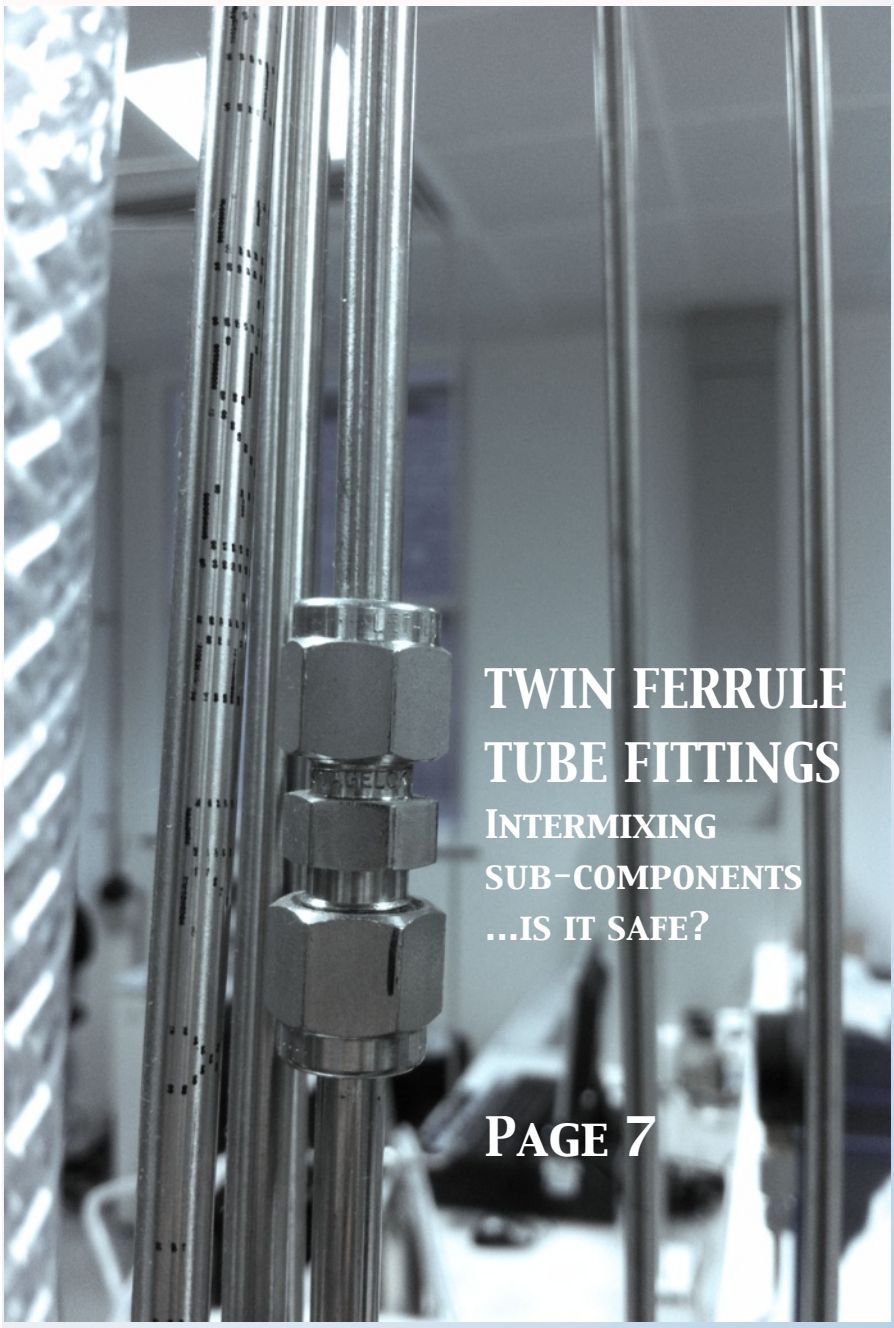
Imperial College London

Health and Safety Matters

June 2013



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Environmental Management
Attaining the standard

Given the close link between environmental issues and health and safety, Sara Muir, Head of Energy & Environment, provides an overview of progress in developing the College Environmental Management System

The College is currently in the process of implementing an environmental management system (EMS), using the EcoCampus EMS system, with a view to achieving the ISO14001 Environmental Management standard. More about what this means for College staff is explained below.

What is an environmental management system?
An EMS is a tool for managing an organisation's impact on the environment. It provides a structured approach to planning and implementing environmental protection measures and establishes a framework for tracking, evaluating and communicating environmental performance. Having an EMS helps ensure that major environmental risks and liabilities are identified, minimised and managed.

Why are we doing this?
The College has made a commitment, expressed in its environmental policy to limit the impact of its operations on the environment and has in place a lot of the systems for managing and monitoring environmental performance at a local level, but there is no central system for collating and analysing this information or for recording incidences and corrective and preventative actions taken.

How are we doing this?
The College has joined the "EcoCampus" scheme, an EMS award scheme for the higher education sector. The EcoCampus project was initially set up and funded by the Higher Education Funding Council for England in 2005 (HEFCE) and is managed by Nottingham Trent University.

EcoCampus is a four step approach to achieving IS0 14001 – "bronze", "silver", "gold" and "platinum" stages. When the "platinum" stage is reached, we will be ready to arrange for an ISO 14001 audit and accreditation.

What progress have we made so far?
So far we've achieved the "Silver" award and we're working towards "Gold". The activities undertaken at various phases are outlined below.

How does it affect me?
Staff are asked to report environmental incidents using the existing *Salus* reporting system and select "environmental incident" to describe the occurrence. Don't worry if you are unsure whether an incident would be best described as health, safety or environment – this will be picked up when the incidents are reviewed by the Safety Team. The type of reports which we anticipate receiving will relate to emissions to air, land or water and might include:

Continued on page 3.....

PHASE 1 BRONZE: **PLANNING**
- Environmental awareness training
- Baseline environmental review
- Development of draft environmental policy

PHASE 2 SILVER: **IMPLEMENTATION**
- Establish legal & other requirements
- Identify significant environmental aspects
- Set objectives, targets and programmes
- Finalise environmental policy

PHASE 3 GOLD: **OPERATING**
- Competence, training & awareness
- Communication
- Operational control
- Emergency preparedness and response

PHASE 4 PLATINUM: **CHECKING & CORRECTING**
- Monitor and measure environmental impacts
- Evaluate compliance
- Take corrective preventative action on any non-conformities
- Control records

Environmental Management.....continued from page 2

- Litter, graffiti, dumping of rubbish and waste.
- Improper storage or disposal of chemical waste (paints, cleaning products etc).
- Improper treatment, storage or disposal of hazardous waste.
- Noise pollution.
- Smoke and dust pollution.
- Activities impacting wildlife.

Depending on the nature of the incident it may be investigated by the Safety Team or your local Building Manager. You will receive feedback on any corrective and preventative action taken.

Where can I find out more?

College Environmental Policy:
http://www3.imperial.ac.uk/facilitiesmanagement/energy/environmentalpolicy

The EcoCampus Scheme:
http://www.ecocampus.co.uk/web/Default.aspx

***Salus* Reporting System**
http://www3.imperial.ac.uk/safety

Check legislation that may apply to you:
If you need further detail about particular legislation, we have a subscription to a legal database:
http://cedrec.com

username: sustainability@imperial.ac.uk
password: cedrec

To arrange a personal login (free of charge), email Lisa Holland – l.holland@imperial.ac.uk

If you think there are areas where the registers can be improved, contact Sara Muir (s.muir@imperial.ac.uk)

The project implementation is being managed by Sara Muir, Head of Energy and Environment Team and assisted by Helen Swanton, Environmental Officer, who are part of Estates Facilities, working closely with colleagues in the Safety Department.

Safety and Student Placements

Many departments undertake or receive student placements, where there is a direct transfer of supervision of the student to a third party for a period of two weeks or more. Placements are normally managed by the departments' Placement Organisers, although students can select their own Placement Provider. Placements only occasionally come to the attention of the department's safety personnel, as most are of relatively low risk.

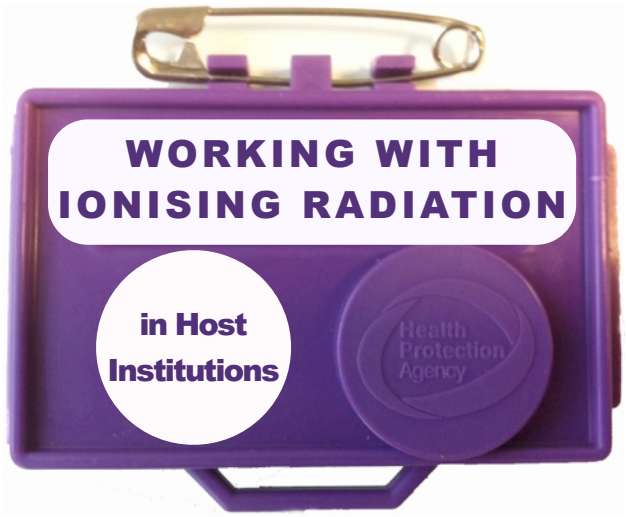
The Safety Department has a web page dedicated to student placements but this is only part of the placement management system. If you follow the link from this to the Registry web site, it is evident there are many other documents which are not safety related, and this can be very confusing for safety personnel if they have been asked for advice. Also the forms used for placement risk assessment are quite different to other College risk assessment forms. This is because Registry are also trying to capture quality control information, and ensure that its own system is followed.

Key Points for safety personnel to understand:

- There is an initial filter in place to determine level of risk anticipated (risk-based assessment form) and whether any further assessment is required. If so, the Placement Organiser may contact the DSO for help and additional templates may need to be completed such as the FW1 fieldwork form.
- Where there is no student exchange agreement, a Placement Provider Information Form should also be completed by the host organisation to enable the College to gain some assurance of safety standards being applied.
- The purpose of the process is to enable the home department to make checks on the placement provider and for the student to provide feedback to the home department.

Further information and additional guidance on departments hosting placements here at the College can be found on the Registry website.

Safety Department student placement page:
http://www3.imperial.ac.uk/safety/subjects/studentplacements



Work away from College - whether collaborative research, study or teaching - is very common. Risks from such activities need to be assessed and controlled to the same standard as work in the College. In addition to the general requirements relating to offsite working, there are specific requirements relating to work involving ionising radiations.

Examples of where off-site work involving ionising radiations might take place include:

- Working at the UK's national synchrotron facility at Harwell or visiting synchrotrons in other locations.
- Working at the Large Hadron Collider in CERN.
- Work at NHS Trusts, for example, imaging work using CT or positron emitting radio nuclides. This will include Imperial College Healthcare NHS Trust, who are a separate entity to Imperial College London.
- Collaboration work with other College site partner organisations or other universities (whether in the UK or overseas).

If staff or students are carrying out off-site work that involves them being exposed to ionising radiations, College must be satisfied that suitable and sufficient arrangements are in place to ensure that any exposures are kept as low as reasonably practicable (ALARP) and do not exceed any relevant dose limits. Examples of control measures that are necessary include, radiological risk assessments, the provision of dosimetry (if necessary), and relevant training (including training in emergency procedures).

In addition, within the UK, where work with ionising radiations by one employer is likely to give rise to the exposure to ionising radiations of the employee of another employer, there is a duty for both employers to co-operate and exchange information (Regulation 15 of the *Ionising Radiations Regulations 1999*).

To this end, College staff & students must inform the radiation protection team when any off-site work is proposed, prior to the visit taking place. An "off site research" registration form must be completed and sent to the Radiation Protection Officer (RPO) in the Safety Department. The form is available from the Safety Department web pages (see below).

The "off site research registration" form has three sections that must be completed by the applicant, the applicant's line manager and the host institution respectively. Importantly, with regard to the host institution, a senior person responsible for the management of radiation protection is required to sign a declaration to verify what has been or will be provided. The information will then help the College RPO decide if suitable arrangements are in place and whether there are any other necessary requirements (e.g. the College may have to provide dosimetry badges to the member of staff undertaking the visit if the host institution does not).

Further information:

General off-site working:
http://www3.imperial.ac.uk/safety/subjects/offsiteworking1

Off-site research registration form:
http://www3.imperial.ac.uk/safety/formsandchecklists/irregforms

Guidance on off-site work involving ionising radiation:
http://www3.imperial.ac.uk/safety/subjects/ionradiation

News Snippets

The Jardine Report

Following the major fire that occurred in the Bone Building last October, an enquiry has taken place focussing on safety culture within the academic community at the College. This enquiry was led by Professor Richard Jardine, Dean of the Faculty of Engineering and the resultant report that has now been published has been commonly referred to as the 'Jardine Report'. The report makes a number of recommendations on the following issues:

- Improved risk matrix screening
- Introduction of peer safety reviews
- Training and competence isues
- Stricter lone working procedures and buddy schemes.
- Improved near miss reporting

A working group has been constituted and an action plan drafted.

The Safety Department have commenced reviewing the College Lone Working Policy and measures have been taken to raise awareness with regard to near miss reporting (including the article on page 6 of this newsletter).

Fume cupboard training video

The Safety Department are making progress with regard to developing a 10 minute training video for fume cupboards. A script was drafted and key staff consulted in the process. A day of filming complete with actors and film crew took place on 5 June after the Chemistry Department kindly agreed to us using two of their teaching laboratories as a venue. The video will concentrate on educating the end-user but there will be references to such issues as commissioning and maintenance. At the time of going to print, we have not yet received the first cut of the film for review.

Electronic cigarettes

This is a topical subject and a couple of enquiries have been received by the Safety Department recently. It has also been discussed extensively on the University Health and Safety Association (USHA) network in recent weeks. Whether the matter a is a safety issue or a social issue remains open to debate, however, it was discussed at the meeting of College Health and Safety Consultative Committee on 8 May and the Director of Estates Facilities has agreed to prepare a paper on the subject in advance of any College policy decisions being made.

Zurich Risk Management Standards Assessment

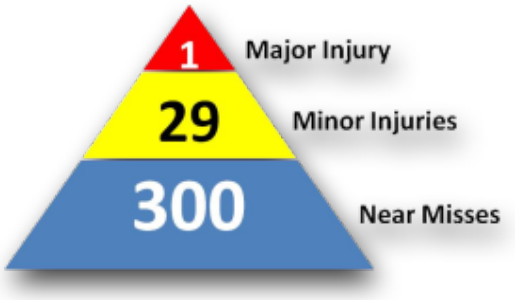
Risk consultants from Zurich, the College insurers, visited on 30 April to undertake a combined liability risk management standards assessment. The purpose of the task is to assess the risk management standards in place within the College and to compare them with Zurich risk management standards and also to benchmark the results with other selected universities so that best practice can be shared. The audit included a review of the College Safety Management System and the Safety Department were interviewed as part of the process. Also audited were Estates Facilities (property management issues), Campus Services (hiring of facilities), Purchasing (contracts and partnerships) and Finance (claims management). At the time of going to press, the resulting report has not yet been received.

The GENIE®

BOC have recently introduced a new type of gas cylinder - The GENIE®. The cylinder is designed to be robust against accidental damage (plastic outer casing) and portable, having a detachable wheelbase. It can therefore be stood upright without the aid of a support and remains stable. The cylinder also has a digital intelligence unit (DIU) display that provides information on how much gas is left in the cylinder. Normal gas cylinder regulators will not fit the GENIE® as they are too large and therefore a specific regulator is required.

Further information on this product, including a user manual and FAQ's can be obtained from BOC at:
http://www.boconline.co.uk/en/genie-mobile/mobile.html

Alternatively, contact the BOC site off at the College.



Reporting Near Misses.... is it important?

Why raise this issue now?

One of the recommendations emerging from the "Jardine Report" following the major fire in the Bone Building last October was that more use should be made of near miss reporting using the established College system. The report went on to add: …." *Our research groups should be encouraged to record even small occurrences that could have led to bad outcomes and point out potential flaws in equipment or practice. They should know that this is being helpful rather than disloyal in any way…."*

What is a near miss?

Definitions of both 'accident' and 'near miss' vary according to what source you choose to consult, whether it be the World Health Organisation, the HSE, British Standard OHSAS 18001 or numerous other sources. It can be easy to get bogged down over-analysing the definition. The HSE and OHSAS 18001 definitions are similar i.e. 'an incident that does not result in an injury'.....but could have done.

What is the law regarding near miss reporting?

Another term often viewed as being synonymous with near miss is 'dangerous occurrence'. However, this term refers to specific types of incident that are listed in Schedule 2 of RIDDOR (*Reporting of Injuries, Diseases and Dangerous Occurrences Regulations*). These are typically major incidents and are reportable by law under these Regulations. Such incidents are very rare within the College. Recording non-RIDDOR reportable near misses is not a statutory requirement. However, many employers collect near miss data and College policy requires near misses to be reported as part of good safety management practice.

Why should near misses be reported?

Monitoring incidents, including near misses, is a standard element of reactive performance measurement and supplements other proactive elements of safety management. By recording and investigating near misses, we may be able to identify operational weaknesses, take corrective action and prevent recurrence. This is recognised in the 'Incident investigation, nonconformity, corrective action and preventive action' section of *OHSAS 18001: 2007 Occupational health and safety management systems – Requirements.*

How are near misses reported?

In the same way as injury accidents - via *Salus*, the College online reporting system. The link can be found on the front page of the Safety Department website: http://www3.imperial.ac.uk/safety. Most people will already be aware of this. The purpose of this article is to raise some awareness and to encourage people to think about near miss reporting.

What will the follow up be?

Most safety committees already have a standing agenda item for incidents - the committees have been asked to ensure that near misses are discussed as part of this. In addition, the Safety Department shall be highlighting any key near misses in the Safety Director's report to the senior College Safety Committees - Health and Safety Consultative Committee and Health, Safety and Environment Committee. Faculties have also been requested to include any significant near misses in the 'Matters of Note' section of their reports to these committees.

What to report?

As with most things in life, a degree of judgement is necessary. The sort of events we would like recorded include:

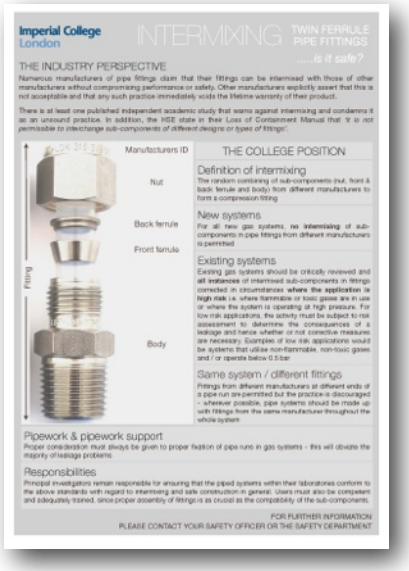
- falling, flying or moving objects that narrowly avoid causing injury.
- failure of safety critical equipment.
- electrical faults or any other equipment fault that may give rise to danger.
- observation of unsafe conditions such as fire risks.
- hazardous waste going into the wrong waste stream.
- any non-conformity that could lead to an accident or damage.

INTERMIXING TWIN FERRULE TUBE FITTINGS

Is it safe?

The Safety Department recently issued an information note on the subject of intermixing sub-components of twin ferrule pipe fittings i.e. the nut, back ferrule, front ferrule and body that comprise the constituent parts of a compression joint. Such fittings are used within a variety of systems within the College, particularly in the Faculty of Engineering. It is worthwhile going into the background of the subject in a little more detail than was possible within the constraints of a one page information note.

A number of manufacturers explicitly state that the components of their fittings can be intermixed with those of other manufacturers without compromising performance or safety, among them, manufacturers whose components are widely used in the College such as Ham-Let (supplied by FTI) and HOKE. Contrary to this stance, other manufacturers, notably Swagelok, are vociferous in their condemnation of this practice as being dangerous - particularly in critical applications. They stress the point that no manufacturer can reliably, repeatedly and uniformly replicate the products of another manufacturer and that therefore intermixing can result in unpredictable performance.


Imperial College London

INTERMIXING TWIN FERRULE PIPE FITTINGS ....is it safe?

THE INDUSTRY PERSPECTIVE

Numerous manufacturers of pipe fittings claim that their fittings can be intermixed with those of other manufacturers without compromising performance or safety. Other manufacturers explicitly assert that this is not acceptable and that any such practice immediately voids the lifetime warranty of their product.

There is at least one published independent academic study that warns against intermixing and condemns it as an unsound practice. In addition, the HSE state in their Loss of Containment Manual that *'it is not permissible to interchange sub-components of different designs or types of fittings'.*

Manufacturers ID

Nut

Back ferrule

Front ferrule

Body

Fitting

THE COLLEGE POSITION

Definition of intermixing

The random combining of sub-components (nut, front & back ferrule and body) from different manufacturers to form a compression fitting

New systems

For all new gas systems, no intermixing of sub-components in pipe fittings from different manufacturers is permitted

Existing systems

Existing gas systems should be critically reviewed and all instances of intermixed sub-components in fittings corrected in circumstances where the application is high risk i.e. where flammable or toxic gases are in use or where the system is operating at high pressure. For low risk applications, the activity must be subject to risk assessment to determine the consequences of a leakage and hence whether or not corrective measures are necessary. Examples of low risk applications would be systems that utilise non-flammable, non-toxic gases and / or operate below 0.5 bar.

Same system / different fittings

Fittings from different manufacturers at different ends of a pipe run are permitted but the practice is discouraged - wherever possible, pipe systems should be made up with fittings from the same manufacturer throughout the whole system

Pipework & pipework support

Proper consideration must always be given to proper fixation of pipe runs in gas systems - this will obviate the majority of leakage problems

Responsibilities

Principal investigators remain responsible for ensuring that the piped systems within their laboratories conform to the above standards with regard to intermixing and safe construction in general. Users must also be competent and adequately trained, since proper assembly of fittings is as crucial as the compatibility of the sub-components.

FOR FURTHER INFORMATION PLEASE CONTACT YOUR SAFETY OFFICER OR THE SAFETY DEPARTMENT

Suppliers such as FTI actively promote the assertion that Ham-Let components are fully intermixable with Swagelok components and Ham-Let 'guarantee' (backed by a Lloyds Certificate) the reliability of such fittings. Given that Swagelok oppose this view (and state that intermixing voids their limited lifetime warranty), its difficult to see how a one-sided 'guarantee' could work and in reality, it is likely to mean very little in the event that something goes wrong. The College have clearly expressed concerns to FTI with regard to liabilities in such an event.

A paper '*Intermixing Twin Ferrule Tube Fittings - is it Safe'* by Mihsein & Seymour appeared in the Journal of Engineering Design as long ago as 1999. The authors report that a wide range of experimental tests and finite element analysis (FEA) were employed to show that the swaging and sealing mechanisms of components were different, despite geometric similarities being evident. They further concluded that *'no two companies produced components to the same dimensional and metallurgical specification and that pressure testing alone should not be used as the only means of validation'.* This contrasts with the simple series of pressure tests that form the basis for the Ham-Let Lloyds Certificate of verification. Most importantly, the authors concluded that the in-depth engineering assessments demonstrated that the sealing methods achieved were not as originally designed and therefore a high risk factor must be applied.

The College has employed FTI to undertake training in pressure fittings for a number of years. Given their views on the subject of intermixing, an urgent meeting with them was called in January and the College was represented by the Safety Department, the Faculty of Engineering Safety Manager and two experienced academics from the Faculty. The FTI representatives agreed that a more balanced view should be presented during the training sessions and most importantly, that the College position on the subject must be clearly conveyed. The College position is that intermixing sub-components from different manufacturers within the same compression fitting is not permitted. Furthermore, this principle shall apply to all newly installed systems and that any existing systems employed in high risk applications should be critically examined and corrections made if necessary.

It should be made clear that the College are not making any judgements about which manufacturers to choose when purchasing fittings. That decision remains with the end user. Ham-let fittings are widely used in the College and there is no reason to believe that they are inferior. In addition, we have received positive feedback from users with regard to FTI, particularly in terms of customer service and competitive pricing.

The full paper by Mihsein & Seymour can be provided by the Safety Department, though it is searchable and free to download from the internet. The College information note can be found at: http://www3.imperial.ac.uk/safety/subjects/pressuresystems

Safety Training

The first meeting of Safety Training Advisory Committee (STAC) took place on 20 May 2013. The remit of STAC is to review future training courses focusing on face to face classroom contact, blended e-learning and refresher training. Stakeholders from both academic and non academic areas were invited and representatives from the Safety Department and Learning and Development Centre were also present. There was an understanding that learning is a strategic necessity for organisations and the need to think together in a more flexible, responsive and adaptive way. Strategy is about preparing for an essentially unknown future and strategic renewal requires some degree of unlearning as well as looking at new ways of learning. All stakeholders were open to innovative change and want to consider the impact of safety training and whether it actually changes behaviour. This is important because it goes to the heart of what we mean by a learning organisation. All present recognised that there were strengths and weaknesses of the current provision but wanted to identify and build on best practice.

This discussion also considered the balance between central and local provision. There was an acknowledgment that there will be need for increasing local provision, but there are resource issues in terms of staffing and time. Options revolved around provision being centrally provided and centrally funded; locally provided and centrally funded; or locally provided and locally funded. There is therefore a need to improve both central and local record keeping. Currently, the OLM system is able to search for staff records, auto-enrolment and self service, send automated notifications, view learning history and produce reports. The OLM system does have limitations in that there are enrolment issues for postgraduates, undergraduates and contractor records which the system records as “External”. There is a reasonable delay for online course statuses to be updated and departments wanting to take ownership for running reports are faced with data protection and “External” issues. However, there is a need for record standardisation so that learning records can be viewed, although some departments are increasingly using *Sharepoint* as a repository for information.

To achieve a coherent approach, defined structure and with reference to the risk spectrum, the Committee focused on several themes:

- Effective Learning Needs Analysis
- Quality Assurance
- Record Keeping
- The role of Safety Representatives

The agreement reached was that interested groups would meet, plan and propose suggestions within one month and that proposals would be circulated for consideration prior to the next STAC meeting.

Contact Details

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