

**WORK, HEALTH AND SAFETY GUIDELINES FOR
TEACHING UNITS AT THE
SCHOOL OF LIFE AND ENVIRONMENTAL SCIENCES**

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1. INTRODUCTION - PURPOSE OF THE GUIDELINES

Work, Health and Safety (WHS) plays a central role in providing everyone at The University of Sydney with a safe work environment. Currently at the School of Life and Environmental Sciences (SOLES), WHS requirements in teaching units are handled separately for each unit of study by the respective unit coordinator. This separation in criteria and instructions causes confusion to staff and students alike. The aim of this document is to provide uniform guidelines for all undergraduate teaching units at SOLES.

The School's Safety Committee also acknowledges that an important aspect of our undergraduate teaching is to educate students for their future careers, including important skills and knowledge in WHS. The inexperience of most students when handling hazardous chemicals or infectious microorganisms, or performing potentially dangerous experiments makes it even more important that we enforce strict but reasonable safety measures.

The guidelines in this document should be adhered to whenever possible, and any exceptions should be discussed with the School's Safety Committee or its representative(s).

2. RISK ASSESSMENTS

Risk assessments (RAs) are a critical component in identifying the risks and hazards in practical classes. A teaching unit-specific RA has to be done by the unit coordinator for each session or component of the unit, except for lectures, tutorials and similar low-risk activities. This includes units taught at the Charles Perkins Centre or other locations that have their own RAs in place. To standardize this process, the School's Safety Committee has developed a new teaching RA form. The form and a detailed guide can be downloaded from the School's Intranet.

To keep the RAs concise and manageable, it is not a requirement to list and detail every single task in the form. However, all tasks and procedures of medium or high risk, e.g. those that could lead to significant injuries, involve hazardous or toxic chemicals, or human and zoonotic

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pathogens must be listed. Further information and tips for preparing the RA can be found on the Intranet.¹

A copy of the completed teaching RA form should be emailed to the School's Safety Committee (soles.safety@sydney.edu.au) and the original should be kept on file with the unit coordinator. The RA has to be updated following changes to the practical and should be reviewed every 12 months.

Importantly, all risks and hazards outlined in the RA and its content must be discussed with the teaching staff and demonstrators involved. The RA should be included in the demonstrator notes and made available to students (e.g. Blackboard, Labarchives, practical manual). **It is recommended that risks and hazards as well as the relevant precautions are stated in the unit resources**, e.g. as an 'alert box'. A sample 'alert box' is shown below that can be modified to meet the specific requirements. **In addition, all relevant risks and hazards must be discussed with all students at the beginning of each experiment or session.** The Safety Committee encourages unit coordinators to include WHS aspects in assignments (e.g. pre work before a class).

Risks and hazards in this practical:

In this practical you will handle hazardous substances and perform the following hazardous tasks / handle the following pathogens: **INSERT RELEVANT SUBSTANCES AND TASKS HERE.**

You must observe all required safety precautions. Your unit-coordinator / demonstrator will give you a safety induction at the beginning of the class that you must attend. If you miss the safety induction (e.g. you come too late to class) you are not permitted to attend the class.

You can find a detailed Risk Assessment at **INSERT RELEVANT INFORMATION HERE.**

NOTE: Demonstrators/academics have to discuss all tasks and hazards stated in the teaching RA and the relevant precautions with their students at the beginning of each class. Students that do not attend this part of the practical must not be allowed in the class unless a separate safety induction is given to them.

¹ The SOLES intranet contains a number of risk assessments for research labs that can be used as a guide for completing the risk assessments for teaching labs.

3. GENERAL LABORATORY/ PRACTICAL CLASS RULES

The following general laboratory and practical class rules should be adhered to wherever possible and apply to all students, demonstrators and staff. Work with some chemicals microorganisms or animals may require specific or additional safety precautions that are not listed in this document. It is the responsibility of the unit coordinator to determine if additional precautions are required or to seek advice if uncertain.

3.1 Personal protective equipment (PPE)

Wearing the correct PPE is one of the most important and effective ways of preventing accidents and reducing the severity of injuries. However, incorrectly used PPE can increase the risk of accidents and their consequences, e.g. poorly fitted safety glasses can obscure peripheral vision.

The following PPE must be worn in all practicals when handling samples, chemicals or performing lab procedures. Non-compliant students must not be allowed in or will be asked to leave the laboratory.

- Lab coat or lab gown: A lab coat must fit properly and be buttoned/tied up and the sleeves must not be rolled up above the elbow. Students must be instructed to remove the lab coat when leaving the lab. If a lab coat or gown is worn in a practical session involving PC2 organisms, students must not remove them from the class. Students will be given instructions on where coats are to be placed for autoclaving and/or disinfection before laundering. Preferably, these coats/gowns are autoclaved prior to students being allowed to remove them from class. If this is not possible, a weekly wash in dilute bleach or active oxygen (e.g. Napisan) is recommended. Any culture spills on coats or gowns must be disinfected before it leaves the lab. Note, a lab gown is preferable for work with PC2 microorganisms.
- Shoes: Footwear must be sufficiently enclosed to provide protection for the foot against dropped objects or chemical or culture spills. The footwear should distribute weight evenly such that there is no risk of damaging impermeable floor surfaces or tripping. Not acceptable footwear includes thongs or sandals, high heels or high platform shoes, or shoes made from absorbent material such as 'Ugg' boots or canvas sport shoes.
- Gloves: Latex or nitrile gloves must be worn whenever working with hazardous chemicals or pathogens. Gloves need to fit well as loose gloves can cause additional hazards. Heat-resistant gloves should be used when handling hot liquids, e.g. molten agar or agarose, or cryogenics. Gloves must be removed before leaving the lab, transporting

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samples to different areas of a building or between buildings (use of transport containers) or when using mobile phones and personal electronic devices. Gloves should be changed regularly to avoid cross contamination. Also, students need to be reminded regularly not to touch their personal belongings or skin with gloves.

- Safety glasses and goggles: Approved safety glasses or goggles must be worn whenever handling pathogens or chemicals or performing tasks that pose a particular danger to the eye. This is not necessarily limited to the handling of corrosives, however the appropriate safety glasses, goggles or face shield for the task needs to be worn. The Safety Committee recommends that safety glasses are worn at all times.

3.2 Personal protective equipment and farms

Appropriate PPE for farms will vary depending on the activity to be undertaken but generally will include steel toe capped boots (preferred) or gumboots or other leather boots, and overalls or lab coats and eye protection as required.

Some farms have strict quarantine requirements, which students will be required to comply with. In some circumstances there may be a requirement for boots and clothing to be disinfected prior to entering or leaving the farm.

3.3 Safety rules

- Eating, drinking or chewing gum in the laboratory is prohibited unless specified otherwise by the unit coordinator or demonstrator in charge. This includes storing food and drinks outside a backpack/tote etc.
- Do not use mobile phones or other personal electronic devices. If use of such personal devices is required, gloves must not be worn or devices must be protected (e.g. phones kept in a sealed plastic bag). If laptops are required, they (as well as other personal devices) should be kept and used in designated areas only, e.g. a separate bench or on a clearly marked area such as a disposable bench coat. Contaminated electronic devices must be decontaminated or discarded. Note, certain laboratories are equipped with touchscreen monitors. Depending on local rules, these screens and other laboratory equipment may be touched with gloved hands (the lab supervisor will provide specific local rules). Please note: personal equipment of students is not covered by the University's insurance.
- Personal property should be kept in lockers or away from work areas.
- Do not sit on benches or on the floor.
- Long hair should be tied back.

3.4 Teaching units in areas with specific regulatory requirements

If teaching units are held in areas with specific regulatory requirements, those requirements must be adhered to. Those areas include PC2 laboratories, quarantine areas, farms and veterinary hospitals.

3.5 Emergency procedures

- Unit coordinators, tutors and demonstrators should be familiar with the University's emergency procedures (<http://sydney.edu.au/whs/emergency/index.shtml>). The emergency procedure video (<http://sydney.edu.au/campus-life/safety-security.html#emergency-procedures-video>) should be shown to all students, e.g. in the first lecture or tutorial.
- Additional information on emergency procedures can be found at <http://sydney.edu.au/campus-life/safety-security.html>.
- Students are to be shown the location of emergency exits and emergency equipment (e.g. fire extinguishers and fire blankets).
- Emergency exits must never be blocked.
- Unit co-ordinators, tutors and demonstrators should explain the emergency procedures in the first practical session: In case of a fire alarm, evacuate the building as instructed and assemble at the assembly area. On farms this may be designated by a sign. All students must report to their demonstrators at the assembly area and any missing student has to be reported to the unit coordinator or emergency fire warden. Neither students nor demonstrators must leave the assembly area unless permitted by a fire warden and the unit coordinator.
- On farms – portable sounders are available and should be used to alert students of an emergency. Yet this should be done only if safe and it is confirmed that all staff and students are not in close proximity to animals when the sounder is activated.

3.6 Reporting of accidents and near-miss incidents

- In case of an accident, inform the local first aid officers and if required emergency services on 000 (internal phones: 0-000).
- If emergency services are contacted, Campus Security should be contacted at 9351 3333 to direct emergency services to the injured person. In addition, staff or students could be asked to help directing emergency services.

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- All accidents or near-miss incidents must be reported immediately to the unit coordinator or their assigned deputy. The coordinator must log the accident or incident on Riskware within 24 hours. If possible, the coordinator should attend the site of accident / near-miss and try to determine the cause.
- Serious accidents should also be reported immediately to the School Safety Officer and the Deputy Chair of the Safety Committee.
- If unsure whether an accident or near-miss incident is to be reported, please contact the School Safety Officer or the Deputy Chair of the Safety Committee.

4. HAZARDOUS CHEMICALS AND SAFETY DATA SHEETS

The use of hazardous chemicals, including radioactive isotopes, in practicals is often unavoidable and may even be desired to train students in the correct safe working procedures (SWPs). When hazardous chemicals are used in undergraduate units, the following rules must be adhered to:

- All chemicals, including all non-hazardous substances, should be labelled correctly and in accordance with WHS regulations. A correct label includes the full name (not abbreviated) of the substance(s), hazard pictograms and hazard phrases according to the Global Harmonized System (GHS). For some experiments it may be required that chemicals are not fully labelled (e.g. when students are supposed to identify a substance in an experiment). However, a unique identifier must be attached to the container and a full list of the contents including GHS safety information (e.g. hazard phrases) must be present as a hardcopy in the lab prep room. Demonstrators should know the content of these containers and all required pictograms and hazard phrases must be affixed to the container with the 'unknown' substance.
- All hazardous substances must be handled (and stored) as listed in the safety data sheet. Use fume cupboards when required.
- Demonstrators will need to inform students about the potential risks of 'high risk' chemicals at the beginning of the class. These have to be included in the RA. A summary of these hazards should be included (e.g. in an 'alert box') at the beginning of each practical in the unit manual.
- A list and explanation of the GHS pictograms should be included in the unit manual or be made available online (e.g. on Blackboard or in an eNotebook).

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- Students must have access to all safety data sheets (SDS; formerly material safety data sheet (MSDS)). This can be done by providing access to ChemAlert or by uploading the SDS to an eNotebook or another electronic resource. Students must be told where to find this information.
- Note: Special rules and precautionary measures may be required for students with existing medical conditions, including immuno-compromised or pregnant students (see also Section 9).

5. HAZARDOUS TASKS AND SAFE WORK PROCEDURES

All tasks and procedures that bear a medium or high risk for serious accidents are to be listed in the RA and be detailed in a Safe Work Procedure (SWP; previously known as standard operating procedure (SOP)). A number of SWPs can be found on the School's Intranet. If no appropriate SWP is present, or if the SWP is not suitable, please contact the School Safety Officer or the Deputy Chair of the Safety Committee, as a new SWP may have to be developed or an existing SWP altered.

Students should have access to all relevant SWPs (e.g. on a lab computer or by uploading to an eNotebook).

Note, if a task or procedure is identified as having a high risk, the RA and SWP need to be approved by the Head of School or their delegated authority.

Examples of tasks and procedures that have a medium or high risk include:

- some hazardous chemicals including toxic or mutagenic/teratogenic substances
- pathogens (PC2)
- field work and fieldtrips (e.g. Q-fever risk)
- work with animals, fetuses and non-fixed animal tissue and fluids
- work with humans, including human tissue and fluid
- high voltage
- high or low temperature
- working with animals including domestic and wildlife species.

For units and classes, where students come into contact with animals, they are to be made aware of the risk of being injured by an animal. Students are to be taught appropriate rules of conduct

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(species specific, if required) before their first physical encounter with animals to reduce the risk of injury.

6. HUMAN PATHOGENS AND OTHER MICROORGANISMS

Special precautions such as the use of Class II biosafety cabinets are required when human pathogens or other Risk Group 2 organisms are used in undergraduate classes. Before introducing new practicals that use human pathogens, please consult with the School's Safety committee to ensure that the required safety precautions are met.

Also refer to the following for additional information:

- WHS guidance on 'Microbiology' and 'Infection Control' at:
<http://sydney.edu.au/whs/guidelines/biosafety/index.shtml>
- Australian Standards PC2 work practices – AS/NZS 2243.3 (Section 5)

If (potential) human pathogens or clinical samples are used in a practical, a statement as detailed in section 9 of this document has to be included in the Unit of Study Outline and the unit manual (see also RA).

7. WASTE DISPOSAL

Appropriate procedures for disposing of waste must be in place during practical classes. Demonstrators should instruct students at the beginning of each class on how to safely dispose of waste. Please see also SWPs for radioactive waste or biohazard waste on the School's Intranet.

8. SAFETY INSTRUCTIONS TO STUDENTS

At the beginning of each practical session all students must be instructed on the hazards and risks (e.g. procedures, chemicals and pathogens). This can be done by qualified demonstrators or duty tutors and should be done as an oral presentation allowing students to ask questions and voice concerns. An online exercise before class alone is not sufficient. The safety instructions should be based on the RAs and cover all items listed in the practical-specific RA. A short quiz to gauge the students' understanding of this information may be included.

All students must be present at the start of each laboratory session to hear the safety instructions. Students that arrive late may be either excluded from the practical or given a separate safety instruction at the demonstrator's or unit coordinator's discretion.

If students do not understand the safety instructions or do not pay attention, they are not to be permitted to complete the practical until they can prove an adequate level of knowledge.

It is also recommended to include the relevant sections from the WHS guidelines in the practical manual. The guidelines are available on the Intranet at <https://intranet.sydney.edu.au/science/soles/whs.html>.

9. STUDENTS WITH PRE-EXISTING MEDICAL CONDITIONS INCLUDING IMMUNO-COMPROMISED STUDENTS

All units should include a statement in the Unit of Study outline and the unit manual asking students with pre-existing medical conditions to contact the unit coordinator before the start of the unit. The statement should include that all information will be handled confidentially. This is of particular importance for units where a pregnant or immuno-compromised student could come into contact with human or animal pathogens or (potentially) hazardous substances.

CAUTION:

In this unit you will gain experience handling live microorganisms and/or hazardous chemicals.

Please contact the University Disability Services and the unit coordinator immediately if you have any predisposing medical condition or issues that might be relevant to your participation in the practical sessions.

If in doubt, consult with your doctor, Disability Services and unit coordinator.

Note: certain class activities (e.g. autopsy of cadavers, work in the environment, contact with animals) bear the risk of non-targeted contact with zoonotic pathogens, such as *Coxiella burnetii* (Q-fever), *Toxoplasma*, *Salmonella*, *Chlamydia psittaci*, *Campylobacter*, *E. coli*, *Clostridium tetani* and others.

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Special care has to be taken if immuno-compromised and/or pregnant students are attending classes, in particular if human pathogens and/or hazardous chemicals are used. **Please note, all information relating to medical conditions must be kept confidential at all times.**

Students with a pre-existing medical condition (and this can include allergies) should also be encouraged to register with the University's Disability Services so that an academic plan can be developed to ensure that their participation in their study can be supported as necessary (please see <http://sydney.edu.au/study/academic-support/disability-support.html> for further details of the support available from the Disability Services Team). Please note that if a student registers with Disability Services, their details remain confidential at all times and only academic staff that need to be aware of their circumstances receive a copy of the academic plan, for the purpose of organising required support. In addition, the following information box should be included in the Unit of Study outline and unit manual:

Information

The University of Sydney's Disability Services assists students who have a chronic medical condition or disability to access reasonable adjustments, and provides advice to students about support services.

More information about Disability Services can be found at
<http://sydney.edu.au/study/academic-support/disability-support.html>

9.1 Immuno-compromised students in units using human or zoonotic pathogens

Unit coordinators should arrange a personal meeting with students that identify themselves as immuno-compromised (demonstrators and teaching staff are to inform the unit coordinator immediately if a student identifies themselves as being immuno-compromised). It may be helpful to ask another academic (e.g. the Deputy Chair of the Safety Committee) to attend this meeting.

At the meeting (or before) the student must be informed that they do not need to disclose any medical information (e.g. diagnosis) or any other information that is related to their medical condition. Students must not be asked to reveal this information and all information disclosed at this meeting must be treated as confidential.

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At the meeting, the student has to be informed that they might be at an increased risk of acquiring an infection. **In order to determine if they can be permitted in class, and whether additional precautions are required, they will need to present a statement from their physician.** A document containing all pathogens / microorganisms used in class and the exact procedures should be given to the student so that a registered health care professional familiar with the student's condition can appropriately assess the situation (refer to Attachment 1 at the end of this document for details). The physician's statement should include the name of the student and the unit, detail if the student can be permitted in class and whether additional safety precautions are required. The physician's directions and safety precautions should always be followed to ensure there is no exposure to potential human pathogens. **Note, the statement and its content are confidential and must be archived in a secure location.**

The student must not be allowed to participate in potentially dangerous activities until this statement has been received and any required precautions have been taken.

Students registered with Disability Services may request that a Disability Services Officer liaise directly with the faculty on their behalf with regards to the management of the above process.

If the required safety precautions are not possible or feasible, the unit coordinator must contact the Deputy Chair of the Safety Committee and/or OHS services (Jenny Thompson) before allowing/denying access to class.

9.3 Students with other pre-existing medical conditions

Certain pre-existing medical conditions such as epilepsy or insulin-dependent diabetes increase the risk for accidents and/or require specific first aid in case of an episode. Thus all unit-coordinators should encourage students with pre-existing medical conditions to inform them. In addition to above statement, this could be done as an announcement in the first lecture or practical. Please note, students are not required to give any medical details or to make the unit coordinator aware of their condition.

If a student identifies themselves as having a medical condition or being pregnant, all reasonable efforts should be undertaken to enable them to attend the classes. To identify if special precautions are required, the student should consult with their physician and Disability Services. (see 9.1 for details).

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For pregnant students, the unit coordinator must ensure that there is no risk of exposure and adverse health effects. The educational value and importance of the practical should not take precedence over safety if the accepted knowledge is that a particular microorganism or chemical is known to be a reproductive hazard. **The student's physician should be consulted** if unsure (see section 9.1). Refer also to our WHS guidance on 'Reproductive hazards' at: http://sydney.edu.au/whs/guidelines/others/reproductive_hazards.shtml.

10. FIELDWORK CLASSES AND EXCURSIONS

Teaching is often carried out in the natural environment or the broader community, away from the normal support networks of the University. Examples include traditional survey and collection work in the natural environment, working in remote rural communities and social science interviews conducted in the community. Some fieldwork is inherently high risk due to the nature of the work environment itself or the associated work activities. Ensuring safety in these situations is dependent on quality planning, the use of appropriate procedures and equipment, and the availability of experienced and competent workers.

If fieldwork or excursions are part of a learning activity, unit coordinators must consult the University's [Fieldwork Safety Guidelines](http://sydney.edu.au/whs/guidelines/fieldwork/index.shtml) (<http://sydney.edu.au/whs/guidelines/fieldwork/index.shtml>) and submit the necessary documentation to the Safety Officer and Deputy Chair of the Safety Committee.

These forms include (but are not necessarily limited to):

- Fieldwork safety plan (FSP),
- Fieldwork project plan,
- Fieldwork disclosure and acknowledgment form (for both staff and students),
- Emergency response plan,
- Fieldwork safety briefing,
- Fieldwork itinerary,
- Participant list.

In addition, all fieldwork requires approval by the Head of School or their delegated authority (note: For units taught through the former Faculty of Agriculture and Environment, approval is

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given by Malcolm Possell). Once assessed, the documentation will be forwarded to the Head of School by the Safety Officer.

11. PLACEMENTS

Placements, e.g. farm placements or industry placements, are not covered by this document. This will be covered in a separate document, currently under preparation.

Attachment 1:

Information regarding the requirements of a physician's statement for immune-compromised or pregnant students or students with pre-existing medical conditions:

A physician's statement may be required for immuno-compromised or pregnant students and students with pre-existing medical conditions attending certain classes. In order to determine if the student can be allowed to attend a class or if additional precautions are required, the student's physician must be provided with the following information:

- 1) Copy of all relevant sections of the practical manual (e.g. experimental procedures) or similar document.
- 2) Detailed list of relevant chemicals (include SDS) and microorganisms.
- 3) Additional information to help the physician to assess the risk (e.g. 'all microorganisms will be handled inside a biosafety cabinet')
- 4) If possible, provide alternative options (e.g. that work is done in groups and that all live microorganisms will be handled by the student's laboratory partner, or that a mask will be provided).

The physician's statement should include the following information:

- 1) Name of the student
- 2) Name of the unit
- 3) That all relevant information has been sighted
- 4) Statement that the student can / cannot be permitted in class and whether additional safety precautions are required.

Note: The statement should not include a medical diagnosis or other personal information.