

GL343 – CLEAPSS Guide to doing practical work in a partially reopened school – Science – Ver. 1.14 – 10th July 2020

The below guidance is additional to all standard operating procedures across your school, any guidance from your employer and CLEAPSS Guidance in general. This guide is based on guidance from the UK Government and Public Health England. It is designed for use during the Summer Term 2020, it does not relate to new DfE guidance released about schools returning in September. CLEAPSS will issue updated guidance relating to the return in September guidance, later this term.

For details of changes to this guide please refer to the last page which lists all changes made.

Practical work can happen but the following will need to be taken into account, as well as all normal planning and risk assessment judgements. The following is a list of things that teachers, technicians and heads of department will need to consider when reviewing a return to carrying out practical work in Science.

- **Entry into the lab:**

If you have been given guidance by your school on entry into classrooms you should follow this. If you haven't been given specific guidance then you can follow the procedure suggested below.

To help with distancing and access to the lab, corridors should be marked with safe waiting spaces, as in queuing systems at supermarkets. Queuing into the lab will need close supervision of pupils. Each space leading to a lab should be 2m apart and marked with a number (starting at no.1 furthest from the door); the number of spaces should correspond to the number of workstations in the lab (see next point). Copies of the seating plan showing the position of the workstations and the maximum number of pupils permitted in the lab should be displayed on the lab door and around the waiting area. As pupils arrive at the lab they should wait at a space until they can be admitted to the room. Under the direction of the teacher, pupils will enter the lab individually and make their way to their workplace.

- **Maximum number of pupils per lab:**

This will need to be measured and judged for each lab. In a normal sized lab (83-90m²) you can expect to fit anywhere between 7 – 12 pupils and still maintain the 2m safe zone.

An easy way to set this out in labs is to make a cross out of 4 metre rulers joined in the middle (see appendix 1 for photo and example layouts). Then by marking on benches and the floor ('duct' tape is useful for this), you can assign workstations within the lab. Take care to ensure you align the crosses to meet the 2m distance. Once this is done you can soon see how many pupils the lab will safely hold with the pupils roughly staying in their allocated seat. If your lab has moveable tables you can experiment with different configurations to ensure the best layout.

Movement around the lab will need planning in advance, things to consider eg, the locations of the door, sinks & emergency equipment and routes between these workstations and teacher's bench; ability of the teacher to supervise work effectively; ability of the teacher to respond to an emergency; procedures to summon help if needed and procedures if pupils need to leave the room during a lesson. Pupils will have to be reminded that they need to stay in the middle of their allocated workstation to ensure the 2m spacing is adhered to.

Clearly label each workstation with a number, no.1 being furthest from the entry point, no.2 the next furthest and so on ending with the workstation closest to the entry point.

Remember to assign a teacher workstation as well !

The same will need to be done for any prep rooms. Chemical and other stores should only be used by one person at a time (most can only accommodate one person at a time!).

Managing practical activities

- The Head of Department and Lead/Senior Technician will need to work together to ensure that there is adequate staff coverage, particularly if the level of staffing will change and/or new/different/non-science staff will be involved. Practical lessons will take longer than normal to complete, so bear this in mind if your school has short lessons.
- Teachers will have to plan and take into account requirements for each practical (e.g available equipment) and decide whether it can be safely managed as a class activity (pupils working individually not in groups) or a demo. Long and complex multi-step practicals should be avoided apart from with very experienced pupils. Integrated instruction sheets as developed by many educators are very useful for these types of lessons. Microscale is also very good for these situations, by reducing space and equipment required. This link gives more [CLEAPSS microscale resources](#) and this Royal Society of Chemistry article for more info about integrated instructions : <https://edu.rsc.org/feature/improving-practical-work-with-integrated-instructions/3009798.article>
- With reduced class sizes schools should have enough equipment to allow pupils to work individually. This may mean some practicals may take longer to complete, but time can be saved by having reagents pre-weighed or measured. Pupils can also share their data after the practical if required.
- Practical equipment will need to be setup at the pupil stations. This must be done before the lesson, by one, maybe two, members of staff who follow social distancing rules at all times. There must be time allocated at the start and end of lesson for setting up/clearing up. Equipment ready setup in trays will help speed up setup and clearing away, plus they will contain any spills.
- To avoid pupil movement to sinks, where needed waste should be placed into a suitably sized container for collection at the end of the practical. If water is required for the practical then this should be provided as part of the equipment. Practical which require the pupils to make use of sinks, will likely need a different seating plan. Note you don't need a sink & tap for distillation or vacuum filtration - see CLEAPSS [Guide GL191](#).
- Once the practical has finished, pupils should tidy up their equipment, wash their hands using alcohol free hand sanitiser and then leave the lab in an orderly fashion similar to their arrival into the lab. Then the teachers / technician can clear away equipment used.
- Once cleared the bench / pupil work station can then be used for written work. The timings for this will need to be carefully coordinated across the department.
- Microscopes; eye pieces should be wiped with a non-alcohol based sanitiser wipe, before AND after use ideally by the user. Eye pieces must NOT be immersed in sanitising solutions as this could damage the eye piece.
- Benches will need cleaning as per guidelines for all classrooms in the rest of your school.
- Practical which require the use of a fume cupboard will require careful planning. Demonstrations in fume cupboards will have to follow the same rules as per normal demonstrations already covered elsewhere in this guide. Where pupils need to use a fume cupboard, the 2m rule will still apply, and the lab spacing layout will need to be adjusted to take account of this.
- Practical equipment used will not require any additional cleaning, though users should be reminded to regularly wash their hands with alcohol free hand sanitiser. Pupils will likely need regular reminders as to when to do this.
- Clearly demos cannot involve pupils crowding around the front bench, however they will still be needed for many experiments. They can still be done by making use of data projectors and digital cameras / visualizers to project what is being demonstrated. Teachers will need to practice beforehand if they are not already experienced in using this equipment.

- Teachers must keep their distance when observing the pupils as they work through the practical activity. This may raise H&S concerns, as well as issues around the competency of the pupil to carry out the task without the intervention of the teacher. The teacher should risk assess the activity prior to the session, and take into consideration the competency of the pupils.
- **Maintaining social distancing in lessons will require pupils to work with staff and to follow a number of new rules. Where the teacher doubts that this will succeed, they should consider stopping practical work, and having pupils work on theory exercises, or on activities that can be carried out without breaking social distancing rules.**
- Practical activities in non-lab settings; some schools may be planning alternative room and lesson timetables which may mean Science lessons are happening in rooms others than labs. In these cases traditional practical work MUST only take place when the class is in a Science lab. Teachers must NOT be tempted to carry out practical lessons or demonstrations when teaching in a non-lab environment.

Inadvisable practical activities

CLEAPSS believes that by following the advice in this guide the overwhelming majority of science practical activities can be carried out safely albeit with very strict controls in place.

However, given the continued uncertainty around the rate of infection in the general population and the rapidly developing understanding of COVID-19 and its pathology it would be prudent, as a precautionary measure, **not** to attempt the following practical activities :

- Cheek cell sampling
- Lung volume / capacity & other breathing based activities
- Activities which make use of saliva
- Activities which make use of straws or other equipment for blowing through e.g. blowing through lime water or using a musical instrument which you blow into to create a sound

Once the rate of infection has reduced and/or when more is known about the virus it is likely that these activities will once again be able to be carried out safely.

We will of course be regularly reviewing this advice in line with changes to government guidance, so please do check for updates.

Technical support

The following will need to be considered as part of the planning by technicians, teachers and the Head of Department

- Preparation and clearing up time will inevitably be longer and will need to be closely monitored as technicians will need much more time to manage both parts.
- Setting up time – As a technician can only do one lesson at a time, thought must be given to managing setting up vs number of technicians if time is limited, see next point.
- If labs are being used at other times e.g. for theory work then this could impinge on availability of set up time.
- Social distancing within a prep room may mean only one tech can work in it, which could affect how much prep can be done, the prep room could overflow into an empty lab if there is one available , see previous point.

- PPE (Personal Protective Equipment)

We know many schools have donated all of their PPE to the NHS. You can expect demand for PPE to be very high, so it will take time and money to restock supplies.

- Eye protection - teachers should not attempt practicals where eye protection is required but is not available in school. This may initially limit the practical work that schools can do.
- Where schools have stocks of suitable safety specs and goggles, these will need sanitising before and after **EVERY** use.
To sanitise eye protection they should be fully immersed in a Milton (or similar 'own brand' equivalent) sterilising solution. For those using Milton, follow this [guidance](#) for how to use either the tablets or fluid. For other brands use the guidance from that manufacturer. The eye protection should then be allowed to air dry. Once dry check for any damage and then return to use. Avoid drying with towels as this can lead to scratching the eye protection. We know of some very new UV based sanitising units, but we do not recommend the use of these, as their effectiveness has yet to be fully proven. We advise against the use of Virkon or other 'industrial' sanitisers as the effects of them on eye protection is unknown at this stage.
- Pupils should be reminded to wash their hands with alcohol free hand sanitiser before putting on eye protection.
- Gloves – The routine use of gloves by pupils doing practical work is not necessary, in fact it is rare that they are actually required. However where we advise the use of gloves then the correct type should be worn, and they must NOT be shared.
- Staff will also need access to their own PPE, each member of staff should have personal eye protection and should be provided with non alcohol based antiseptic wipes for cleaning through the day. At the end of the day the eye protection used should be sanitised, see above guidance on how to do this.
- When leaving the lab, pupils should place their used PPE in a washing up bowl of Milton (or similar 'own brand' equivalent) sterilising solution (have enough of this solution to cover all PPE). This then starts the sanitising process.

Note: since lab coats are not PPE they are not required for practical work, although we wouldn't advise against anyone wearing their own lab coat if they wish to do so. Shared or department based lab coats should be removed from use.

Hand sanitiser

Ideally, each pupil should be provided with a personal bottle of alcohol free hand sanitiser by the school, which they can use to clean their hands before and after practical work. If this is not possible, alcohol free hand sanitiser should be provided in each practical working station. Different brands of hand sanitiser may have different required hand washing times, so the instructions should be checked and adhered to.

Please take the below into account when choosing your hand sanitiser :-

1. Alcohol based hand gels are a real fire risk in labs and thus should not be used in science labs / lessons.
2. Schools must not make their own gels as the chemicals schools have or are able to buy are not safe for use on the skin, nor are school labs designed or clean enough to produce cleaning products for the skin.
3. Schools who are dispensing hand sanitiser from large bulk containers to smaller ones, must label the small containers with similar labelling as the bulk container, to ensure the user is aware of any hazards it may present. This should also include any instructions on how to use the hand sanitiser.

- Dealing with an emergency

- If there is a small spill then this will need clearing up, possibly by the pupil (though they may need some guidance in this). Therefore a small amount of paper towels or kitchen roll should be provided for this purpose. Larger spills will need to be cleared up by staff, in these cases pupils should be evacuated from the room in an orderly fashion as you would at the end of a lesson, and then the spill can be dealt with.
- Chemicals spilt on the skin / hands – these should be washed off with lots of water as normal and **not** with hand sanitizer. Refer to [E-cards](#) for more information on this.
- It is essential that you do not delay responding to any casualty. In some cases, the casualty may be able to deal with her/himself under your instruction. However, when close contact is needed, staff may ‘break’ the 2m exclusion zone to provide IRM (immediate remedial measures). See <https://blog.redcrossfirstaidtraining.co.uk/what-can-i-do-as-a-first-aider-at-work-or-in-public-during-the-coronavirus-outbreak?>
- Staff who are designated and currently trained as first aiders should consult their training provider for the latest guidance on what PPE / changes to first aid practice are now in place. Please note CLEAPSS does not provide first aid training, therefore we are **not** able answer these questions.
- Staff will need the following in each lab used for practical work, stored near the eye wash station, to be worn if they need to administer IRM. This should be worn properly, and care taken when taking them off. Wash hands **immediately and thoroughly** after removing any of this PPE.
 - Disposable gloves, a fluid-resistant face mask (FRSM Type IIR), disposable plastic apron and disposable eye protection (face shield, safety specs or goggles), paper towels, plastic bags for the disposal of used equipment and for any contaminated clothing. The used PPE should be removed and stored in a bag, labeled as ‘potentially contaminated’ and then this should be either laundered or disposed of appropriately (store for 72 hrs and then place in normal non-recycling waste).

These items should be stored in a clear sealed bag, marked for emergency use only. A set should be located in **every** lab.

Face Masks / Face Coverings

- These are not traditional PPE, but coverings to try prevent the spread of COVID-19. You will need to follow any school and/or government advice on the wearing of face masks / face coverings, this should include guidance on the disposal of any discarded masks. These could be homemade or bought ones, you will need to apply common sense & strict hygiene rules over the use of these, and you should have spare ones to hand. For more details on these items see this [government advice on face masks / coverings](#). Please note that homemade masks and most likely bought masks won’t be of the correct specification to be used as PPE in science, CLEAPSS has further guidance on the use of face masks in [Guide GL310](#)

- Labs

- Refer to CLEAPSS [Guide GL345](#) for more details about what checks you should make when reopening your science department labs.
- All working spaces should have as much ventilation as is reasonably practical to ensure as much natural air supply as possible.
- Some schools may have non-science lessons happening in science labs. This raises a number of H&S concerns, these are further covered in CLEAPSS [Guide PS082](#).

All of the above presumes the pupils are well trained in following the now normal social norms of following the safe 2m rules, that would need to be followed in all lessons.

If schools and colleges which are members of CLEAPSS have further questions about this please make use of our Helpline - <https://science.cleapss.org.uk/helpline/>

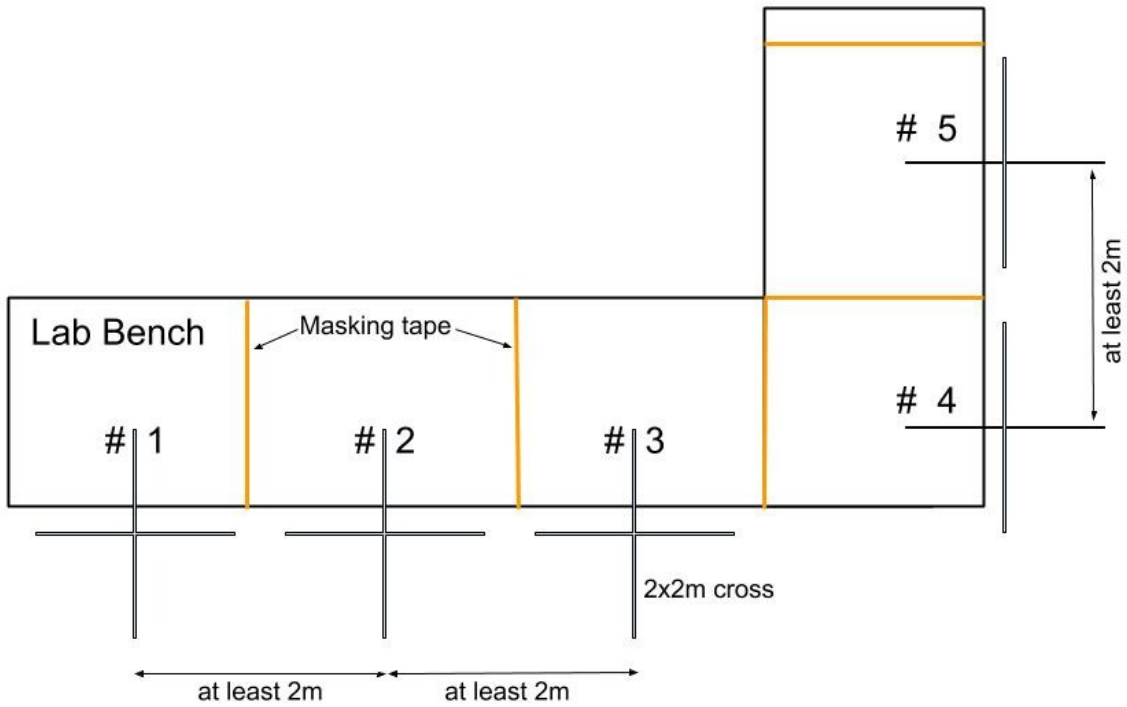
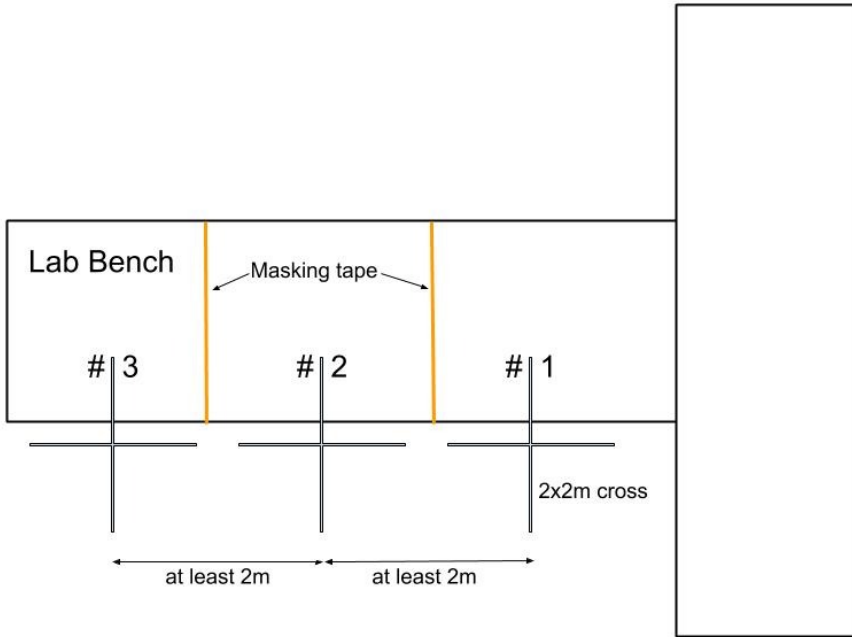
Appendix 1

2 m measuring device

Each 'arm' of the structure is 1 m long measured from the centre of the cross.



Two examples of how a layout could work in labs



Revisions list

Version 1.1 (12th May) changes :-

- Added option to use 'own brand' equivalent for Milton tablets / fluid
- Added bag & disposal of used emergency PPE details
- Added info about and link to Microscale resources
- Added two diagram examples of what room layouts could be like
- Added details about how to deal with chemicals on the hand / skin emergencies

Version 1.2 (13th May) changes :-

- Added details about not using Virkon when cleaning PPE
- Added detail about trained first aiders and checking for new guidance
- Added detail about wiping down microscope eye pieces
- Added detail about the need for pupils to stay in the middle of their allocated workstation
- Added link to guidance from Milton on how to use Milton against COVID-19
- Added detail about need for good ventilation
- Added link to Helpline

Version 1.3 (14th May) changes :-

- Corrected typo error in section about entering the lab

Version 1.4 (18th May) changes :-

- Added detail that hand washing before putting eye protection on should be with alcohol free hand sanitizer
- Added detail about using alcohol free hand sanitiser during practical work and using equipment.
- Added detail about wearing, removing and disposing of IRM PPE
- Added link to our guide to checks you should make of your labs when reopening schools, GL345.
- Various minor wording, typo and grammar corrections made throughout the guide.

Version 1.5 (19th May) changes :-

- Altered details about use of Milton – removed time and now just follow latest Milton guidance on their website.
- Added detail about not sharing gloves
- Added phrase face coverings to face masks section and added link to government website about face coverings.
- Added that each lab should have its own set of IRM PPE.

Version 1.6 (26th May) changes :-

- Added detail about types of hand sanitiser to use / not use.

Version 1.7 (1st June) changes :-

- Added details about use of fume cupboard(s)
- Added section on inadvisable practical activities

Version 1.8 (16th June) changes :-

- Added detail about decanting hand sanitiser

Version 1.9 (24th June) changes :-

- Added details about how practical work must only take place in labs and not in other non-lab environments.
- Added paper towels to kit of PPE to be used

Version 1.10 (26th June) changes :-

- Minor layout changes and corrections

Version 1.11 (3rd July) changes :-

- Added detail about new DfE guidance

Version 1.12 (8th July) changes :-

- Added additional activities to the section on inadvisable practical activities

Version 1.14 (10th July) changes :-

- Added link to guide PS082 - Using laboratories for non-science activities (N.B. There was no version 1.13)