Storage of chemicals in

We continue to come across cases where the storage of chemical is causing some concern. It is important that we highlight that there are a number of pieces of legislation that require chemicals to be stored and handled safely - e.g. Health and Safety at Work etc. Act 1974, Management of Health and Safety at Work Regulations 1999, Control of Substance Hazardous to Health Regulations 2005 (COSHH), the Dangerous Substance and Explosive Atmospheres Regulations 2002 (DSEAR).

In some situations, we feel that those responsible for the design of accommodation or management of premises are not fully aware of either the legislation or the importance of compliance

In general, chemicals should be kept in a dedicated indoor store, preferably accessed from the main prep room but if not then conveniently close to it. This arrangement increases security and reduces manual handling problems. Such internal stores should be large enough to allow the separation of incompatible substances. It is not necessary to have an additional outside store since these can be a security risk and often results in manual handling issues. The only reason for having an outside flammable store would be if you had in excess of 50 l of flammable liquids a situation which should not arise. If flammables are to be stored, a risk assessment under DSEAR should be carried out to assess whether an explosive atmosphere could develop. This will determine whether spark-proof electrical fittings are required - a situation which rarely occurs in the school environment. In any event, the storage of flammable materials must be approved by the local fire prevention officer and internal chemical stores should have a fire resistance of at least half an hour.

To date, the majority of the issues that we have encountered have been around the ventilation and temperature of chemical stores. All chemical stores should be well ventilated to the outside either by mechanical (e.g. electrical fan) or natural means (e.g. top and bottom venting through air bricks in external walls) and protected from frost. Siting the store on an outside wall can be an advantage and when suitable is certainly the easiest and most cost effective way to ventilate chemical stores. It is not necessary to have full air conditioning. Windows are not recommended as these present security problems and can expose chemicals to direct sunlight which is undesirable.

Unless the chemical store is used for dispensing chemicals then a ventilation rate of 2 room changes per hour should be sufficient.

To achieve this by mechanical ventilation, it is necessary to have a way of allowing 'fresh air to be drawn into the store. This is often done by having an 'in vent' low down in the door to the store. To ensure the system is efficient the extraction fan should be place high, usually in the ceiling, as far as possible from the 'in vent'. It is also important that it is unobstructed. Unless a risk assessment under DSEAR suggests that an explosive atmosphere may develop, non-sparking fans are not needed.

Mechanical ventilation should be controlled by a separate switch, not linked to the lighting, outside the chemical store. If it is required to have a time switch, to come on for a certain period every hour for instance, there should also be a manual override.

It comes as a surprise to most people that there is no specific legislation that refers to temperature in a chemical store. It is good practice to keep chemicals relatively cool and the HSE expects employers to adopt 'good practice' when there is no specific legislation. We would recommend around 15-20°C, but temperatures in the low to mid 20s are acceptable. The issue of temperature is, however, covered indirectly. As temperature increases, volatilisation of susceptible substances, particularly organics, increases. This leads to a greater concentration of these chemicals in the atmosphere, which is covered by COSHH and DSEAR (as mentioned above). While a higher temperature will lead to shorter shelf lives for chemicals, provided the ventilation is sufficient to cope with the vapours, this is not a health and safety issue.

It is important that decisions regarding the specification and location of a chemical store are made early in the design process: remedial works after construction has finished can be very expensive.

More details around the storage of chemicals in schools can be found in a SSERC document on laboratory design, which can be downloaded here www.sserc.org.uk/images/Chemistry/misc%20documents/SSERC_Lab_Design_Draft.pdf.

Microbiology for teachers - a new course

For many years we have been running the *Level 3 Safety in Microbiology* course which is SQA accredited and which involves delegates being assessed both in practical techniques and in a formal written assessment. While it is essential for someone in school to be trained to Level 3 in this way, it is not essential for teachers to have this level of training in order to deliver the vast majority of microbiology that is in the curriculum.

Biology teachers come from a wide range of academic backgrounds with a wide range of skills and interests. We feel that it would be beneficial for teachers with little or no prior experience of microbiology to undertake a course which allows them to acquire and practise aseptic technique and various other skills required to support the delivery of microbiology in their classrooms without the detail of Level 3 supporting tasks and assessment.

There is a long waiting list for the limited number of places on the *Level 3 Safety in Microbiology* course. While it is useful for teachers to have undertaken this course, in most cases it is often best if the school has a technician trained to Level 3 because in practice the preparation of media, sub-culturing and safe disposal of contaminated materials will be done by technical support staff.

We are proposing to run a residential two-day course for teachers with Day 1 covering risk assessment, levels of work, the Microbiology Code of Practice, aseptic technique, sub-culturing technique, and dealing safely with spills. During this time teachers will also be made aware of the Level 3 tasks that are required of their technical support staff. The focus of Day 2 will be on microbiology in the curriculum and give teachers the opportunity to try some practical work suitable for Higher and Advanced Higher as well as some simple activities for BGE. The first running of this course will be 29-30 September 2016 and further details are available on the SSERC website - see http://www.sserc.org.uk/index.php/cpd-sserc/cpd-courses-sserc34/4038-microbiology-for-teachers.