

**University of St. Andrews
School of Chemistry**

**Minutes of the School Safety Committee
Wednesday 9th August 2023**

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|----------------|-------|-------------------------------|
| Kevin Jones | [KJ] | H&S Manager (Chair) |
| Bela Bode | [BEB] | Assistant Safety Coordinator |
| Petr Kilian | [PK] | Assistant Safety Coordinator |
| Andreas Stasch | [AS] | Assistant Safety Coordinator |
| Paul Connor | [PAC] | Phys Chem Representative |
| Magnus Alphey | [MA] | BSRC, X-Ray |
| Robert Steele | [RS] | Earth Sciences Representative |
| Cathy Dwyer | [CD] | Drochaid |
| Iona Hutchison | [IH] | Disability Officer |
| Nick Taylor | [NT] | Janitorial Staff |

1. Apologies

Apologies received from Iain Smellie, Scott Filipovic, Brian Walker and Terry Smith

2. Minutes from Previous Meeting

The minutes from meeting on 19th January 2023 were taken as read and approved.

3. Matters Arising / Progress Update

KJ explained that a table had been circulated to the committee outlining the progress made since the last meeting and that several actions had been completed.

KJ outlined the actions that are still to be completed:

- Finalising an updated monthly lab inspection form – AS and KJ have produced a new form, however, KJ would like to update the laboratory "hazard document" for each laboratory before circulating to staff.
- Finalise the printing and laminating of overnight forms to be distributed to the department.

PK raised a query about recirculating chillers. He explained that he understood the benefits of recirculating chillers, but wondered why rotary evaporators were being left on overnight (referring to an incident discussed at the last meeting). KJ clarified that the rotary evaporator was not left on, but rather the mains water used for cooling was accidentally left running, resulting in a minor flood. Recirculating chillers should help to minimise the extent of any floods.

PAC raised a point relating to the updates to the CHARM system, the introduction of the section relating the experimental scale and the planned production of a "scale guidance" document. He mentioned that he had received risk assessments for approval in which safety information had been entered into the wrong text box, but no consideration of scale had been included. KJ explained that

he had re-recorded a video detailing how to use CHARM to complete a risk assessment that includes a detailed description of the scale section to help students and staff understand what should be included. KJ also explained that a document to complement the video will be developed.

AS queried the process associated with risk assessments that require review (those RAs that are >2 years old) and questioned if the risk assessment could be returned to the student rather than the supervisor. PK commented that the student may have left in which case the risk assessment becomes defunct without anyone being made aware. AS also queried the approval procedure in which named workers need to sign the form and, if the RA is rejected, then all workers need to sign again. KJ explained that his advice is for a single worker to develop the risk assessment in partnership with their supervisor and, once approved, the supervisor can add additional workers without the need for everyone to resign the form. KJ went on to explain that EHSS are looking at replacing / updating CHARM. RS suggested that a meeting with John Nicholson would be beneficial so that the requirements for a new system can be discussed.

| Actions | Date Completed |
|--|----------------|
| KJ to update "lab hazards" document, separate into individual files and add to intranet. Once complete, AS and KJ to circulate the updated monthly checklist to staff. | |
| KJ to complete printing and laminating of overnight forms and distribute to research groups. | |
| KJ to produce "guide to scale" document and add to chemistry H&S website | |
| KJ to contact John Nicholson regarding a meeting to discuss requirements of an updated CHARM system | |

4. Incidents

Incident #1 - Distillation resulting in ignition of methyl tert-butyl ether:

KJ explained that this particular incident occurred several months ago and was discussed at a Chemistry Staff Council, but raised here for wider-awareness. Distillation of MTBE resulted in a fire. After investigating the accident, it was found that the student was using a heat gun to heat the still-pot. It seems likely that pressure built up inside the glassware causing the joints to separate, hot vapour to escape and make contact with the heat-gun element resulting in ignition.

BEB queried whether the heat gun had been included in the risk assessment and KJ confirmed it was not specifically mentioned. KJ explained that a safety bulletin had been produced and was available on the chemistry H&S website. BEB suggested that this was raised at staff council to inform supervisors that a risk assessment covering the use of heat guns should be considered.

Incident #2 - Heat gun used to dry a solvent soaked cardboard box:

KJ described an incident in which a heat gun was used to "dry" a cardboard box that had become soaked in flammable solvent resulting in ignition of the cardboard. The box was placed on the floor and the smouldering material was stamped out. Whilst no injury or damage was caused, it highlights that students may not fully consider the hazards associated with heat guns.

PAC and PK highlighted that, whilst the incident is regrettable, it is a good sign that the group reported the incident. Related to the incident above, BEB queried whether a general risk assessment covering heat guns had been produced. CD queried whether a one-page "heat gun – do's and don'ts" could be

generated to inform students of the dangers. KJ agreed that this was a good approach and he will author a document covering this topic.

Incident #3 – Minor HF exposure

KJ described an incident in which 100 µl aliquots of HF were being added to a solution of tetraethyl orthosilicate. The worker involved was manually stirring the mixture when the spatula caught on the bottom of the reaction vessel and sprayed a small amount of the mixture on the workers cheek.

Investigation of the incident showed that the group had a well-defined procedure for the use of HF and the emergency actions (treating the area with readily available calcium gluconate gel) was followed. Fortunately the reaction between HF and TEOS is rapid and the likelihood of free HF being present was limited, however, the response from the lab users was good. Based on the incident, the standard procedure for HF work within the group has been updated to more strongly state that the fume cupboard sash should be kept as low as possible to provide an additional layer of protection for the lab user.

Incident #4 - Teaching laboratory incidents

KJ explained that last academic semester saw several incidents in the undergraduate teaching lab involving broken glassware being placed into general waste bins, unidentified chemicals being left on bench tops and a case in which concentrated sulphuric acid was spilt on a bench, not cleaned and a second student leant on the acid, ultimately receiving a burn. BEB and PK queried whether it was possible to identify the student responsible and KJ explained that the students can either hide in the crowd and some incidents occurred when a student had gone over time and the rest of the student cohort had left the laboratory. KJ explained that he would raise at staff council and would work with lab convenors to police this over the next semester.

Incident #5 – Needle stick injuries caused by re-sheathing used needles

KJ explained that several incidents of lab users "resheathing" needles used to dispense research chemicals resulting in needle-stick injuries have been reported. BEB commented that "resheathing" needles is prohibited by departmental policy and needs to be strongly enforced. He suggested that this is raised at chemistry staff council the emphasise that this is an area that needs to be improved. KJ agreed to raise this at the next staff council meeting.

| Actions | Date Completed |
|---|-----------------------|
| KJ to inform staff about key points raised from incidents at next staff council meeting. | |
| KJ to produce "guide to scale" document and add to chemistry H&S website | |
| KJ to produce "heat gun safety" document and add to chemistry H&S website | |
| KJ to contact John Nicholson regarding a meeting to discuss requirements of an updated CHARM system | |

5. EssentialSkillz Courses

KJ explained that, over the last year, safety coordinators had helped develop courses for the EssentialSkillz platform. The "Introduction to Fire Safety for Lab-based Science Schools" course was circulated last year and a new course entitled "safe working in the laboratory" is currently awaiting release by Principal's Office. In the meantime, KJ and MA have developed courses covering general risk assessment, use of the University CHARM system and a building induction specific for Chemistry. KJ hopes that these courses will be released shortly such that PhD students starting in late September can be enrolled. KJ explained that he had also contacted Gareth Miles (Dean of Science) to ask whether this could be extended to final-year undergraduate students. MA explained that the main benefit of the EssentialSkillz platform is being able to quickly determine the level of course completion on a single platform. PK commented that he sees the benefit of being able to quickly gauge compliance.

| Actions | Date Completed |
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| KJ to follow up with Christine Linton, EHSS and Gareth Miles to request ES courses are made available as soon as possible. | |

6. Fire Wardens

KJ explained that Yuri Andreev and Ross Blackley have both retired and their roles as fire wardens need to be reassigned. KJ suggested that he approaches Aaron Naden to act as fire warden for the microscopy suite and Gary Moffat to temporarily cover the exit previously handled by Yuri Andreev until a suitable replacement located in that area of the building can be found.

KJ explained that, due to the recent the recent change in legislation, security & response will attend in the event of a fire alarm activation to confirm whether it is genuine. KJ has contacted S&R to see whether training can be provided to local staff members to reduce response time. He will contact fire wardens to ask for volunteers to undertake this training in the future.

RS queried whether there was any possibility of upgrading Purdie to a high hazard building such that the fire service would attend automatically. KJ commented that this query has been raised, but as Purdie is not a "sleeping risk", it is not considered a priority by the fire service.

RS queried about whether building users have been informed that, in the event of a fire, they should press the fire call point (manual activation) even if the alarm has automatically sounded. NT mentioned that this was the advice that the janitorial staff had received. KJ agreed that this would be useful to provide to the building users and he could circulate this information after the next evacuation drill.

RS queried whether any consideration had been given to the number of fire detector heads are placed in the building. KJ agreed that this was an interesting question and would raise this with the fire officers / EHSS.

| Actions | Date Completed |
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| KJ to approach Aaron Naden about acting as a fire warden | |
| KJ to arrange an evacuation drill in partnership with security and response | |
| KJ to circulate an e-mail to the Purdie Building regarding changes to fire response and actions building users can take to alert fire service in event of a confirmed fire | |

7. Health Surveillance Query

KJ explained he had received a request from occupational health who plan to offer a programme of health surveillance for those working in the science schools. KJ asked the group whether they had any thoughts on this matter. RS queried what was meant by health surveillance. MA clarified that occupational health had capacity to offer lung function, dermatitis and (possibly) hearing tests, but more specialist tests (e.g. blood tests) are not available.

CD commented that the requirement for health surveillance would be identified by the initial risk assessment or in the event that a worker reports a health issue. KJ agreed, but highlighted that staff / students author risk assessments and may be unaware if health surveillance is required. KJ suggested that any message sent to laboratory users should provide details about health surveillance to allow staff and students to make an informed choice. BEB highlighted that this should be considered in a CHARM replacement such that chemicals / biological agents that require consideration of health surveillance could be automatically highlighted. PAC commented that the tests available may not be effective in identifying diseases that could develop through exposure to the research chemicals used in the school. MA and KJ commented that they will continue this discussion with occupational health and EHSS and report back to the committee.

| Actions | Date Completed |
|---|----------------|
| MA and KJ continue discussion with occupational health about contacting staff about health surveillance | |

8. Gas Cylinder Training

KJ explained that he would like to develop a practical training course covering the safe movement and use of gas cylinders. KJ commented that the school currently does not offer any training on gas cylinders and that, in the event of an incident, we would not be able to provide any training records for students and staff. BEB commented that he would contest that no training is provided as this is often delivered in individual research groups, but understood that this referred to formalised training offered by the School.

KJ explained that the BCGA advocate minimum PPE requirements as gloves, protective shoes and safety glasses and that the department would need to provide this equipment.

AS queried whether it would be worth considering whether a member of support staff could deliver gas cylinders to the research groups. KJ explained that is currently being considered as part of a broader discussion about the role of Purdie stores. MA commented that this approach was adopted by Dundee. PK commented stating that this is also how Drochaid also work with Asif changing cylinders.

RS suggested that stores should move towards a system that allows informal drop-ins rather than scheduled times. RS also highlighted that whilst this approach could apply to house gases, it may not work for specialist gases purchased by individual research groups and, on this basis, gas cylinder training would need to be available for all. AS commented that such training would be valuable for undergraduate students. MA commented that training had been delivered by BOC in the past and covered both movement and operation.

BEB mentioned that ultimately a system would need to be introduced so staff / students can only gain access to cylinder stores once practical training has been completed.

MA commented that EHSS should be approached to see if sessions could be funded. KJ mentioned that this could perhaps form the basis of train-the-trainer sessions that would allow training to be delivered in house.

| Actions | Date Completed |
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| KJ to investigate gas cylinder training course and development of in-house version | |

9. A. O. B.

RS commented about strong solvent smells developing in the clean lab. PAC suggested that this might be due to a water aspirator being used in vacuum filtration could be drawing solvent vapour down the drain. KJ commented that he would need to speak with Scott Filipovic to see if the source can be identified.

| Actions | Date Completed |
|--|-----------------------|
| KJ to work with RS and SF to investigate source of solvent smell | |