



UNIVERSITY OF CAMBRIDGE

Geography Science Laboratories

Physical Geography - Laboratory Work



<https://www.geog.cam.ac.uk/facilities/laboratories/>



@GeographyLabs



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IMPORTANT CONTACT DETAILS:

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<https://www.geog.cam.ac.uk/facilities/laboratories/safety/>



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Laboratory Safety

Advice to Students
on Safety in the
Geography Science Laboratories

Safety and Security Handbook

<https://intranet.geog.cam.ac.uk/safety/handbook/>



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Laboratory Safety = Common Sense + Planning



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RISK ASSESSMENT

<https://www.geog.cam.ac.uk/facilities/laboratories/safety/riskassessment/>

&

CHEMICAL HAZARD RISK ASSESSMENT (C.H.R.A.)

<https://www.geog.cam.ac.uk/facilities/laboratories/safety/riskassessment/chemhaz/>

“Permits to work”



Laboratory Safety

- ▶ **Rules for Safe Working.**
- ▶ Fume Cupboards.
- ▶ Electricity.
- ▶ Water.
- ▶ Fire.
- ▶ Chemicals, Flammables & Explosive Substances.
- ▶ Vacuum Techniques.
- ▶ Lone Working & Use of Equipment Overnight.
- ▶ Compressed Gases.
- ▶ Biological Hazards & Foreign Soils.



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Rules for Safe Working in the Geography Science Laboratories

- Risk Assessments and C.H.R.A. ; a **Legal Requirement**.
- Read & observe special safety instructions.
- Never eat or drink in the laboratories.
- Always wear a lab coat, face mask, keep long hair tied back.
- Keep your work area tidy; store samples properly.
- Wash hands & remove lab coat when leaving the laboratory.
- Never use equipment unless authorised & trained.
- Report any accident, dangerous occurrence or injury.



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Rules for Safe Working

in the Geography Science Laboratories during COVID19

- Contact a member of lab staff via email in advance.
- Lab induction via Zoom
- Policy document
- Self declaration form
- Risk Assessment for working in the laboratories during COVID19.
- Observe special safety instructions.

<https://www.cam.ac.uk/coronavirus/stay-safe-cambridge-uni>



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Fume Cupboards

- Your principal protection from hazardous substances.
- Fume Cupboards; general work and solvents.
- Acid Digestion Fume Cupboards; Concentrated acids.
- Must be kept clean and tidy.
- Must be switched off when not in use.
- Front of Fume Cupboard to be kept closed as far as possible.
- Overnight running must be clearly signed.



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Electricity

- Electric Shock & Electrical Fires.
- Report any malfunctioning equipment.
- Beware of worn or damaged cables, plugs & sockets.
- Check whether equipment has been electrically tested.
- Electrical equipment which uses water presents a special hazard.



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Water

- Secure water supply & drainage for equipment.
- Never leave running water experiments overnight.
- Always clear up spillages.



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Fire

- Flammable Materials and Electrical Fires.
- Do you know where the Fire extinguishers are?
- Do you know which type to use?
- Do you know the Fire Escape Routes?
- Never wedge open a Fire Door.





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Chemicals, Flammables & Explosive Substances.

- Hazards include; Ingestion, Inhalation & Contamination.
- C.H.R.A is a **Legal Requirement** before use.
- Do you understand the **Risks** and how to minimize them?
- Do you understand how to **Protect** Yourself and Others?
- Do you know to deal safely with a spillage?
- Can you cope in an emergency?
- Special rules for Flammables & Explosives.



Flammable



Danger
Explosives



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Vacuum Techniques

- Danger from the Implosion of Evacuated Vessels.
- Vessels must be screened by gauze or wrapped in cling film.
- Workers must wear eye protection.
- Never draw solvent vapour through a vacuum system; use a trap.



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Lone Working & Use of Equipment Overnight

- Working out of hours can be very Hazardous;
It is an **Exceptional Privilege** and is generally discouraged.
- You must plan your work & inform staff of your intention.
- You must inform someone at home or College; Where & When?
- Certain procedures are prohibited out of hours.
- A 'buddy' system of working is recommended.
- Equipment running overnight must be clearly signed.



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Compressed Gases

- Danger from the Explosions, Falling Cylinders and from the Gases themselves
- Handle cylinders with great care; always ask for assistance.
- Do you understand how to operate a regulator properly?
- Do you understand the properties of the gas?
- Always close valves when not in use.
- Report suspect or leaking regulators or pipework.
- If in doubt ask for help!



WARNING
Compressed
gas



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Animal &
Plant Health
Agency

Biological Hazards & Foreign Soils

- Licence to Import Foreign Soils and Plant Materials; Restrictions
- Foreign Soils: Foreign Hazards?
- Anthrax: A British Reality!
- Other Pathogens; Samples from the Sewage Outfall!
- Always use personal protection.
- Always plan the storage of potentially hazardous samples.



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‘Planned Work is Safe Work’



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RISK ASSESSMENT



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$\text{Risk} = \text{Severity of a hazard} \times \text{Likelihood}$



Risk Assessment (RA)

- ▶ Use of Apparatus, Equipment or Machinery.
- ▶ A safe system of working must be agreed.
- ▶ Risk Assessment identifies risks to **YOU**.
- ▶ Control measures must be established.
- ▶ Risks must be avoided or minimised.
- ▶ Set out agreed courses of action.
- ▶ It is a legal requirement of lab work.



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Chemical Hazard Risk Assessment



Chemical Hazard Risk Assessment

- ▶ Use of Substances Hazardous to Health
- ▶ All substances involved in a process must be considered.
- ▶ All reactions and by-products must be assessed.
- ▶ Personal Protection and Emergency Action will be stated.
- ▶ You must understand the hazards and the control measures.
- ▶ C.H.R.A forms are audited & reviewed annually.
- ▶ It is a legal requirement of lab work.
- ▶ Unassessed experiments will be suspended.



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‘So, you want to do lab work?’

Then get yourself some....

- ▶ Common Sense.
- ▶ Planning.
- ▶ Risk Assessments.
- ▶ Chemical Hazard Risk Assessments.



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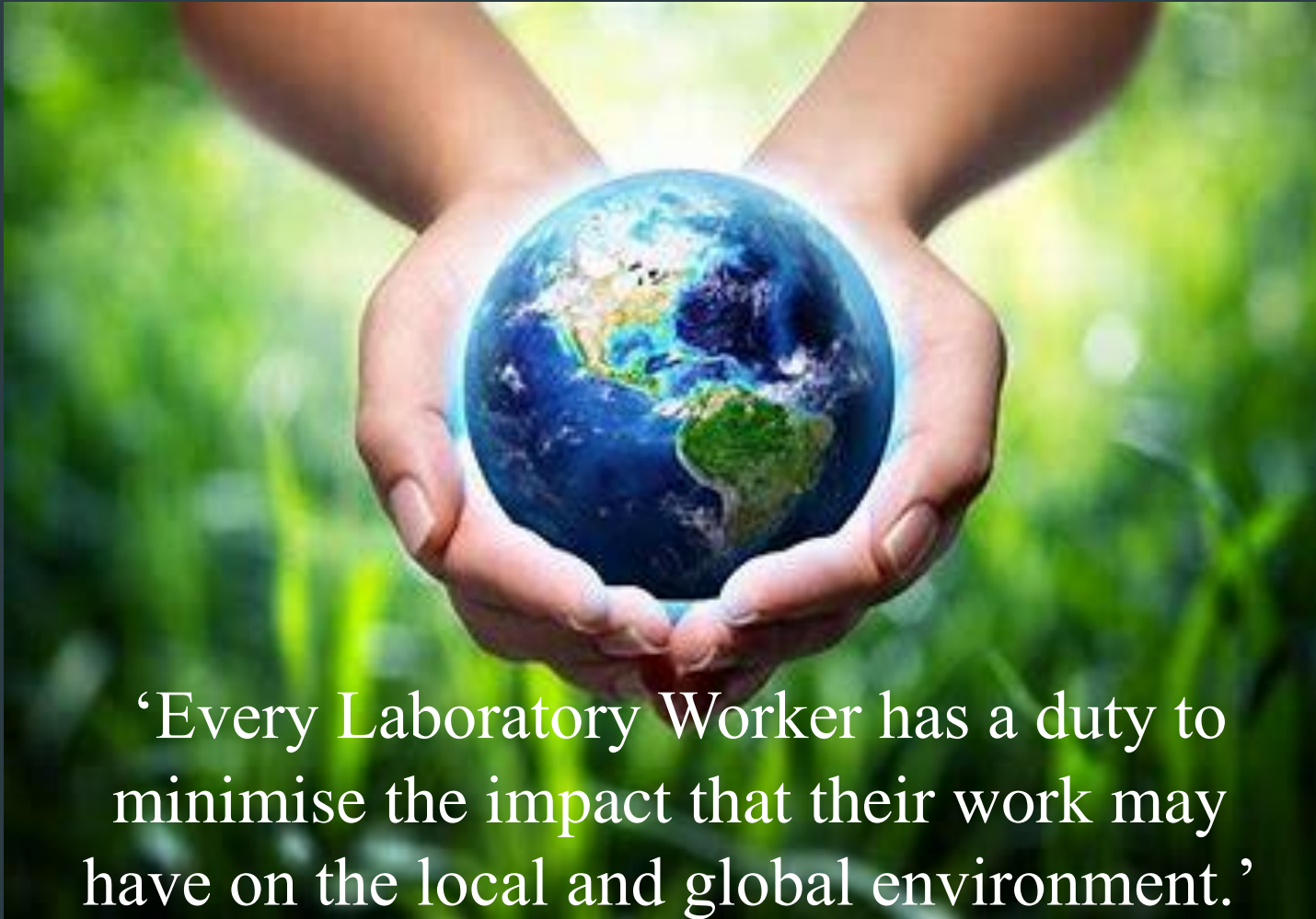
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‘What about the Environment?’



‘Every Laboratory Worker has a duty to
minimise the impact that their work may
have on the local and global environment.’



environment.admin.cam.ac.uk





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