that the sides, top, bottom, door(s) and lid are capable of providing 30 minutes fire resistance. These storage cupboards must not be sited adjacent to doors or other means of escape from the laboratory.



- When new cabinets are being purchased either as replacements for old cabinets, or in cases of fitting out a laboratory after refurbishment or new build, all cabinets or bins used for the storage of flammable liquids must conform in construction to the more demanding BS EN 14470-1:2004 'Fire safety storage cabinets – Part1: Safety storage cabinets for flammable liquids; Factory Mutual, Underwriters Laboratories and ANSI/NFPA 30 standards.
- Individual workers should not retain chemicals superfluous to current needs and should return these to the storage cupboard, cabinet, or bin, as soon as possible after use or, if the materials cannot be used again, make arrangements for their safe disposal.
- Certain chemical compounds, e.g. ethers as peroxide formers, should have the date of opening, test history and date of discard written on the label
- If flammable chemicals are to be stored in refrigerators these must be intrinsically safe (spark proof), ordinary domestic fridges, as supplied, are not suitable for this purpose.
- Chemicals in liquid form should not be stored above head height.
- Great care must be taken to ensure that incompatible chemicals are stored separately (e.g. mineral acids and organic solvents, oxidisers and flammables) to prevent violent reaction in case of spillage or leakage.
- Regulations governing the storage and labelling of toxic and other hazardous materials must always be observed. Schedule 1 Poisons (e.g. arsenic compounds, mercury compounds, sodium and potassium cyanide) Highly or Very Toxic substances and Cytotoxic substances must always be kept in secure storage, access to which is available only to nominated key holders. Accurate records of chemicals issued from a secure store must be kept by a nominated person. Lists of chemical substances within the above categories is available via the School of Chemistry's website at:
<http://www.info.chem.ed.ac.uk/safety/notices> (requires your university log in)

The storage quantities quoted above are intended to be viewed as recommended maxima representing good industry safe practice, rather than be taken as absolute limits. There is intended to be some flexibility with these limits, where it is recognised that the design of modern day buildings and the pattern of work can sometimes make adherence to these quantities difficult to achieve; for example, in large or open-plan workrooms / working areas. However, where the employer/dutyholder does identify a need to store quantities in excess of the recommended maxima, a robust demonstration of



this requirement would need to be made and in particular the risk assessment, under DSEAR Regulation 5, must take into account:

- The properties of the materials to be stored or handled in the workroom / working area. For mixed storage the worst case situation should be applied, i.e. all materials in the storage cupboard or bin should be considered as being the same material as the one that has the lowest flashpoint;
- The size of the workroom / working area and the number of people working in it;
- The amount of flammable liquids being handled in the workroom / working area and the quantities of liquid that may be accidentally released or spilled;
- Ignition sources in the workroom / working area and potential fire spread in the event of an ignition:
- Exhaust ventilation provision to the workroom / working area and / or the storage cupboard or bin;
- The fire performance of the storage cupboard or bin;
- The arrangements for closing the cupboard or bin doors/lid in the event of a fire;
- Means of escape from the workroom / working area.

The particular objective, in the event of an incident, is to ensure that people can safely escape from the workroom / working area. In this context, the purpose of storing Dangerous Substances in cupboards and bins of appropriate construction and design is to provide a physical barrier to delay the involvement of these materials in a fire, for sufficient time for people's safe evacuation and the dutyholder's immediate emergency procedures supporting this to be implemented.

Where quantities in excess of the recommended maxima are to be stored employers/dutyholders will find cabinets with enhanced fire performance i.e. to BS EN 14470-1:2004 standard a help in making their risk assessment demonstration. In cases where the recommended maxima are to be stored all cabinets within the area must be to 60 minute fire resistant standard.

Further information is available in the guidance document [Safe storage of hazardous substances](#)