

Safety in microbiology - advice on training requirements

As part of its role as a shared local authority service, SSERC provides advice and guidance on the safe use of microorganisms to all Scottish local authority schools and to member independent schools and colleges. SSERC's advice on safe working with microorganisms comprises:

- a code of practice, *Safety in Microbiology - A Code of Practice for Scottish Schools and Colleges* [1];
- a set of instruction sheets, *Microbiological Techniques* [2];
- a training course, *Safety in Microbiology for Schools* [3];
- an advice and information consultancy service, by telephone or email [4].

SSERC can only provide advice and guidance on health and safety; it is the responsibility of the employer to decide on health and safety policy and its management including the training of staff. Central to staff training requirements are the three levels of working with microorganisms. The three levels are defined according to the risks which they present and the skills, laboratory practices and specialist knowledge about microorganisms required to control these risks. The level of work with microorganisms that a teacher or technician may undertake will be limited by the training the teacher or technician has undergone.

Most school microbiological laboratory work carried out by learners will be at levels 1 and 2, although students in the senior phase may carry out particular level 3 tasks associated with specific protocols or Advanced Higher Biology Project work.

Staff trained to level 3 are required to prepare for and to support level 2 microbiological laboratory work in schools and to supervise students who carry out level 3 tasks. For level 3 work teachers and technicians should be thoroughly trained and skilled in aseptic technique. A competence based training course such as *Safety in Microbiology for Schools* should provide the necessary skills, laboratory practice and specialist knowledge.

Level 3 tasks required to support microbiological work in schools:

- a) order, receipt, labelling and storage of cultures;
- b) preparation of sterile media and sterile equipment;
- c) preparing sub cultures for class use;
- d) sampling from bioreactors;
- e) sterilisation and disposal of cultures;
- f) sterilisation of used equipment;
- g) management of incidents of spillage;
- h) staining of incubated plates (e.g. starch agar).

For level 2 work with learners, science teachers may require training and some supervision which can be provided by a knowledgeable biology teacher or technician or by a short in-school training session. The SSERC instruction sheets *Microbiological Techniques* should be a useful resource in such training as will reference to and familiarity with the code of practice *Safety in Microbiology*. Even although it is not an absolute requirement, teachers may prefer and feel more confident in managing level 2 laboratory class work if they are trained to level 3.

Level 2 work does not require the same level of skills as level 3 as it involves:

- a) a limited range of microorganisms;
- b) a limited range of inoculation and transfer techniques;
- c) inoculated cultures remaining unopened;
- d) knowledge of how spillages are to be dealt with.

For level 1 work with learners, teachers do not require specialist microbiological training beyond normal good school science laboratory practice.

Work at level 1 involves:

- a) microorganisms with little, if any, risk;
- b) good domestic hygiene measures;
- c) observing microorganisms in the closed containers in which they were grown.

Health & Safety

From time to time SSERC receives enquiries on policy decisions for microbiological training of staff. Decisions on training for teachers and technicians are a matter for the employer; SSERC can only offer advice. To operate within the code of practice *Safety in Microbiology* school technicians who are preparing and disposing of materials for level 2 work must be trained to level 3. Although there is no absolute requirement for teachers to be trained to level 3 the advantages of doing so are:

- they can supervise students carrying out some level 3 tasks;
- they can support and supervise colleagues who teach level 2 microbiological work;
- they can assist or lead in establishing good microbiological practice in school;
- they become more confident practitioners as a result of extending their professional learning.

In deciding a policy for the microbiological training of staff an employer will require sufficient staff trained to level 3 to prepare and manage materials for class use, sterilise and dispose of used materials and to manage

any incidents of spillage. Although these tasks will largely be carried out by technicians it makes sense and it is good practice to also have teachers trained to level 3 to assist in management decisions related to the school's microbiological practice and to allow teaching where students may be engaged in level 3 tasks or to deal with spillage incidents. It is for the employer to decide upon the number of staff to have trained. Practice varies from one trained technician per school to all school technicians and all biology teachers in a school being trained.

References

- [1] Safety in Microbiology - A Code of Practice for Scottish Schools and Colleges (2012), SSERC www.sserc.org.uk.
- [2] www.sserc.org.uk/index.php/biology-2/biology-resources/microbiological-techniques265.
- [3] www.sserc.org.uk/index.php/cpd-sserc/cpd-courses-sserc.
- [4] www.sserc.org.uk/index.php/contact-us.

Health & Safety

Gas masks and Brodie helmets

This could be one to share with colleagues elsewhere in your school. The Health and Safety Executive (HSE) has found that most Second World War gas masks contain asbestos, often in the more dangerous blue form. There is no easy way of determining whether or not a gas mask does contain asbestos, so the following advice is given:

- Children and teachers should not handle gas masks;
- If you have gas masks in school, they should be double bagged and sealed with tape, labelled and securely stored;
- Disposal should be at a local authority licensed site. Alternatively, a licensed contractor can be employed to make the artefact safe for display.
- The majority of World War One "Brodie" helmets have also been found to contain asbestos. They should be treated in the same way as outlined above.
- Replica gas masks and helmets that do not contain asbestos are available.



For more information about asbestos, visit the HSE's website [1].

Reference

- [1] www.hse.gov.uk/asbestos/index.htm (accessed June 2014).