

**School of GeoSciences  
Laboratory and Workshop Inspections 2009**

**1. Introduction**

A full inspection of all GeoSciences labs and workshops was made by Dick Kroon and Dodie James during late August and early September 2009. The primary purpose of the tour was to audit compliance with the terms of the School Health & Safety Policy, and to monitor and review the operation of that Policy in School lab and workshop facilities. However, somewhat predictably, other issues, not directly related to health and safety, came to light during the tour and these are also recorded here for consideration by the Facilities Committee at its October meeting.

**2. General Findings**

Labs and workshops are, in general satisfactorily managed and safety requirements are broadly observed in practice. We were, however, concerned that ownership of a facility is not, in all cases, accompanied by ownership of the responsibility for health and safety in that facility. In the event of an incident or accident, those responsible for the management of facilities would be unable to **prove** compliance with School policy and would, therefore, render themselves and the School vulnerable to criminal prosecution or claims of negligence. Specifically, the following general failures and problems were noted:

2.1. General risk assessments are not current.

Each general risk assessment has a review date and should be updated annually, or counter-signed and re-dated if there have been no changes since the last assessment. General risk assessment forms (RA1) for labs and workshops are available on the School safety web site.

2.2. COSHH assessments are not always complete.

COSHH assessments are NOT the same as safety data sheets. As soon as any hazardous substance is used in any procedure a COSHH assessment must be completed. Again forms are available on the School web site. COSHH includes chemicals, biological organisms, and the use of naturally occurring materials.

2.3. A severe shortage of storage space within, or associated with, labs and workshops.

Working space is too congested in many cases and there are serious implications for fire and general workplace safety.

2.4. Well appointed labs are being used mainly for storage while other internal rooms are being brought into use as research labs. Better use of space could be achieved by using internal rooms for storage.

2.5. Samples, redundant equipment, and general 'stuff' is accumulating in lab areas and other places (such as under stair cupboards and corridors) forbidden by the fire regulations.

A major clear-out in a number of areas is now urgently required. There has been little or no pressure placed on students and research staff to remove samples and materials etc when projects are completed. Lab managers should become proactive in ensuring School facilities are maintained in good shape for the incoming cohort of workers.

Specific details of these issues and recommendations for discussion have been included in the relevant sections of this report.

### **3. Crew Labs**

These labs are well appointed and generally pleasant areas to work in. Safety in the Gas Lab (Room 2) is particularly well managed. In this building, more than elsewhere in the School, laboratory space is being used for the storage and periodic maintenance of field equipment. While space is undeniably required for these purposes, it may not be the best use of the facilities available. Specific points related to the Crew Labs are as follows:

#### **3.1. Rooms 4 & 5 (Chemistry Labs)**

- General risk assessments must be reviewed and updated.
- General housekeeping standards could be improved.
- Care must be taken with labelling chemicals cupboards and capping bottles of chemicals.

#### **3.2. Rooms 11 & 12 (Mencuccini, Grace)**

- No general risk assessments.
- No COSHH assessments.
- Look like dumping rooms.
- Evidence suggests that work and supervision standards do not comply with School policy.

#### **3.3. Room 13 (Heal)**

- Cardboard and packaging accumulations.
- Lead acid batteries being used as door stops.

### **4. Geography Labs**

These labs are generally well appointed and managed. Risk assessments and COSHH assessments have been recently reviewed and updated. Safety in the Cosmogenic Unit is particularly well managed. Out-of-hours working policy and supervision rules are generally observed. Supervision could be improved by ensuring students understand the limitations which the School imposes so they make appropriate arrangements to get project work started and completed. Specific points related to the Geography labs follow:

#### **4.1. Room 3.07 (Chemistry Store)**

- Chemicals which are no longer needed should be disposed of via the Chemistry Stores.

#### **4.2. Room 3.03 (Mineral Separating)**

- General risk assessment for this area must be reviewed and updated.

### **5. John Murray Labs**

These labs are generally well appointed and managed. However, all lab areas are extremely short of storage space and lack of bench space is generally a problem. Metal cabinets are on order for the rear corridor and more could be provided if the remaining derelict wooden cupboards were replaced with additional metal cabinets, as the fire officer has previously requested. NOTE: Metal cabinets placed in corridors must be lockable. Specific points are as follows:

#### **5.1. Room 5 (Organic geochemistry – Mowbray/Cowie)**

- Insufficient bench space.
- Inadequate storage.
- Hydrogen sulphide fumes come through from the fume hoods in the adjacent lab (Ngwenya – Room 7).
- General risk assessment and COSHH assessments must be reviewed and updated.

## **5.2. Room 7 (Ngwenya)**

- General risk assessment and COSHH assessments must be reviewed and updated.
- Accumulations of combustible materials (cardboard particularly) must be removed.
- Leakage of hydrogen sulphide fumes into roof space causes problems in adjacent lab.

## **5.3. Room 8 (Butler)**

- General risk assessment and COSHH assessments must be reviewed and updated.
- Cardboard must not be allowed to accumulate in this area.

## **5.4. Rooms 18 & 17 (Ngwenya)**

- Safety files containing risk assessments and COSHH assessments for biological work must be set up and maintained.
- All staff working in these labs and Room 7 should participate in the University's Biosafety training programme.
- Guards and/or warning signs should be provided around the shaker in Room 17 as there is a risk of entrapment in the spring mechanism at the corners.
- Storage for this area could more logically be situated in the area leading off Room 16 (the oceanography store which is currently used by Craven for Ion Probe storage). There is already an access door from Ngwenya's lab.

## **5.5. Rooms 10-14 (Thin sectioning)**

- Room 13 requires some ventilation – consider a Ventaxia or similar fan.
- Part of the false ceiling in Room 13 is missing and should be replaced.
- Room 14 (saws) is very cold as there are old AC vents and no heating. Consider blocking some of the vents to reduce draught.
- General risk assessment and COSHH assessments must be reviewed and updated.

## **6. Outside Block: Clipper Saw (Hall) and Crushing & Grinding (Odling)**

Both these rooms are dirty and have accumulated offcuts and rock samples which have clearly been left for some considerable time.

- A thorough clearance and cleaning is required.
- All failed and obsolete equipment should be thrown out.
- General risk assessments in both facilities must be reviewed and updated.
- Noise and dust level assessments should be reviewed.

## **7. Grant Institute Labs and Workshops (Old Extension & Old Basement)**

These labs and workshops are generally well appointed and managed. Specific points as follows:

### **7.1. EMMAC Labs**

- General risk assessments and COSHH assessments in all areas must be reviewed and updated.
- The Electron Probe in Room 121 has been mothballed. Care must be taken to ensure that this room does not become a storage area for combustible materials. Risk assessments and other safety information relating to the Electron Probe should be contained in a lab safety file.
- The microscope lab (Room 100) requires exhaust ventilation for the rotary vacuum pump.
- Winchesters accumulating in the Probe Prep Lab (Room 119) should be washed and discarded in the glass recycling bins behind the Chemistry Department Stores.

## **7.2. Mechanical Workshop**

The mechanical workshop (Room 116 and 122) is well equipped and managed. The machines and equipment have recently been assessed and inspected according to statutory requirements. Reports are available via the Crimson system through University Insurance.

- The workshop is rather overcrowded and care must be taken to ensure sufficient space is maintained around the machines.
- General risk assessments and COSHH assessments must be reviewed and updated.

## **7.3. XP Unit and Prep Labs**

DJ reported in detail on the XP suite early in 2009 and recommendations for improving storage and workspace were made (GW to report back). Despite Butler's recent efforts it was noted that a considerable amount of old computing equipment etc is still being stored in this area. Butler and Elphick are, therefore, asked to consider rationalising further to resolve storage problems in XP.

- General risk assessments and COSHH assessments must be reviewed and updated for all areas.
- Lifting tackle stored outside the XP labs must not be allowed to spread and restrict access to the X-ray CT lab.
- The 2kbar lab (Room 125) currently houses 'trolleyed' instruments and equipment in storage. It was noted that alternative space must be found for these items if the facility is suddenly required for research purposes.
- The prep labs (Rooms 133-5) seem to accumulate old chairs and cardboard and must be cleared out to improve access. The main entrance also requires an outside handle. This area needs a lab safety file to house risk assessments and other relevant safety information.

## **7.4. Basement Rock Storage**

The drawers used for rock storage in the old basement have a variety of combustible boxes and bags of rocks and samples on top. The fire officer has repeatedly asked for built-in cupboards to be constructed here, or for the top surface to be sloped so that it cannot be used for storage.

## **8. Grant Institute Labs (Ground Floor East End)**

These labs have been recently cleared out and equipped. Specific points as follows:

### **8.1. Room 214 (Mineral Separating & Gel Prep) - now under the care of Ian Butler.**

- The security of this lab should be carefully monitored if it is to be used for CO<sub>2</sub> experiments in future.
- General risk assessments and COSHH assessments must be reviewed and updated.

### **8.2. Room 136 (Thordarson)**

This is an internal room used for storage and sieving crushed samples. It is less than suitable for the amount of usage and there should be cleaning protocols and vacuum cleaning equipment available.

- The amount of dust generated is of concern and dust levels should be measured under normal usage conditions. Safety warning signs relating to the need for respiratory protection are required.
- This area needs a lab safety file to house general risk assessments and other relevant safety information.

### **8.3. Room 207 (Coral Drilling – Elliot)**

This is another internal room and is too hot for a working area in regular use.

- This area needs a lab safety file to house general risk assessments and other relevant safety information.

## **9. Grant Institute Labs and Workshops (Ground Floor West End)**

**NOTE: General risk assessments and COSHH assessments must be reviewed and updated in all areas on this corridor except XRF/XRD which are up to date.**

The labs in this area generally need a thorough clearing out. This process is well underway in the Oceanography and Clean labs (Rooms 223 and 225) but the Core Prep Lab (238 - Tait/Pike) and XRF/XRD instrument and preparation labs (Rooms 230, 233 and 234 - Odling) are particularly bad. These areas contain drawers and cupboards where rocks, powder samples, and other items, have accumulated over a considerable time. The following specific points were noted:

### **9.1. Room 236 (Wet Sediment Lab – Mennim)**

- Eye wash needs to be fixed to the wall.

### **9.2. Room 235 (ICPMS – Geibert/Tankere-Muller)**

- A sink would be useful to avoid carrying acids into alternative labs via the corridors for disposal.
- A dust strip on the door would help reduce contamination entering the room from the corridor.
- Vents in the door should be higher up to reduce floor level dust entering the room.

### **9.3. Room 223 (Oceanography – Geibert/Tankere-Muller)**

- Door closing mechanism requires adjustment.
- Cupboards beneath fume hoods are rusting due to acid storage and lack of drip trays.

### **9.4. Room 224 (Stable Isotope Mass Spectrometer - Chilcott)**

- Care must be taken to dispose of waste oil and accumulations of cardboard.
- A low oxygen monitor must be installed inside the lab and must be connected to audible sirens located at head height inside the room and another in the corridor outside. Specification for this equipment has been passed to Chilcott and Tudhope.

## **10. Grant Institute Labs and Workshops (Ground Floor New Extension)**

The labs and workshops on this corridor are well appointed and managed. The following specific points should be noted:

### **10.1. Room 241 (High Field Lab and Map Room) - Thordarson/Tait)**

- This area needs a lab safety file to house general risk assessments and other relevant safety information.

## **11. Grant Institute Labs (First Floor New Extension – Room 305 - Darling)**

The palaeontology lab is well fitted and managed but suffers from poor ventilation and a shortage of bench space for student projects. It is recommended that two freezers are relocated (possibly to the emergency shower/store on the ground floor) to reduce heat output and allow bench extensions. Freezers should not be located in front of the doorway inside the room as previously suggested.

## **12. Grant Institute Corridors and Under-stairs Cupboards**

- Display cabinets and rock collection storage cabinets which were taken out to accommodate new fire doors must be relocated as soon as possible.
- Additional fire sirens are now required in corridors as those in existing locations are no longer audible in all areas. This has been noted in the fire officer's inspection but needs fairly urgent attention.
- The cupboard under the west staircase had been sealed up but has now been reopened for rock storage. This cupboard should be cleared and sealed up permanently in accordance with the fire officer's instructions.
- The cupboard under the main staircase should not contain any combustible materials. This cupboard should also be cleared out.