CLEAPSS For teachers and technicians

CIRCULATION LIST SCIENCE AND D&T

137 Spring 2010

BULLETIN

Practical support for Science & Technology

Would you like to work at CLEAPSS?

We are looking for an enthusiastic and experienced science technician to help us develop a technician training programme. This will be a full or part-time secondment to start around April 2010. The training programme will initially be accredited by CLEAPSS but we hope in time to obtain national accreditation for the training. The successful applicant needs to be able to write training materials, deliver some of the training and liaise with outside organisations, including accrediting agencies. We will provide induction and training as necessary.

For more details, or to apply, visit our web site www.cleapss.org.uk, or telephone us on 01895 251496

NEW!

The CLEAPSS Technician Job Service

CLEAPSS is now providing a free service that allows members to post adverts for technician vacancies at their school. Go to the CLEAPSS website home page (www.cleapss.org.uk) and click the Technician Job Service button. Job seekers looking for work as a technician can then browse the list of vacancies. Recruiters can click the link on this page for further instructions and to download the form for placing adverts.

If your school is recruiting new technicians then why not give the CLEAPSS Technician Job Service a go?

Happy New Year from CLEAPSS.

This edition of the Bulletin is packed with information and offers so make sure that all science and D&T staff are able to read it.

Swine flu update

As we go to press the spread of swine flu [influenza A(H1N1)v] is continuing. No doubt your school will have its policy on contingency action in the event of an outbreak. CLEAPSS has not seen any evidence that suggests limiting science practical activities, such as microbiology work or looking at cheek cells. Unless your employer has recently forbidden such activities, you can find guidance in the usual CLEAPSS references.

This might also be a suitable opportunity to teach pupils good hygiene practice in relation to preventing viral infections and to develop their scientific understanding of viral diseases.

Student access to CLEAPSS material

We are concerned that teachers or technicians might, in a fit of enthusiasm, be giving students log-in details for the CLEAPSS website, in the same way that students are sometimes given copies of individual *Hazcards*. We understand the desire to encourage students to learn about risk assessments through using our material to produce their own assessments. If this is the intention, then download or print our *Student Safety Sheets*, which were written specifically for students – mainly KS4 and above. With the exception of these sheets and a few electronic resources, CLEAPSS material is designed to be used by science and technology staff. The material contains information that students may use mischievously or in ignorance. We would therefore urge you not to supply students with log-in details.

CPD for new teachers on practical work in science

We are again offering our successful residential training course on practical science – The art of practical science. The dates this year are July 14, 15 and 16. The course will take place at the CLEAPSS premises at Brunel University and we have arranged accommodation in the university conference facilities. The course is aimed at science teachers who wish to expand their capacity in science practical work. We thought it would be most useful to new teachers but our experience over the past couple of years has shown it has much wider appeal.

The programme focuses on doing practical work and has a large hands-on component. All CLEAPSS advisers contribute to what has become a full, interesting, exciting and confidence-building programme. There is also a social element, which includes at least one evening out. The charge for the whole programme, including accommodation and meals, is £380.

For more details, or to apply, visit our web site www.cleapss.org.uk, or telephone us on 01895 251496.

FREE

to all member secondary schools & other members.

Also in this issue:

Getting Practical

(Improving Practical Work in Science Programme)

***Getting Practical* professional development courses will be available from January 2010 in your local area. This training is designed to help science teachers, technicians and teaching assistants to improve the effectiveness of their practical science teaching. By considering their current teaching practice and making small changes – guided by the *Getting Practical staging tool* – teachers will hopefully better engage their learners, while also ensuring it is a worthwhile learning experience.**

Schools are now invited to register their interest in the professional development training and will then be put in touch with their local trainer. To find out more information and register your interest contact Kirstie Hampson, Email: kirstiehampson@ase.org.uk
Tel: 01707 283000.

More information about the course is also available on the website www.gettingpractical.org.uk. Please visit the resource section where you will be able to find teacher resources for use at primary, secondary and post-16 level. We are always looking for additional resources for this section so if you have any tried and tested practical activities that you would like to share, please contact us through the Your Thoughts section of the website.

Getting Practical – Improving Practical Work in Science Programme is funded by DCSF with coordinating partners ASE, CLEAPSS, national network of SLCs, Centre for Science Education at Sheffield Hallam University and contributing partners the SSAT, IOP, Society of Biology, RSC, Gatsby Science Enhancement Programme, National STEM Centre and the University of York with support from SCORE, the Royal Society, Gatsby Science and Plants for Schools, the National Strategies, Wellcome Trust and the Young Scientist's Centre at the Royal Institution of Great Britain. The independent evaluators are the Institute of Education at the University of London.

A whoosh bottle incident

A recent accident has prompted us to remind readers of our *Supplementary Risk Assessments* (SRA) published on our web site and Science CD. They cover a range of demonstration activities which need to be prepared and performed carefully. The SRAs are very detailed in the hope that there is no room for misunderstanding. We strongly advise that the demonstrator does not deviate from what is written as this can affect the demonstration or even cause a serious accident. In this whoosh bottle accident the experiment deviated quite radically from the SRA by using glass apparatus in place of the specified 18-litre polycarbonate water bottle, and the glass bottle shattered explosively.

CLEAPSS Science and D&T material for 2010

The science CD and a new version of the D&T CD have been sent to schools. Let us know by the end of January if you have not received these. As you know, both sets of this support material are now on our website either in our Secondary resource (science) or D&T resource. We are encouraging members to use the web version in preference to the CD because we are able to update the website frequently. However, for the moment we will continue to send an annual science CD. The D&T CD remains an occasional publication. The log-in details to access the website for 2010 are: username **helium**; password **c4y2x3k6**. These details can also be found on the 2010 Science CD.

Practicals from the Internet

The Internet is a wonderful resource, which we use daily at CLEAPSS. However, we want to draw teachers' and technicians' attention to some potential health and safety issues. We are often told of seemingly exciting practical activities discovered on the Internet, sometimes as video clips. Unless the source of these activities is made clear and is verifiably trustworthy, there is no guarantee that they have ever been subject to a risk assessment. Even if they have, a risk assessment for an individual doing a favourite experiment is not the same as a teacher trying the same experiment with a class of pupils. If you want to use any of these activities make sure that you do your own risk assessment.
And if you are not sure call us on 01895 251496.

Water supplies in labs (and elsewhere)

For a couple of years now we have been working with SSERC in Scotland and with some of the UK water supply companies on implementing the *Water Regulations* 1999. These replaced all local water byelaws to provide a single standard across the UK. It is 10 years since these were brought into being but only recently has the impact been felt on school science. The regulations require water companies to provide clean water at all points on the supply chain. This means that opportunities for the water supply to become contaminated must be removed. One such opportunity is in science labs and prep rooms where rubber hoses are frequently attached to lab taps and dangled into the sink. This creates a potential conduit for water in the sink, or even the drain, to pass back into the tap. It is called backflow, and backflow prevention is required.

Although we haven't identified an instance of such backflow actually happening in a lab, it does occur in related situations, including possibly in other parts of a school. Solving the problem requires a permanent, non-maintenance device or system – non-maintenance because over time people forget to maintain it! If the system fails then the water supply is stopped rather than allowing any potential contamination.

With new-build labs it is possible to install a system of header tank(s), which provide absolute backflow prevention. Such a system is described in section 6 of our guide G14 *Designing and Planning Laboratories*. We urge all readers to bring this to the attention of architects and planners involved in developing new or refurbished science facilities. For existing labs, updating the water supply to ensure no backflow can be more challenging. We will, in due course, publish some ways of doing this.

For now we want to draw attention to the *Regulations* and to the fact that over the next few years schools will be systematically inspected by water company officers. Following such inspections school will be required to improve their water supply facilities in line with the *Regulations*. School managers need to recognise this and may need to set aside significant amounts of money to pay for improvements.

Another element of the *Regulations* requires all water users to notify their water supply company whenever changes are proposed to the water supply system in their premises. The water companies acknowledge that this is not always being done. They urge managers to do this, and to employ approved* plumbers or contractors. In that way all work meets the new standards and will pass any inspections. We advise schools to keep detailed paperwork relating to all plumbing work.

Along with backflow prevention, a further aim is to reduce opportunities for *Legionella* bacteria to grow and thrive and, latterly, to reduce water use where possible. Inspections by water companies take all of this into account, which can lead to schools being given a long list of improvements, not just in the science department.

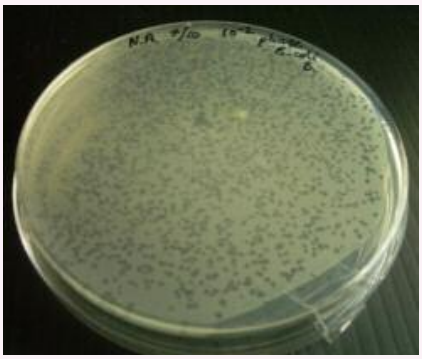
** There are various approval schemes, both national and local. National schemes include the Chartered Institute of Plumbing & Heating Engineering (CIPHE), the Association of Plumbing & Heating Contractors (APHC) and Scottish & Northern Ireland Plumbing Employers Federation (SNIPEF). Water companies may also operate their own approval scheme. If in doubt check with your water company.*

Microbiology tip

If you are growing Lactobacillus-type bacteria using MRS agar, then you need to know that the bacteria require anaerobic conditions.
They don't grow well on the surface of the agar but do grow well within it. Make your plates by pouring the agar onto the culture and not the other way around.

How Science Works in microbiology

Students often find the How Science Works component of school science very difficult, particularly in level 3 courses. Practical microbiology provides lots of opportunities for both developing and demonstrating investigative skills. We have recently produced a useful guidance leaflet (PS88) containing a couple of valuable activities, which can be easily done with a class. Download it from our Secondary Resource. We will incorporate these and other similar activities into our new Further Microbiology course, which we plan to offer from September 2010.



Viral plaques in an E. coli lawn

Energy Foresight

Energy Foresight is the latest teaching material sponsored by the nuclear power industry, produced by YF Education and Training Ltd. A central aim is to promote recruitment into the nuclear sector. Useful Internet, paper, video and interactive computer resources are available after a teacher attends a free one-day training session. Participants are encouraged to discuss various learning styles such as discussion, role-play, research and presentations. This should also be helpful in other areas of the science curriculum.

The resources are designed to give teachers confidence to teach about radioactivity and electrical energy. Unfortunately, little reference is made to associated practical work in school and some information is misleading. For example, decaying radioactive material does not glow luminous green as shown in some of the multimedia animations. Used selectively, alongside other resources, these materials should encourage interesting classroom debate. www.energyforesight.org

Computer trolley alert

The Health and Safety Executive has issued a safety alert concerning some laptop computer charging trolleys. A user received an electric shock from the mains plug supplying a trolley a short time after it was unplugged. Depending on the particular trolley, and also the type and number of chargers connected, enough energy may be stored to deliver a significant electric shock. The HSE is also concerned that, contrary to good electrical engineering practice, some trolleys have inadequate plug and cable storage facilities, unsuitable earthing or more than one mains supply cable and plug. More detailed advice is given on the HSE web site at:
www.hse.gov.uk/services/education/safety121009.htm

Please pass this information to colleagues in other departments as appropriate.

Technician's tips

Growing root tips for mitosis

The CLEAPSS *Handbook* suggests using garlic cloves or onions, supported over water, to provide root tips for studying mitosis. It also comments that some onions may be dormant. To break the dormancy, soak the onion or garlic for a few hours. Then slightly damage the bottom, eg, by gentle scraping with a knife, especially round the base (and slightly on the basal plate of the onion). Dormancy will be broken and roots 1 to 2 cm long grow within 3 or 4 days.

Thanks to Elaine Kemp of Cadbury College

CLEAPSS courses

Course	January 2010	February 2010	March 2010	April 2010	May 2010
Basic Chemical & General Skills	London (SLC)	Southampton (SLC)		London (SLC); Gloucestershire	
Basic Physics Skills		Oxfordshire (SLC); Southampton (SLC)		London (SLC)	Surrey
Making Simple Science Equipment	Southampton (SLC)	Dartford	Chester		
Microscope Maintenance	Chester	Manchester		London (SLC)	
Running a Prep Room	Uxbridge (CLEAPSS)	Surrey	London (SLC); Wirral	Kirklees	
Working with Glass			Brentford; Bristol (SLC); Lancashire		London (SLC); Chester
Chemical Safety for Technicians	London (SLC)	Hertfordshire; Keele (SLC)	Sheffield (SLC); Essex	Jersey	London (SLC); Durham (SLC)
Practical Skills & Techniques in Chemistry	Uxbridge (CLEAPSS)		Essex; London (SLC); Southampton (SLC); Leicester (SLC)	Jersey	Bristal (SLC); London; Surrey
Fume Cupboard Monitoring		Uxbridge (CLEAPSS)		Dartford	
Biology Safety			Gloucestershire	Southampton (SLC)	
Microbiology	Uxbridge (CLEAPSS)	Norfolk (SLC); London (SLC)	Kirklees	London (SLC)	Wirral; Southampton (SLC)
Physics Training for Technicians		Bristol (SLC)	Coventry; London (SLC)		
Electrical Inspection & Testing	Cambridge; Sheffield (SLC)	Manchester	Keele (SLC)		Southampton (SLC); Hertfordshire; Leicester (SLC); Dartford
*Radiation Protection Supervisors	Keele (SLC); Nottingham (SLC)	Southend on Sea; Maidstone; Bristol (SLC)	London (SLC); Durham (SLC)	Birmingham; Sheffield (SLC)	Leicester (SLC); Keele (SLC); Ipswich
Technicians' Health and Safety	London (SLC); Uxbridge (CLEAPSS)	Southampton (SLC)	Kirklees	Hampshire	London (SLC); Bingley
*The Management of Health and Safety for Heads of Science		Monmouthshire	Cumbria		
*H & S in Practical Science for New Teachers					
*Surely it's banned/Microscale Chemistry	Southampton (SLC)		Southampton (SLC); Leicester (SLC)	Dartford	Sheffield (SLC)
*D&T Managing H&S		Cumbria			

** Denotes courses primarily for teachers.*

CLEAPSS also runs courses for teachers and technicians in Design and Technology (The D&T Technician, D&T Workshop Maintenance and H & S Management in D&T) but we are only able to provide them if suitable venues can be found. If you are interested in hosting a D&T or Science course in your area please call us on 01895 251496 or e-mail science@cleapss.org.uk