

Changes at CLEAPSS

Hello. This term's big news at CLEAPSS is that Phil Bunyan retired as director at the end of March. Phil has been director for 5 years but has had a long association with CLEAPSS dating back to the early 1980's. In the past 5 years Phil has led CLEAPSS through some significant developments including the move to new premises and the redesign and launch of the new CLEAPSS website. Many of you will have spoken to Phil on our helpline

and benefited from his calm and constructive advice. Whilst we will all miss Phil's daily presence, as many of you have probably guessed, CLEAPSS staff seldom really retire, and we are delighted that Phil has offered to continue to work for us on a consultancy basis. He will be working on our publications to make them more accessible, particularly for teachers. He will also continue to deliver some of our courses around the country. We wish Phil a busy and rewarding retirement.

Barbara Elliot joined CLEAPSS in 2007. Many of you will have spoken to her – particularly on queries relating to our RPA service. Barbara has relocated back to the Midlands to be nearer to friends and family. We wish her well for the future.

Lorraine Weller joined CLEAPSS to replace Barbara. Along with answering the telephone on Thursdays and Fridays Lorraine will take over the administration of the CLEAPSS RPA service.

And finally –Welcome to **Matt Endean** who is joining CLEAPSS as the assistant director during May. Matt has been working in Waltham Forest and will be a hugely valuable addition to our team.

Micro-scale chemistry

We can report that, following a personal invitation, our long-standing lead chemistry adviser Bob Worley attended and spoke at the Sixth International Conference on Microscale Chemistry held in Kuwait. Bob talked about his enthusiasm for micro-scale chemistry in school science, and demonstrated a number of his increasingly well-known practical activities. His presentation was obviously well-received as Bob was invited to talk further about it on Kuwait breakfast TV.



We plan to develop and provide more examples of micro-scale activities for class practical work. They have many advantages over traditional versions of an activity, including:

- They use much smaller quantities of materials, significantly reducing purchase costs and storage requirements
- Smaller quantities reduce risks so more activities can be done as class practicals
- Smaller amounts of product substantially reduces waste, disposal is easier and less costly
- Gas-producing reactions, (eg chlorine) enable class practicals in an open laboratory without fear of generating harmful levels of hazardous gas
- Smaller equipment is easier to store, clean and transport

The conference demonstrated that, micro-scale has many implications for industrial chemistry as well as schools. CLEAPSS strongly believes that, in the future, schools are much more likely to adopt micro-scale practices. They will help preserve the vital role of hands-on practical work in all children's science education.

Have a look at our guide L215 *Microscale organic chemistry*, and look out for future publications on this topic.

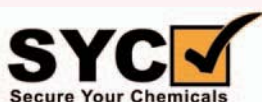
Disposing of dissection waste

The introduction of the *Animal Bi-Product Regulations* in 2004 constrained how schools could sensibly dispose of dissection remains. Animal materials which had been used in a lab could not be treated like kitchen waste even though both could have been purchased at the same time and from the same butcher. After several years of lobbying by CLEAPSS and others, DEFRA recently announced some changes to the way the UK is allowed to implement this European legislation. Without going into detail, the wording now includes the following in the section dealing with the: "Use of animal bi-products in research and other specific purposes: Article 16(b) and Article 17: *except in the case of low risk material for educational purposes for which a general duty of care to ensure safe disposal applies*". This means schools disposing of what are always relatively small amounts of dissection waste can safely put them in the normal refuse. CLEAPSS would advise, as it has in the past, wrapping the remains in an opaque bag and then in a further opaque bag before putting them into the refuse at a point in time close to when it is collected. This avoids the risk of the remains beginning to decompose and encouraging vermin. We suggest materials can be held in the fridge or freezer until disposal time.

FREE to all member secondary schools & other members.

www.cleapss.org.uk The autumn term Bulletin will be available from September 12th 2011

Secure storage and use of chemicals



The Government is running a programme entitled *Secure Your Chemicals*, aimed at ensuring all holders and users of particular hazardous chemicals have effective systems to manage and monitor their stock.

This applies to schools as well as industries and CLEAPSS, together with SSERC in Scotland, is working with the Home Office to produce some appropriate guidance. This is likely to confirm the existing advice, available in CLEAPSS publications, and should not present any issues to well-run science and D&T departments. The guidance will be available on the CLEAPSS website in a few months time. Schools are urged to look out for it and also to plan to carry out a thorough audit of existing chemical stocks during the coming summer. We believe that a thorough audit could be timely in many respects and it will allow schools to be confident that they meet the intentions of this programme.

Remember too, you can always use the CLEAPSS *Helpline*, to resolve any issues an audit might raise.

The programme is likely to be publicised through a number of routes so you may find some school governors enquiring about what actions schools might need to take.

Science dept break-in

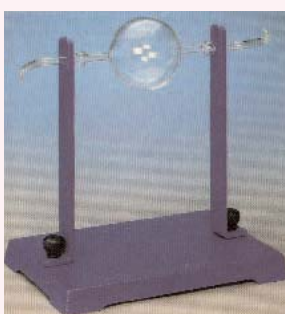
A school science dept had a break in recently where some IT equipment was stolen but, more importantly, the culprits let off two fire extinguishers. These were dry powder type which rendered two labs and a prep room out of action for the week and may also have ruined some electronic equipment. The school had to employ a specialist cleaning company to clean up.

It is partly for this reason that CLEAPSS does not recommend dry powder extinguishers. We suggest you should only be supplied with carbon dioxide cylinders, which can be recognised by the large trumpet-type horn used to direct the gas.

Hero's engine warning

Some recently-manufactured, glass Hero's engines have exploded in use. Our investigations suggest that the faulty engines may have insufficiently wide vent tubes and/or be made of inferior quality glass.

If you have purchased a Hero's engine in the last 5 years, we recommend that you contact your supplier for advice. In the meantime if you have a glass Hero's engine of any type:



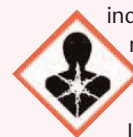
- Inspect the glass for scratches or cracks before use
- Make sure the glassware spins easily
- When in use, all present should wear eye protection
- At least two safety screens should set up – one to protect observers and the other to protect the operator
- Use clean, distilled water and fill the bulb to about one quarter full
- Heat the bulb *gently*, to produce the minimum amount of steam necessary for satisfactory results

If you have any experiences, good or bad, with a Hero's engine please let us know by email.

Chemical labelling Under the Global Harmonisation Systems, as of the end of 2010 suppliers are required to label pure substances with the new *Classification, Labelling and Packing (CLP)* symbols.

They may or may not also use the current CHIP labels. Mixtures, which include most domestic products and mixed scientific chemicals, such as universal indicator, biological stains, etc, do not *have* to have the new labels until June 2015. Thereafter all chemicals will be labelled with the CLP system.

We stress that no action is needed in schools, though when you receive chemicals with the new symbols it may be helpful to add the old labels so that staff get used to the changes. Use Hazcards to identify the current label. The labelling requirement is for suppliers, not users. Schools can choose whether or not to use any hazard labels, old or new, on containers put out for practical lessons but must, obviously, identify their contents. The new labels will have a symbol and some associated words, which make clear the nature of the hazard. The new symbols will be printed in black on a white background within a red diamond frame. For some, the graphic will be slightly different, and three new graphics have been added. These are:



indicates damage to genetic material: mutagens, carcinogens and substances that target specific organs. These tend to lead to long-term effects, often manifested some time after exposure



indicates less serious health hazards and includes substances formerly classified as IRRITANT, some which were classified as HARMFUL and some which are not currently classified as hazardous



gases under pressure

The new system includes some redefinition of the hazards which means the hazard rating may appear to have changed. This does not mean that the chemical has become more or less hazardous but that the way its hazard is classified has changed.

A particular change is that the harmful symbol will disappear and that many substances currently classified as harmful will acquire the toxic symbol. Symbols accompanied by the word *Warning* will approximate to the current HARMFUL. Symbols accompanied with the word *Danger* will approximate to the current TOXIC. Comparing the old and the new hazard classification is not simple. We plan to publish guidance on this, and other useful advice during the summer term.

Forthcoming training for teachers

New materials, updates and corrections.

We have recently published a useful guidance leaflet GL 100 *School science technician services*. It is aimed at school leadership teams to explain the value of the science technician to a successful science curriculum. We have a number of interesting and useful guidance leaflets on microbiology such as GL 94 *Using microscopes* GL 95 *Gram-staining* and GL 97 *Estimating viral populations*. For D&T we have published some corrective information in GL 93 *D&T machines in schools: over-zealous safety reports*

Model Risk Assessments for

Technology. We have made some changes to risk assessments 1.033, *Metal working: cutting oils*; 1.071 *Wood working: dusts*; and 1.077 *Wood working portable power tools – routers*. New versions are on the web site.

Recipe sheets We have also corrected some minor errors on the following:

Sheet 51. Iron (II) sulphate (VI)-7-water. 250 ml of 1 M should be 69.50 g and not 59.50 g

Sheet 52. Iron (III) chloride. The third entry on the table should read 1 M not 0.5 M

Sheet 54. The second entry on the table should read 0.5 M and not 0.05 M

Sheet 56. In *General Hazards* should refer to *Hazard 60* and not 59B

Sheet 70. To make 1000 ml of a saturated solution requires 120 g not 1200 g

Sheet 73. To make 2500 ml of 0.1 M solution requires 39.51 g and not 395.08 g

Sheet 77. In *General Hazards* refer to *Hazard 87* and not 81.

Sheet 78. The entry in the right hand column of the table should read: Dissolve 1.6 g of sodium tetraborate -10-water (not 1.8 g)

The versions on the web site have been corrected.

In our previous Bulletin we gave an incorrect web site for Re4med tops. It should have read –

www.re4medtops.moonfruit.com

Finally, we plan a new section of the web site entitled something like *Great ideas for practicals that work*. Aimed at teachers, these will give all the practical details needed and a reason for doing the practical with pupils.

The Art of Practical Science. Once again we are offering this successful and enjoyable course for new science teachers who wish to try a range of practical activities before having to do them with pupils. The course will take place at CLEAPSS premises, Brunel University. The dates are 13 – 15 July. The course is residential and the modest cost of £425 includes the room, all food and drink, and of course, expert tuition. The programme will include microbiology, dissection, radioactivity and handling radioactive sources, physics practicals and demonstrations, microchemistry, chemistry demonstrations, analytical techniques, gas reactions, and health and safety - a 'practical' update.

The Art of Practical D&T. Three days of hands-on training in practical D&T for new(ish) D&T teachers. Similar in structure to the highly successful science course it will take place on July 6th – 8th at CLEAPSS. It includes one day spent working in a school workshop. The cost, including accommodation, food etc, is £450. The programme covers a range of practical activities that can be used to extend the D&T curriculum for pupils

and includes, working in metal and plastics, properties of materials, basic electronics, mechanisms and computer control. All the work will be focussed on practical tasks that are suitable for key stage 3 pupils and above.

See our website for further information. Places are limited so contact us as soon as you can.



Twilight courses for teachers. We are developing a range of short courses in practical science for teachers, which can be offered the evening before a one-day course at the same venue. Twilight courses all need a laboratory and, at present, we can offer training in basic and advanced microbiology and in chemistry.

For more information contact us at science@cleapss.org.uk

Technician tip

Bee Lake (Eastleigh College) found that she could prevent cross contamination of solutions which are put out for practicals by attaching a dispensing pipette to each of the solution bottles. Use 3 cable ties- one for the neck of the bottle (you can adjust this to fit any size of bottle), one for the pipette holder (in this picture a large centrifuge tube), and one to join them together.



Prescription eye protection

Technicians and teachers who wear prescription spectacles sometimes have difficulty finding comfortable and safe eye protection to wear over their usual glasses. Bolle has a couple of models which can be supplied to prescription.

The Blast goggle is also large enough to fit over most prescription spectacles. A small visor can be purchased to add onto the goggle, usefully increasing protection for the lower face, all to EN166 1B 3,4. Tracker II goggles are also available to this specification. These would not fit over prescription spectacles but would suit smaller heads well and are also available with a prescription insert.



The Blast goggle with visor



The Tracker II goggle

The Blast goggle plus visor together cost under £15; the Tracker costs just over £8. Prescriptions for either model start at around £44 plus VAT (not including an eye test or dispensing) via some high-street opticians. It is worth asking your optician or school science supplier if they can offer such a service.

CLEAPSS Training for New School Science Technicians.

We are now over three quarters of the way through the first pilot of this 12-unit course, each unit being taught over one day. The first five units included a range of basic practical skills including, handling chemicals, making solutions, soldering, working with microscopes, and glass working. The other units are more advanced and we have completed two further chemistry units, covering topics such as chemical spills and disposal, gas preparation, titration and organic chemistry, and a microbiology unit covering safe practice and aseptic technique. The participants have worked hard throughout, attending each session, completing assignments between sessions, and also carrying out their 'day' jobs. Their feedback has been very positive

We have learnt a lot from this pilot and intend to evaluate it further before repeating the programme next academic year. We aim to run two courses simultaneously, one here at CLEAPSS and another in the London Science Learning Centre, starting in early October and finishing by Easter 2012. If you are interested in participating in either please contact science@cleapss.org.uk

And another thing. New technicians forum in Bradford area – anyone interested in joining a technicians forum for Bradford and the surrounding area please contact Cheryl Moore at Oakbank School cmoore@oakbank.org.uk

Particularly suited to overseas members, a cluster of training courses for technicians in September.

In January, we ran a suite of 4 technician training courses here at CLEAPSS (which is conveniently close to Heathrow airport, London). We have been asked if we would repeat this in September which we are planning to do. The programme will be the same as in January:

Basic Microbiology	Tuesday, 20th September 2011
Physics Training for Science Technicians	Wednesday, 21st September 2011
Chemical Safety for Technicians	Thursday, 22nd September 2011
Morning: Principles of Health and Safety/Running a Prep Room Afternoon: Glass working	Friday, 23rd September 2011

Individuals can enrol for single, multiple or all four courses with the following charges:-

One course	£80	Three courses	£220
Two courses	£150	Four courses	£290

The costs do not include evening meals and accommodation. High quality, relatively inexpensive accommodation can be booked on the Brunel University campus. Contact us at science@cleapss.org.uk for more details. Overseas delegates should not book flights until the courses are confirmed by Friday 17th June



CLEAPSS courses

Course	May 2011	June 2011	July 2011	September 2011	October 2011
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Basic skills courses for new and inexperienced technicians

Basic Microbiology (for technicians with some experience)	Keele (SLC)	Kent; Surrey; Lincoln (SLC)	London (SLC)		
Basic Physics Skills	Dartford				
Chemical Safety for Technicians	Brighton (SLC); London (SLC)	Greater Manchester			
Technicians' Health and safety	Rotherham; Brentford	Suffolk; Wokingham; Keele (SLC)	Bristol; Blackpool		Devon

More advanced courses for those with some experience and wishing to develop their expertise

Further Microbiology	Dartford	Essex	Brentford		
Making Simple Science Equipment		Dartford; Bristol (SLC)	London (SLC)		
Microscope Maintenance	Brighton (SLC)	Bristol (SLC)			
Physics Training for Technicians	London (SLC)	West Yorkshire			
Practical Skills & Techniques in Chemistry	Bristol (SLC); London (SLC)	Cumbria	Wirral	Lincolnshire	

Courses for senior technicians or others with considerable experience that aspire to become a senior technician

Electrical Inspection & Testing	Southampton (SLC)	Hertfordshire			East Sussex
Fume Cupboard Monitoring		CLEAPSS			
Prep Room Management and H & S for Senior Technicians		Gloucestershire			
Working with Glass	London (SLC); Keele (SLC)				

Courses for teachers

Basic Microbiology	Keele (SLC)	Kent; Surrey; London (SLC)	London (SLC)		
Further Microbiology	Dartford	Essex	Brentford		
Refresher Microbiology for KS3 and KS4 (twilight)		Surrey			
H&S and risk assessment in practical science for teachers					Devon
H & S Management for Heads of Science and their Deputies	Halton	Suffolk	Aylesbury (SLC); Blackpool		
H & S in Practical Science for New Teachers			Surrey	Barking & Dagenham	Greater Manchester
Radiation Protection Supervisors	Bradford; Cornwall; Buckinghamshire	Manchester; Gwynedd; London (SLC)			
D&T Safety Management	Halton				

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.