



Supporting practical science & technology
- in schools & colleges

Circulation list: Science and D & T

The Art of Practical Science course: book now!

There are just a few places left! This residential course is ideal for new (or recently qualified) teachers as well as those teaching outside their subject specialism. The 3-day course will provide all participants with hands-on tuition and practice in a wide range of practical techniques across all three sciences.

The activities have been chosen to help with the teaching of Key Stage 3, GCSE and/or post-16 courses and include:

- microbiology, aseptic technique and dissection
- radioactivity and handling radioactive sources
- physics practicals and demonstrations
- chemistry demonstrations and microchemistry
- analytical techniques and gas preparation
- health & safety - a 'practical' update.

The course takes place Monday 14th - Wednesday 16th July 2008 in our own lab here at CLEAPSS on the Brunel Science Park.

Accommodation on campus has been organised for the Monday and Tuesday nights and is included in the course price of £340 which also covers meals and refreshments.

To apply for a place or to go on the reserve list, please contact CLEAPSS on 01895 251496 or email courses@cleapss.org.uk.

New labs? Refurbishment work? Project Faraday

You will recall that the Government has ambitious plans to enable every secondary school in England to be rebuilt or refurbished over the next 15 years. A book containing the *Project Faraday* designs for some new school science facilities has recently been sent to every school in England. CLEAPSS was consulted about these designs and, although they are exciting, we do have some reservations. We are concerned that, in looking to introduce designs that are futuristic and very different, a school may produce a range of interesting rooms but with too few to accommodate whole-class practical work. We are also concerned that preparation and storage facilities may be squeezed.

Since many of you will, now or soon, be considering a redesign of your science facilities it is timely to remind you of the CLEAPSS guide **L14, *Designing and Planning School Laboratories***, which was produced with the needs of practical science firmly at its heart. The guide is on the CLEAPSS Secondary CD-ROM and, because it was part-funded by the DfES (now DCSF), is also freely available to architects, designers, etc., on the CLEAPSS website. In addition, you can find information on prep rooms and storage in guide **L248 *Running a Prep Room*** and the CLEAPSS *Laboratory Handbook*.

New and exciting science facilities will, no doubt, play a part in reviving enthusiasm for science and is something we wholeheartedly support. We would urge you, though, to make sure that all science staff (including technicians) are consulted *throughout* the design and building process, and that you and the designers use the guidance to calculate the number and size of rooms you will need and then plan for at least that. This will enable you to adopt a wide range of new, exciting designs without compromising on the option to support and undertake class practical work, which is what pupils always say they enjoy most about science.

REACH - don't worry!

You may have picked up some news about recently-introduced legislation relating to the use of chemicals. In June 2007, a European Union (EU) regulation came into force concerning the **Registration, Evaluation, Authorisation and restriction of Chemicals - REACH**.

The main aims of **REACH** are to improve the quality and amount of information we have about the chemicals that we use and to improve the protection of human health and the environment. The REACH legislation replaces a large number of existing directives with what will, we hope, be a more streamlined system. REACH places extra responsibility on manufacturers and importers of chemicals for knowing, understanding and managing the risks associated with the use of the chemicals they place on the market. This will be achieved through a **registration** process.

Manufacturers and importers of chemicals need to be aware of how chemicals are used in a wide variety of situations in order to prepare the appropriate registration documentation. Hence, one of the key features of REACH is the transfer of information up and down the supply chain.

CLEAPSS and the Scottish Schools Equipment Research Centre (SSERC), with the support of the Royal Society of Chemistry (RSC) and the Association for Science Education (ASE), have already started working with chemical suppliers to ensure that all relevant information about the use of chemicals for '*teaching and training purposes*' is available to those who need it.

The Health & Safety Executive (HSE) is responsible for managing the key aspects of REACH in the UK and we have also been liaising with them. At this stage, there is nothing that you need to do or need to be worried about. However, CLEAPSS and SSERC may need your help in gathering information and we will let you know if this is the case.

Inevitably, at some stage in the future, a number of chemicals may become difficult to obtain. This may be for economic reasons or because a small number of certain chemicals, those categorised as being '*substances of very high concern*', will become subject to **restrictions** or their use will require **authorisation**. This scenario is still some way off, there are many thousands of chemicals to be processed and the REACH process is likely to be very slow.

We will keep you fully informed about REACH with articles in the Bulletin and updates on our website.

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It's that time of year again ... primary liaison

We receive many *Helpline* calls about this topic. The Summer Term is a popular period for primary-secondary liaison activities and we know that well-organised, well-planned activities can play a significant part in reducing the worries that many pupils have about making the transfer.

For the science department, primary liaison events can provide an excellent opportunity to enthuse prospective pupils about the exciting science experiences that lie ahead of them. However, these events need very careful thought and we are concerned that some schools plan activities that may be inappropriate or unsafe.

Visits by primary schools If primary pupils are visiting you, it is important to remember simple things such as the fact that they may be much smaller than even your present Year 7 pupils. Can the pupils reach the benches? Will they need eye protection and, if so, will it fit? Primary-age children will also have limited manipulative skills and, if you are planning to use Bunsen burners (although we would suggest not), be aware that some may never have seen a naked flame before! The laboratory itself will be an unfamiliar environment.

Visits to primary schools If you are putting on an event at a primary school, think carefully through the implications of not having the usual laboratory facilities to hand.

It is essential that any primary liaison activity, even if it is an experiment or demonstration you have carried out many times before, is fully risk assessed to take account of the changed circumstances.

CLEAPSS would also encourage secondary schools to think objectively about the purpose of the event and to ensure that the chosen activities are appropriate to that purpose. It seems only fair that the primary pupils leave at the end of the day having gained a *realistic* view of what their first year at secondary school may involve. Make sure you don't use all your 'WOW!' experiments and demonstrations - keep those for later.

There are many simple but engaging activities that can be undertaken. Remember that the event may be more meaningful and memorable if the pupils have been involved in activities in which they have had as much hands-on experience as possible.

Guidance leaflet **PS 71** *Primary/secondary liaison in science* provides more detailed information on the key points to consider when planning these events and also includes some hints and tips on where to find great ideas for suitable activities.

... and work experience

It is also during the Summer Term that we are most likely to receive *Helpline* calls about students being allowed to carry out their work experience in a school science prep room.

This is not without significant problems and we would strongly advise that you consult guidance leaflet **PS73** *Work experience in prep rooms* if such a situation is proposed.

Transporting chemicals

Science staff in schools or colleges may be involved in putting on lectures, demonstrations or other practical activities at external venues. Where there is no alternative (such as asking the venue to supply the chemicals or a supplier to deliver them directly to the venue) it may be necessary for the 'presenter' to transport the chemicals him/herself.

CLEAPSS, the Royal Society of Chemistry (RSC) and the Scottish Schools Equipment Research Centre (SSERC) all want to encourage activities that stimulate an interest in chemistry and, with support from the HSE, have produced a booklet designed to provide guidance for those involved in transporting chemicals for these activities.

This booklet, *Transporting chemicals for lecture demonstrations & similar purposes*, was published by the RSC in January this year.

The full booklet can be accessed on the RSC website at www.rsc.org/ConferencesAndEvents/RSCEvents/RiskAssessment.asp SSERC has produced a wider guidance document which is available on their website at www.sserc.org.uk

All change at SAPS

Following our note in last term's *Bulletin*, the Science and Plants for Schools (SAPS) website has been reorganised and there is a very good search facility to help you find interesting ideas and instructions for experiments. www-saps.plantsci.cam.ac.uk is well worth a visit.

SAPS has also announced that, at the end of the current academic year, it will be changing its direction. The focus will shift more towards post-16 courses in order to better support education and learning in plant sciences and molecular biology at this level and leading to university entry. For details of the changes see the *What's new* section on the SAPS website.

Coming up for air?

Schools have reported supply problems when ordering medical oxygen to use in spirometers. CLEAPSS advice remains as in the *Laboratory Handbook* section 14.5.1: that medical oxygen is *not* needed for spirometer use in schools.

Oxygen gas may be supplied in various grades: for industrial (including the preparation of diving gases) and medical uses. The difference between medical oxygen and pure oxygen is that more stringent checks are required for the containers of medical oxygen and it is subject to EU standards for human inhalation. Not all companies are licensed to supply medical-grade oxygen and those that do may restrict its supply to people who demonstrate they are qualified to use it.

For occasional use it may be worth purchasing oxygen (or other gases) in smaller quantities than is typically provided in cylinders available for hire. Scientific & Chemical Supplies offer a range of gases in non-refillable cylinders. Telephone 0845 165 0845 for details. If schools *do* wish to obtain medical oxygen they may contact Catherine Martin at BOC on 0161 930 6865.

Other companies that hire out gas cylinders are listed in guidance leaflet **PS 45** *Refilling carbon dioxide cylinders*.

Yes you can ... copy the CLEAPSS CD-ROM!

We often take *Helpline* calls where it is apparent that the technician (it's often the technician!) doesn't have immediate access to the CD-ROM because 'it's in someone else's lab coat pocket' or 'it's here on the shelf ... somewhere!' or *even* 'we gave it to the IT department ...'!

Every teacher and technician in the science department needs easy access to the CLEAPSS Science Publications CD-ROM so that they have access to guidance on practical work and, more importantly, to up-to-date health and safety information. Since only one free copy is sent to each school or college, we strongly encourage you to copy it onto stand-alone computers and/or science staff laptops, so they can have access to it at home. Schools may also copy the CD onto secure (staff only) sections of their school's computer network. To copy the CD-ROM (to a PC):

- Create a folder on your computer's desktop and name it 'CLEAPSS' or similar.
- Copy ALL the files and folders from the CD-ROM into this folder (it will take about 5 minutes to copy across).
- Open the 'CLEAPSS' folder on your desktop. Open the 'PC' folder within the 'CLEAPSS' folder.
- Right click 'StartPC.exe' and select 'Create Shortcut'. This will create 'Shortcut to StartPC.exe'.
- Drag 'Shortcut to StartPC.exe' from the 'PC' folder onto your desktop. Rename 'Shortcut to StartPC.exe' to 'CLEAPSS'.
- Double click the 'CLEAPSS' shortcut to start the CD-ROM copy.

For more information about getting the most out of the CD-ROM, read guidance leaflet **PS66**.

Occasionally, there are complications in running the CD on some systems. If so, look at the FAQ section on our website: www.cleapss.org.uk/secfr.htm. If that does not help, e-mail cdrom@cleapss.org.uk.

Tips for Technicians

We've had quite a few good ideas sent in from technicians but there wasn't room for many this time around so look out for a bumper selection in the Autumn Term Bulletin. If you do have any good ideas to pass on please send them in - ideally with a picture or diagram if possible. If you email your suggestion please title it 'For the bulletin' or similar.

Speedy starch 'solution'!

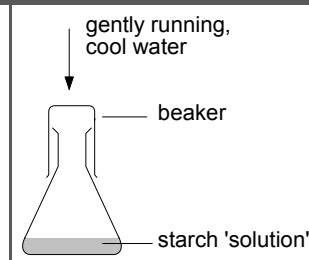
A technician has sent in this tip for making 'solutions' (strictly suspensions) of starch. A gift token is on its way!

She says to follow *Recipe Card 35*, but to boil *distilled* water in a kettle. After adding the boiling water to the starch paste, there is no need to re-boil. We have tried this at CLEAPSS and it's true ..

... there is no need to re-boil the solution when using *some* starch! However, with other starch, particularly old stock, the solution does need re-boiling to dissolve.

The hot solution can be cooled in a water bath (or try the technique shown in the diagram) if the starch is needed at room temperature ... and in a hurry.

Another tip when starch is required at room temperature is to make a 2% solution - then dilute to 1% with *iced* distilled water.



A nasty surprise in store?

We know that many of you will have a bit of a 'clear out' this term. Please be careful! The story below is typical of some of the incidents we've had reported to us.

Earlier this year, a school phoned about a vial of sulfur trioxide, SO₃, that had been found 'lurking' at the back of a store. Rather than leave it alone, the vial was lifted and moved and it subsequently cracked. Thick acidic fumes were produced and the building was evacuated. The fire brigade, local authority H&S officers and local press were involved by the time we were contacted! SO₃ is not something we come across every day so this was a bit of a challenge. However, we did manage to identify how to handle the vial and its contents (do NOT add water!) and helped the school arrange safe removal and disposal.

Incidents such as this could be avoided if CLEAPSS is contacted sooner rather than later. So ... if you *do* come across something you're not sure how to deal with, *do please* consult us first!

Problems with new GCSE practicals?

Our guidance leaflet **PS67** continues to grow - see **page 4**.

Pass on that old burette!

Don't throw away unwanted equipment. *LabAid Trust* will pass good equipment on to schools in countries that can make good use of it.

LabAid would also welcome more volunteers to promote this service and to arrange collections and deliveries to the centre in Amersham.

Companies willing to transport boxed items to the *LabAid* centre are also needed. Areas north of Bolton and Nottingham, and west of Taunton and Cardiff, are currently not well covered.

For more details visit the *LabAid* website: www.labaid.org

CLEAPSS Courses

Details of CLEAPSS courses, up to half-term in October 2008, are listed below. Courses marked with an asterisk* are *primarily* aimed at teachers. Courses are open to anyone willing to travel and, where possible, are publicised to schools and colleges in the locality of the host establishment. Contact us (ask for Alison or Caroline) for an application form or, for a Local Authority-organised or Science Learning Centre (SLC) course, for details of the appropriate contact person. For such courses, you will need to book directly with the Local Authority or SLC. Some Local Authorities give priority to their own schools.

For more detailed, up-to-date information on courses, visit our website - please check this as information is provided about the items participants should bring with them for specific courses. If courses of interest are not being held in your area, please contact us - we may be able to organise something.

Course	May	June	July	September	October
Basic General & Chemical Skills		Birmingham			Brentwood
Basic Physics Skills	Kirklees	London SLC, Welling (Kent)			Brentwood
Making Simple Science Equipment	Brentford	Weymouth	Isle of Man, London SLC		
Microscope Maintenance					Southampton SLC
Running a Prep Room	Northants, Wakefield, Warwicks	Croydon, Shrewsbury	Norwich		Southampton SLC
Working with Glass					Weymouth
Chemical Handling I	E Midlands SLC, London SLC	Dartford, Devon, Cornwall	Bristol SLC, Gloucestershire		
Chemical Handling II	E Mids, London, Salford	Suffolk, Devon, Dunstable, Lincoln			Bristol SLC, Warwicks
Fume Cupboard Monitoring		CLEAPSS			
Biology Safety					
Microbiology		Barnet, Welling (Kent)	Somerset	London SLC	Bristol SLC
Physics Training	Birmingham, London SLC	Stampton SLC, Wembley, SW SLC	Cumbria		
Electrical Inspection & Testing	Greenwich	Bromley	Carshalton, Cheltenham	Hertfordshire (2)	
Radiation Protection Supervisors*	Kidderminster, SLC SW	Buckinghamshire			
Health & Safety (Technicians)	Chester, Gloucs, London SLC	Cumbria, Isle of Man, Sheffield			Norwich, Southampton SLC
Health & Safety (Teachers)*	Brentford		Essex	Barking & Dagenham	
Health & Safety Management*	N Yorks	E Sussex, N Yorks, Northants			Norwich
Safe-Exciting Classrm Chemistry*			Southampton SLC, Bracknell		Southampton SLC
Surely it's banned/Microscale Chem*					
Art of Practical Science*			CLEAPSS (residential)		
The D&T Technician			Isle of Man		
D&T Workshop Maintenance			Isle of Man		
H & S Management in D&T*	Sandwell	Cumbria			Norwich