SEPTEMBER 2020

Bulletin 271 Health & Safety

There's no place like home

The COVID-19 situation has brought the issue of carrying out practical work in and around the home to the fore but it's not just a global pandemic that might prompt out-of-school practicals. Other scenarios include fire damage to a school building, prolonged severe weather or the extended absence of an individual.

A school technology room or science lab is certainly not a 'place like home'. It is a closely supervised environment with a number of safety features built in. Those supervising are highly trained. There is obviously no guarantee that this situation exists in the average home. Risk assessments for school practical work will have to be reviewed to determine whether additional control measures are needed in the home, or indeed whether the activity is entirely unsuitable for the home environment. Be particularly aware that an activity that is viewed as low risk in a school may require additional control measures to reduce the risk to the same level in a home setting.

Factors to take into account when reviewing risk assessments

Does the activity require PPE?
If so, then it almost certainly should not be carried out at home by younger students. PPE is usually the least favoured option in industrial environments because it requires people to be responsible enough to wear it. In schools, the level of supervision is such that we can rely on PPE for protection. That level of supervision will not necessarily exist at home.

Does the activity involve equipment or materials that require special storage?
If so, the activity should not be carried out at home, but bear in mind that small quantities of materials may be safe enough.


Image: Julia M Cameron / Pexels.com

How will kit be transported home?
It would not be appropriate for students to transport craft knives home, for example. If chemicals are to be used, can they be transported safely? >>

Other topics

Consider younger siblings and cognitively-impaired adults
The materials may be safe enough for use by the student, but what about others in the household who may have access to them? Please see the section on Parent/Carer Involvement.

Environmental considerations
Are any of the materials or products harmful to the environment. If so, how will they be recycled or disposed of?

Don't make assumptions regarding the safety of equipment/material already in the home
There are plenty of things on supermarket shelves that are not considered safe for use by children, even when supervised - dual voltage hair dryers, dishwasher tablets etc.

Something doesn't suddenly become dangerous just because it's used in the context of an experiment
Children put vinegar on their chips without resorting to PPE. There is no need for them to wear it when experimenting with small quantities of vinegar. Nobody wears safety glasses when making a coffee.

Results of risk assessment

There are three possible scenarios:

- The activity can go ahead - no control measures are required. This would be the case, for example, if only tools such as scissors were being used, or chemicals such as sugar or salt.
- The activity can go ahead provided certain control measures are in place.
- The activity is not suitable for home.

Parent/Carer involvement

If an activity requires control measures, parents and carers should be informed in advance and their active consent sought. We do not recommend that you send a 'five steps' (as was) risk assessment form home. Simply describe the equipment being sent home and the purpose of the activity. List any hazards. Bullet-point the control measures. It is probably best not to use the phrase 'control measures' as it will not be familiar to many people. 'Safety instructions' is fine. The parent or carer can then decide if the activity can be carried out. Point out to the parent that the activity has been assessed as appropriate for the pupil if they follow safety instructions. Materials supplied are not necessarily suitable for use by other members of the household, for example younger siblings, adults with dementia. One of our correspondents pointed out that the presence of pets could be a factor.


Image: Julia M Cameron / Pexels.com

Making activities safer

This practice is already widespread in practical science and technology. We use small quantities of chemicals in low concentrations where possible and low voltages for experiments involving electricity. These measures can slow down processes, but that may not be an issue for a pupil working at their own pace at home.

Packing and transporting material

The factors to consider here are fairly obvious:

- Use containers that will not break.
- Protect sharp points, e.g. using a cork.
- Use tape over the ends of batteries to avoid shorting.
- Label individual containers and apply any necessary warning symbols.

In the case of a pandemic, material can be wiped with sanitiser. Alternatively, it can be bagged and left to quarantine for 72 hours before being distributed to pupils. A zip-lock bag containing the materials for the activity and instructions could be used. Equipment which has been returned can be left in a tub and quarantined for 72 hours.

In summary

If you propose that pupils carry out practical work at home:

- Review risk assessments.
- Liaise with parents and carers if control measures are necessary for significant hazards.

Keep it clean!

It is likely that enhanced hygiene measures will be with us for some time to come. Your employer will have risk-assessed your school situation and put in place a policy. Health and safety law says that you must follow your employer's guidance and nothing in the following article should lead you to think, "I don't need to do that because it's not part of SSERC's guidance." Rather, what we're saying is that if your employer tells you to do X, this is how you might comply in a practical setting.

We will discuss at the following topics:
- Hand hygiene
- Equipment
- Work surfaces
- PPE

Hand hygiene

This is first on our list for a reason as it is the most important of all the likely control measures in a school, and will probably be 'last person standing' as restrictions are gradually removed. Soap and warm water is best for hand washing but could be difficult to implement in a classroom that has anything approaching normal occupancy. Even if a lab or workshop has a number of sinks, it is likely that only one of them has warm water. There are ways round this, and we elaborate in our online document [1] but it is likely that hand sanitiser will be seen as a more practical solution if the class is full. The school may decide to issue each pupil with their own sanitiser, or sanitising stations may be set up in individual classrooms or at work stations. Note that students with dirty or greasy hands should still use soap and water. There is no problem with students sharing a sanitiser dispenser - they will be cleaning their hands immediately after using it.

Alcohol-based or alcohol-free? If you use a sanitiser with at least 60% alcohol it will be effective. Some alcohol-free sanitisers are also effective but buyers will have to check whether or not a particular alcohol-free product is suitable.

If alcohol-based hand sanitisers are used, the bottles should be kept well away from any sources of ignition and no naked flames should be used for several minutes to avoid possible ignition and burns.

Equipment

It is possible that infection levels will be low enough that only good hand hygiene will be required in the lab or workshop. If this is not the case and your employer requires you to minimise the risk of transmission that might occur through sharing equipment, there are two approaches to consider. Equipment can be cleaned with a suitable wipe after each use. This is likely to be relatively straightforward for items such as power supplies, hand tools and so forth, but less so for fiddly items such as crocodile clips and connecting leads. Flammable sprays should, of course, never be used where there is any chance of ignition. Glassware used for chemistry experiments should be cleaned between uses anyway so no additional measures are required. Normal dishwashing either manually or in a dishwasher will be sufficient.

Rather than being wiped down, equipment could be quarantined. 72 hours is the recommended period. It would be a rare practical department that could operate with anything approaching normality if swathes of equipment were unavailable for three days at a time, but this might be a suitable approach for the aforementioned 'fiddly' items.

Note that computer keyboards and even touch screens have been shown to operate effectively even when covered by a layer of cling film.

Work surfaces

Your school will have a policy on cleaning of desks and lab and workshop benches will be covered by this. It may be that a daily clean will be seen as sufficient if case numbers are low and good hand hygiene is observed. Do not worry if benches are old and gouged - we have assessed the additional risk to be small. Correspondents have asked whether giving each pupil a large sheet of paper to cover their work area at the beginning of a lesson, with it being disposed of at the end of class, is suitably safe. It is, but we would query whether it was any less time consuming or costly than wiping down between lessons.

>>

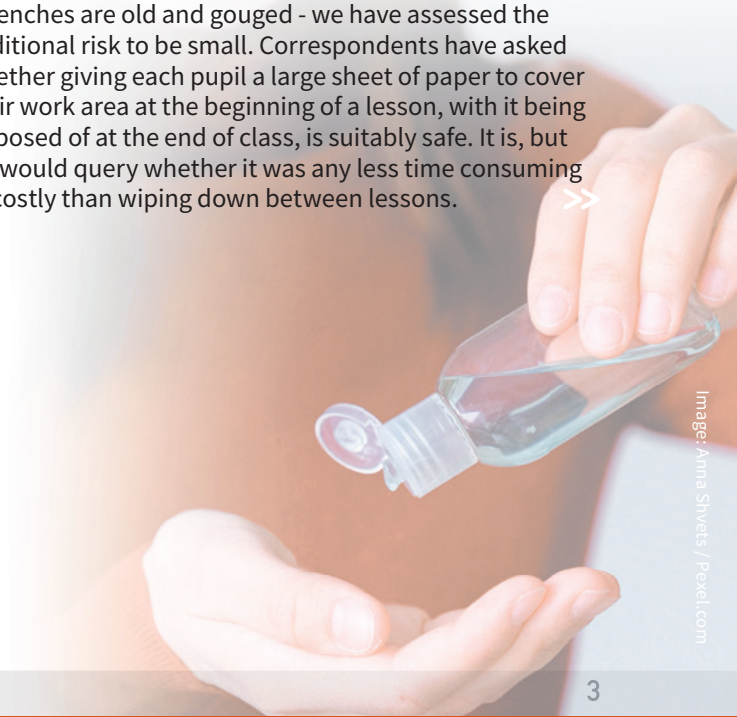

Image: Anna Shvets / Pexel.com

PPE

Our online guidance document [1] discusses all relevant PPE and suggests suitable sterilising solutions. Here we will focus on eye protection. Sharing an item of eye protection between learners, be it a pair of safety glasses, indirect vent goggles or a face shield, should not happen unless the equipment is sanitised between wearers. As with hand-washing, this is a control measure that is likely to outlast most others. In an ideal world, every learner would have their own eye protection, labelled and kept in school. This is not a scenario that is likely to be commonplace. Indirect vent goggles with elasticated straps are the most problematic. The only really effective way is to fully immerse them in sterilising solution for 15 minutes, rinse them and allow to dry.

The real problem here is with the straps taking time to dry. A solution that will work for some designs at least is to make a strap for each learner using elastic and two bulldog clips. The straps are kept (separately) for each learner and the facepieces can be cleaned and dried more rapidly (or with an antiviral wipe). Details can be found here [2].

Having said that, indirect vent goggles are only required for activities involving corrosives and toxic chemicals. Safety glasses are fine for many activities and whilst the procedure for sterilising goggles is also appropriate for safety glasses, the latter could also be cleaned with an antiviral wipe and left to dry. If eye protection is used only infrequently, a 72 hour quarantine regime could be employed.

The above issues can be mitigated to an extent in some cases by changing the experiments, reducing concentrations for instance, such that eye protection is no longer needed.

Teachers should have their own set of PPE. This can be sterilised at the end of the day and left to dry overnight. <<

References

[1] **More guidance:** The coronavirus situation is fluid - for the most up to date SSERC guidance, please go to https://www.sserc.org.uk/health-safety/covid-19-back-to-school/. The guidance there is also more comprehensive. Please do not hesitate to get in touch (enquiries@sserc.scot) if you have any questions about issues raised in this article.

[2] https://www.sserc.org.uk/wp-content/uploads/2020/09/Eye-Protection-and-Practical-Work.docx.

Storage of hand sanitisers

Understandably, hand sanitiser fluid is much in evidence these days. Equally understandable, employers are keen to buy in bulk to reduce the costs.

There is, however, a problem with this strategy that seems to have been overlooked, that of storage.

The law is clear. Under DSEAR (the Dangerous Substances and Explosive Atmospheres Regulations) flammable substances in the workplace (including sanitiser) must be stored suitably. This means either in a flammable cabinet or (preferably) in a suitably constructed flammable store. Most chemical stores (if constructed according to our guidance) do meet these requirements even though they usually have cabinets in as well.

Containers placed around the school are exempt from this as they are classed as 'out for use'. But larger quantities can pose a problem - we recently heard from a school that had a delivery of 1750 litres!

This is a matter that employers will need to consider, ideally before the purchase of large quantities of sanitiser. <<

SSERC self-study courses

In the latter part of 2019, SSERC tried out what for the organisation was a new type of professional learning – the self-study course. Strictly speaking, the format was not wholly new as optional self-study modules were incorporated in the last round of our physics Blended Learning course.

The difference this time was that our Optical Radiation Safety course was entirely stand-alone. Optical radiation was chosen as, while it is an essential topic with significant safety issues to consider, we felt that it would not be a priority for schools when it came to releasing staff or paying for a face-to-face course. No charge was levied for the self-study course. The structure of this professional learning initiative was as follows:

- Interested teachers and technicians applied for the course in the usual way.
- Successful applicants were sent links to a course folder that contained a course guide, documents on the safe use of optical radiation, a series of self-check quizzes and corresponding answers.
- Contact details of a course tutor were given.

Participants were directed to read a section of the safety documentation, attempt a quiz, then check their answers. Once the entire documentation had been read and self-assessed, they carried out an assignment. They were required to perform an experiment and list the control measures they put in place. Assignments were sent to the named tutor who would often engage in a dialogue with the course 'attendee'.

The pilot was well-received, and a further self-study course was scheduled for development in session 2020/2021.

Along came coronavirus.

Our response was two-fold:

1) We had begun a second run of the Optical Radiation Safety course, but it was clear that staff would have little or no access to labs and equipment. Hence, our first action was to alter the requirements for the assignment, making it necessary only to describe an activity that could be done in school and to list the control measures that, were you able to carry out the activity, you would put in place.
2) Secondly, we fast-tracked the development of two more physics safety courses and modified one of the Blended Learning self-study units in order to make it generally available. For the first time in over a decade, the Physics Teacher Summer School that we run jointly with the Institute of Physics (IOP) in Scotland had to be cancelled. Undeterred, our IOP Scotland partners gave us funding to supply equipment for a further two courses to support a Virtual Summer School initiative.

Feedback indicates that this support has been valued by the profession. The following quotes are typical:

"This course has been a really good way for myself and my team to do some very constructive work while the world has gone a bit crazy so thank you."

"...thoroughly enjoying all the content being provided online via SSERC and the IOP. Feeling very supported and valued."

To find out more about our self-study health & safety [1] and self-study Physics [2] courses, please visit our website.

<<

References

[1] https://www.sserc.org.uk/professional-learning/secondary-clpl/health-safety-clpl/.

[2] https://www.sserc.org.uk/professional-learning/secondary-clpl/physics-clpl/.

The SSERC Bulletin is published by SSERC 1-3 Pitreavie Court South Pitreavie Business Park Dunfermline KY11 8UU
Managing Editor: Alastair MacGregor Telephone 01383 626070 enquiries@sserc.scot www.sserc.scot