Imperial College London

Health and Safety Matters

June 2015

Imperial's Provost, Professor James Stirling, speaks about safety at the College ...Page 2

Page 2

Overview of safety at Imperial
Professor James Stirling

Page 3

Discharges to drain
The world of Trade Effluent Discharge Licenses

Page 4

Learning from incidents
Some topical issues

Page 5

News snippets
New staff, guidance and regulatory matters

Page 6

Chemical weapons & precursors
What are the implications for the College?

Page 7

Fire suppression within fume cupboards
The need for rigorous assessment

FAQ
Occupational health - some questions relating to skin

Page 8

Safety Training
A reflection on 2014

Access Health and Safety Matters in electronic format at :
http://www3.imperial.ac.uk/safety/subjects/newsletter

Recycle paper copies

Provost James Stirling outlines his view of safety at Imperial

As Provost here at Imperial, with responsibility for our core academic business of education and research, the safety of our staff and students is of the utmost importance to me. There are safety aspects of essentially everything that we do at the College, and we owe a duty of care to all our staff and students, and also to those who work on our behalf.

Imperial College has a uniquely challenging environment from the safety perspective. We operate across multiple sites, using complex equipment, heavy machinery and hazardous chemicals. The density of space that we occupy is very high, particularly at South Kensington. We also have inter-dependencies with a number of other organisations, which means having to monitor and satisfy ourselves of their practices as well as our own. We have ambitious plans to develop our existing campuses and our new campus at White City, and this development has to be carried with safety as a fundamental guiding principle. Just as we strive to be world-leaders in education and research, we should aim to be leaders in safety as well. 'Excellence in everything we do' has been a message I have been promoting since joining the College in 2013.

So how will we achieve this?

Partly it is about strong leadership. My personal commitment to safety is shared by my senior colleagues. At the monthly meetings of Provost's Board, the College's senior management committee that I chair, an update on developments and incidents in Health and Safety is always the first item on the agenda. From time to time we have strategic discussions as well. For example, we recently received a thoughtful and challenging presentation from Surrinder Johal, outlining her views on the current safety management environment at College, and her plans for the future.

The Board was greatly impressed by the amount of ground that Surrinder has covered since her arrival here last year, and gave strong endorsement to her future plans and priorities. It is clear that – as with many aspects of life at Imperial – there are pockets of excellence and best-practice around the College. Some of our practices are as good as any in the world, but there are also areas where we must improve.

We must constantly seek to improve our systems, and amend our practices to stay in line with changing legislation and sector requirements. We are fortunate to have highly qualified safety professionals who have dedicated their careers to honing our systems, structures and record-keeping. There are a number of medium and long-term projects underway to refine these, and a number of 'quick-wins' that have already been achieved. I have every confidence in all those around College who have responsibilities for the safety of the people who work and study here.

But equally important is ensuring that we have a strong culture across the institution where concern for the health and safety of ourselves and others sits right at the heart of what we do. Safety should be embedded in our thoughts at all times, part of the way we go about our daily business. It is incumbent on all of us to set an example, to actively promote good health and safety, and to speak up when we have concerns. Earlier this year we established the Provost's Awards for Excellence in Health and Safety, which reward individuals and teams from across the College who have gone above and beyond in their work, and whose activities are helping to create the culture that we aspire to.

I am very pleased that an explicit commitment to safety is now enshrined in our new College Strategy 2015-20 (see: www.imperial.ac.uk/strategy). The strategy is built on strong foundations that make Imperial a great academic institution and talented and inspirational people who make up our university community. Our partners make our work possible and help us to deliver benefit to society through our research and education. Enablers help us to deliver our strategy, and one of our enabling commitments is to provide professional support, consistent processes and appropriate technology for all of our staff and students. A specific action under this heading states that we will achieve the highest standards of safety, and Surrinder's paper to Provost's Board sets out the next steps on this journey. It is only through working together, and taking individual responsibility for the safety of ourselves and our colleagues, that we will succeed.

Celebrating excellence in health and safety

The Provost's Awards For Excellence in Health and Safety were announced in March and fully covered in Reporter Issue 282: http://www.imperial.ac.uk/staff/reporter/

Provost James Stirling (far right) with L-R: Director of Safety Surrinder Johal, and some of the winners: Dave Bowler, Cristina Andrighetti-Formaggini and Ken Keating

The College is obliged under the *Water Industry Act 1991* to hold a license for sites discharging trade effluent. Trade effluent is any liquid waste released into the sewer system from a business or industrial process and is best described as anything which is not toilet, bath or sink waste, uncontaminated surface water and rainwater from roof drainage. The trade effluent discharge license (TEDL) is issued by the local wastewater services company, who police the system. Our TEDLs from Thames Water permit the discharge of trade effluent arising from our operations - within certain parameters. At South Kensington campus, the following maximum limits are defined for trade effluent:

	Milligrams per litre
Settleable solids	**1000**
Chemical oxygen demand	**2000**
Saponifiable oil or grease	**300**
Unsaponifiable oil or grease	**50**
Sulphide	**1**
Ammoniacal nitrogen	**35**
Phosphate (as P)	**8**

The TEDLs place the following additional restrictions on what the College can dispose of to the sewer system:

- trade effluent must be at a temperature no higher than 43.3^{0}C.
- the pH must not be less than 6.0 or greater than 11.0.
- no condensing water.

In addition, we are prohibited from washing vehicles on site and it is illegal to discharge any substance which may interfere with the free flow of the sewerage system, including fats, oils and grease, which has a relevance to our catering activities.

The majority of the College's London sites are served by combined sewers which carry both storm water and sewage. This means we benefit from dilution of effluent produced from laboratories and workshops and we are at low risk of creating pollution as a result of crossed connections. However, the increasing London population and urban development means that even during periods of moderate rainfall, overflows of sewer and storm water discharge into the river Thames, on average once a week. Around 20 million cubic metres of untreated sewage is discharged into the Thames every year. For this reason we have a duty to ensure that we minimise inappropriate waste reaching the sewer system.

The restrictions stipulated by the TEDLs are all very well, but the information might be considered to be of limited use to the laboratory worker. What about the thousands of other compounds that may be present in our laboratories that are not specifically listed as prohibited or restricted? How does the researcher know what concentration, pH or temperature a liquid might be at the point it reaches the sewer? It is not uncommon for the Safety Department to receive queries about what can and cannot be discharged to drain. We would like to produce some sensible guidance on the subject but as yet, have struggled to get a dialogue going with Thames Water. However, we will continue with this quest.

Estates Facilities is currently reviewing the TEDLs the College has in place to ensure they adequately cover our operations and will be looking to put licenses in place where they do not already exist. This could be a gateway to getting answers to some of our trickier questions. Questionnaires will be compiled and forwarded to staff identified as having a responsibility (or knowledge) for areas producing trade effluent. The questionnaires will be generated by WSP Environmental who are assisting Estates with this project. This is likely to be coordinated via Building Managers and will no doubt require the assistance of Laboratory Managers and local safety staff.

Further information on this subject can be obtained from Sara Muir, College Head of Energy & Environment.

LEARNING FROM INCIDENTS

Leaning from incidents is an essential element of reactive safety management. As such, we plan to make this subject a regular feature of future editions of Health & Safety Matters as a means of publicising particular cases, and will attempt to focus on those issues that have College-wide implications. In this edition we look at two current 'hot topics'.....hand-held eye showers and repetitive strain injuries.

Example 1: Hand-held eye showers

The issue: There have been two recent incidents whereby faults have been found with hand-held mains-fed eyewash showers (of the *Broen* type). These faults were only discovered when they needed to be used for emergency eye irrigation following a chemical exposure. In the first incident, a PG student received a toluene splash to eye. When the student came to use the eyewash, no water emerged. The person had to be helped to an adjacent lab where the eyewash was functioning correctly. It was found that the supply valve to the eyewash shower had been turned off. In the second incident, a chemical mixture sprayed into a PG student's face. Again, the eyewash was found to be non-functional and the student had to be taken to an adjacent lab to be treated. It was subsequently found that water would not come out unless the flexible tube was pulled out for some length through the hole in the worktop. This implies that there may have been a kink in the tube or some other obstruction or restriction. Investigation of a laboratory nearby found another eyewash valve in the closed position.

Learning outcomes:

1. Eye showers must be subject to weekly flushing to reduce the risk of bacterial contamination (typically *Legionella pneumophila, Pseudomonas aeruginosa* and *Mycobacterium* species).
2. A record of the flushing checks must be retained. This may be achieved by a 'Scafftag' log being attached to the eyewash hose or some alternative simple checklist held locally.
3. Aside from weekly flushing, functionality checks should be periodically carried out and should form a routine part of safety inspections. This will aid in detecting any mechanical faults that may develop. Eye showers are, after all, an important item of safety equipment that remain the responsibility of those who are in control of the laboratory.
4. Periodic 'deep cleaning' should be carried out to remove any scale of other debris that may have built up in the shower head.
5. Faults must be reported as a priority defect as a matter of urgency. The eyewash station must be clearly marked up as being faulty – either by removing the Scafftag insert to reveal the 'Do not use' message or by other obviously visible signage.
6. In addition, laboratory users must be informed of any faults as soon as possible – either directly or via the Building Manager.

Example 2: Repetetive strain injuries

The issue: We have seen a number of recent reports concerning both staff and students complaining of work-related repetitive strain injuries. These typically involve shoulder and back pain or pain and weakness in the thumb or wrist. We have had one recent case of tendonitis diagnosed. Common causes cited for RSIs are working at computers for prolonged periods and repetitive pipetting at the laboratory bench (sometimes a combination of both). Other repetitive laboratory activities such as manually operating cryostats have also been implicated in causing this type of condition to develop. The risk associated with these activities is well recognised and comprehensive guidance on controlling the risk is available from both Occupational Health and the Safety Department. However, there is still evidence that cases of RSI are not reported promptly enough and its very likely that many cases are not reported at all – the sufferer continues to tolerate the condition, possibly exacerbating it until it reaches the point where the effects may become permanent.

Learning outcomes:

1. Undertake a workstation assessment for your computer work. A self-assessment checklist is available and assistance may be sought from your departmental DSE assessor.
2. Don't ignore symptoms. If problems become evident, reorganise work to give more breaks and review workstation set-up. This also applies to organising the workstation when working with pipettes at the laboratory bench. If symptoms persist, report the issue to the College system (Salus) and contact Occupational Health.
3. Alternate tasks involving repetitive work with other activities.
4. Select the equipment that suits you. As technology continues to develop, a wider range of ergonomic solutions are likely to become available.
5. Understand the risks and follow the guidelines available for reducing those risks. Computer health guidelines may be found on the OH website (http://www3.imperial.ac.uk/portal/page/portallive/OCCHEALTH/guidanceandadvice/computerhealth/computerhealthgeneralguidance) along with guidance on working with pipettes (http://www3.imperial.ac.uk/portal/page/portallive/OCCHEALTH/guidanceandadvice/pipette). Guidance on working with cryostats may be found on the Safety Department website (http://www3.imperial.ac.uk/safety/subjects/alerts).

News Snippets

Welcome.....

Eddie Hartrick
Eddie joined the Safety Department in June in the role of Process Safety Officer where he will focus on providing safety advice in relation to complex process equipment and experimental rigs. After obtaining a BSc in Chemistry (Coventry), Eddie spent several years as a synthetic organic chemist, before moving on to work as an Experimentalist for Mexichem Fluor, a global chemical business supplying fluorine based products, technologies and services to a range of industries. In this role, Eddie specialised in data generation using experimental rigs as well as engaging in the safety aspects of the processes.

Audrey Plaquin-Chan
Audrey also joined the Safety Department in June in the role of Safety Auditor where she will be supporting Julia Cotton in the development and management of the College safety audit and inspection programme. Audrey graduated from Imperial College London with a distinction in Master of Research in Chemical Biology of Health and Disease. She also holds an MSc in Molecular Neuroscience (Bristol), a BSc in Resource Chemistry (Malaysia) and is currently completing her PhD here at Imperial. Audrey spent several years working in Malaysia as an Executive Chemist with a multinational oil and gas corporation where she initiated and rolled out a company-wide Laboratory Chemical Safety Programme. After moving to the UK and working as a training consultant with one of the largest financial providers in the country, she decided to return to university for retraining. Audrey has a special interest in risk management.

Day One Safety Induction

The Day One Safety Induction form has recently been reviewed and simplified, focussing mainly on emergency arrangements and incident reporting (and now included local emergency contact numbers). It applies to all staff, students and contractors - only casual visitors on site for less than one day are exempt. The supporting guidance note remains unchanged.

Guidance on Working from Home

The Safety Department have drafted a guidance note on home working. The GN addresses issues such as the legal position, making requests to work from home, insurance, security, incident reporting and risk assessment. Risk assessment is largely low key, as would be expected in relation to low risk environments and concentrates on mainly on ergonomic issues and electrical safety. The document will be available on the Safety Department web pages following redevelopment of the site as part of the 2015 Web Redesign project .

Specified Animal Pathogens Order (SAPO)

On 1st April 2015 the regulation of activities involving Specified Animal Pathogens (SAPO) transferred from DEFRA to the HSE. Consequently, the HSE will now be the point of contact for all enquires related to licensing and inspection of activities involving specified animal pathogens in addition to the regulation of contained use of human pathogens and genetically modified organisms.

The new licensing regime has several key changes, which include:

- A requirement for a risk assessment.
- A requirement to comply with licence conditions that include management arrangements to ensure the effective application and maintenance of containment and control measures.

Our current SAPO licence holders will move onto the new regime in the next few months. This should be a straightforward process as all the key changes are already implemented at the College. If you wish to work with Specified Animal Pathogens and have to apply for a new licence, please contact the Safety Department.

Chemical weapons and weapons precursors……what are the implications for the College?

Whats the deal?
The Organisation for the Prohibition of Chemical Weapons (OPCW), based in the Netherlands is an intergovernmental organisation that administers the Chemical Weapons Convention (CWC), the aim of which is to outlaw the production, stockpiling and use of chemical weapons and their precursors. The UK has its own CWC National Authority that is responsible for implementing the CWC in this country. This includes the onward transmission of information to the OPCW.

Who collates the UK information?
The UK CWC National Authority is part of the Department of Energy and Climate Change (DECC).

So what does this mean for the College?
Chemical weapons and their precursors are classified into a number of Schedules. We sometimes acquire these chemicals from commercial suppliers for legitimate research purposes. We have to make an annual declaration to DECC accounting for any Schedule 2 substances that we 'consume' and Schedule 3 substances - but only if we produce, import or export them (so far there has been no evidence of this).

Does the College have a legal obligation to make a declaration?
Yes, DECC have an obligation to forward aggregate national data to OPCW and we have an obligation to furnish DECC with the necessary information relating to our institution.

Who submits the declaration to DECC on behalf of the College?
The Safety Department undertakes this task.

When?
The submission date is usually around the third week in January. Given that the declaration covers the previous calendar year and that data cannot be fully collated until that year has expired, this makes for a very tight deadline.

By what means?
The submission is made online. DECC maintain the CWC Declarations Database and each organisation can access its own current and historical declarations (subject to the usual security controls). The College has a named Reporting Officer (within the Safety Department) and a Legal Contact (the College Secretary and Registrar).

I'm a researcher – why does this concern me?
If you are using any of these substances, you are the 'consumer'. You have an obligation to keep a local record of how much of the substance(s) you have used over the course of the calendar year – only you can keep track of this. If other researchers within the department are using the same stock bottle, someone will have to take responsibility for monitoring usage.

How do I know if I've got any substances that fall within scope?
You might not. Historically, we have had researchers express surprise when they have been told that they have a chemical weapons precursor in their possession. Suppliers have not always had a mechanism in place to flag this fact up at the point of ordering. However, Sigma Aldrich for example, may ask the buyer to complete an 'end-user declaration' form. If you receive one of these, it is an indication that that substance you are intending to purchase is controlled for one reason or another, for example, a weapons precursor or drug precursor. The College COSHH form has a trigger question that asks whether any of the substances used in the activity are subject to the Chemical Weapons Act. This is the best way to be proactive about determining this fact i.e. at the prior risk assessment stage.

What do I have to do then?
Determine whether you need to acquire such substances at the risk assessment stage. Complete any 'end-user declarations' that the supplier might ask for. Keep a clear record of any usage throughout the year and ensure that this information is easily retrievable. The Safety Department will contact you in January to request this information. The Safety Department will identify those who have ordered such substances via the suppliers order records which are obtained by the Purchasing Department.

Anything else?
Not really. As yet, we have received no specific instructions to ensure that these substances are subject to any special security measures other than what we would normally expect for hazardous substances…..and some of them would barely be considered hazardous within the scope of COSHH.

What is our typical usage within the College?
Low. Our 2014 declaration only identified 4 Schedule 2 chemicals in use and 14 Schedule 3 chemicals having been ordered from three separate commercial suppliers. Historically, those acquiring such substances have tended to be chemists and chemical engineers, though it is feasible that researchers in any department could have cause to utilise them for research purposes, hence this article.

Further information
Enquiries should be directed to the local safety officer in the first instance or alternatively the Safety Department. We currently have no formal written guidance on this subject, but plan to construct a web page as part of the review of the Safety Department website relating to the 2015 Web Redesign project.

FIRE SUPPRESSION

within fume cupboards

A proposal was agreed at the recent meeting of College Health, Safety & Environment Committee for an amendment to be made to the College Fume Cupboard Code of Practice to accommodate an assessment to determine the requirement for fire suppression systems to be fitted to new ducted fume cupboards.

At present, only a limited number of fume cupboards within the College are fitted with fire suppression (mainly in the Chemistry Department). The College has experienced a number of fume cupboard fires over the years, notably a large and costly one in 2012. A number of other universities have suffered similar events. The cost of installation and maintenance of such systems when balanced against the consequences of a major fire has now brought the matter to the surface for serious consideration. There is also regulatory pressure with respect to complying with the Regulatory Reform (Fire Safety) Order 2005 and the consequences of failing to take due consideration of risk.

An additional section will be added to the CoP and further questions added to the existing Fume Cupboard Selection Form (FCS1). These questions will look to tease out activities and situations where an enhanced fire risk may exist and where fire suppression may therefore be warranted. Typical examples may include activities where explosive or pyrophoric substances will be used, where elevated temperatures may be required as part of the experimental protocol or where flammables may be used under pressure.

The Safety Department will look to develop some specific guidance on this subject to ensure that there is a framework in place to ensure that a consistent approach is taken.

FREQUENTLY ASKED QUESTION

FAQ

A series of FAQs about skin

At work our skin is exposed to a diverse range of substances and environments which can affect it. Being a complex structure, the skin provides a range of essential functions. It is the body's first defence against physical, chemical and biological hazards. Its integrity is important.

How can I protect my skin at work?

Avoid contact between unprotected skin and substances, products or wet work. Avoiding contact will not always be possible, so use personal protective equipment such as gloves. Wash any contamination from your skin promptly. Protect the skin by moisturising often, particularly at the end of the day. This helps replace the skin's natural oils that keep the protective barrier present.

What is dermatitis & how is it caused?

Dermatitis is inflammation of the skin that occurs when we come into contact with a particular substance. It can be caused by an irritant that directly damages the outer layer of skin, or an allergen that causes the immune system to respond in a way that affects the skin. Dermatitis caused by irritants is more common.

How do I check for dermatitis?

Checking your skin regularly is easy and can help to catch dermatitis early, which can make it easier to treat. Look for dryness, itching, redness or other uncomfortable feelings such as flaking, scaling, cracks or blisters.

I think I have dermatitis, what should I do?

If you believe that you have dermatitis related to your work, take a photograph if necessary and contact the Occupational Health Service. You will be given an appointment to see an OH team member in clinic. Tell us what you do at work and what you think may be causing the problem. Also talk to your manager/supervisor about your concerns. If your dermatitis is confirmed and is work related, we need to make sure that you can work in a way that protects your health.

Safety Training

A report submitted to Health, Safety & Environment Committee on 13 May provided an overview of College safety training in 2014. In effect, approximately 4930 delegates accessed over 41 separate courses, both classroom based and through e-learning. This does not take into account local training delivered in-house for departments which is not recorded on ICIS.

From September 2014, two new online e-learning packages were launched - Introduction to Laser Safety and Fire Prevention and Fire Safety, to supplement the face to face sessions. The existing Month One Safety Training (MOST) revealed 1931 test results and Risk Assessment Foundation Training (RAFT) recorded 306 test results.

All First Aid events incorporated Automatic External Defibrillator (AED) training from April 2014. The College has trained or re-qualified 300 First Aiders during 2014. However, attendance at requalification and refresher training is poor given that our licence enables twelve candidates per class. The College provides sufficient places to ensure requalification where first aiders can be formally tested and hold certificates approved by the First Aid Industry Body (FAIB). Many first aiders do leave the College but others fail to re-qualify on time and this does not maximise College resources. The half day Refresher allows first aiders in their second year to maintain their skills and confidence. Most first aiders will not have an opportunity to apply their skills and so the refresher enables them to avoid skills decay through practice and receiving updates on best practice. Additionally, first aiders can get hands-on training with the AED introduced in 2014 via this route. Requalification and Refresher is an individual responsibility but First Aid Co-ordinators must keep their records updated and ensure attendance. Furthermore, departments and line managers must encourage and create opportunity for first aiders to participate.

Summary of First Aid Courses 2014

Course Title	Sessions (including multiple days)	Delegates
Emergency First Aid at Work (incorporating AED from April 2014)	18	190
First Aid at Work Qualification (incorporating AED from April 2014)	4	41
First Aid at Work Requalification (+AED)	4	38
Fieldwork First Aid	3	31
First Aid Refresher (+AED)	8	49

The Learning and Development Centre (LDC) is continuing the process of not offering attendance certificates for internal short duration classes, though there are exceptions - the Safety Department will provide attendance certificates for candidates successfully completing the Radiation Fundamentals and Radiation Protection Supervisor training, for example. LDC continues to issue Certificates for nationally validated courses by examining boards and longer courses approved by professional bodies.

The LDC is re-thinking NEBOSH NGC, given syllabus changes taking effect from 1 October 2015. This means looking at the relative merits of offering an internal event or looking at external providers who may offer a different approach and alternative modes of study. The reality is that one third of our NEBOSH delegates withdraw from the course before completion and this is more likely where internal candidates are concerned.

Contact Details

Occupational Health Service
Level 4
Sherfield Building
South Kensington
London SW7 2AZ

Telephone:
020 7594 9401
E-mail:
occhealth@imperial.ac.uk
Website:
www3.imperial.ac.uk/occhealth

Safety Department
Level 4
Sherfield Building
South Kensington
London SW7 2AZ

Telephone:
020 7594 9423
E-mail:
safetydept@imperial.ac.uk
Website:
www3.imperial.ac.uk/safety

If you have any comments or suggestions for inclusion in the Newsletter, please contact the editor:

John Luke
Safety Department
j.luke@imperial.ac.uk