

SCS Safety Seminar 2023

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School of Chemical Sciences
The University of Auckland









What do we do here?

How can we do it safely?



SCS Safe working practice

We all need to wear personal protection equipment

Transport and store chemicals safely

Use chemicals according to safe guidelines

Dispose of waste safely

Know how to deal with incidents if they occur

Ask for help if uncertain or inexperienced!

Lab managers will provide technical advice and answer your questions.



Talk to your supervisor and professional staff if you are unsure about anything.



SCS Working hours





SCS Types of work





Closed	Low risk	Closed	
6 am	MONDAY - SUNDAY	12 pm	

Definition | Office work

Instrument measurements such as UV, IR, NMR

No SCS access outside these hoursIf stuck inside, call **security** on 85000 or (09) 3737 999



SCS Types of work



Definition Any work with hazardous, toxic or corrosive chemicals.

Virtually all lab work

Specialised high risk work as approved and signed off by PiC or lab manger



SCS Types of work



Definition

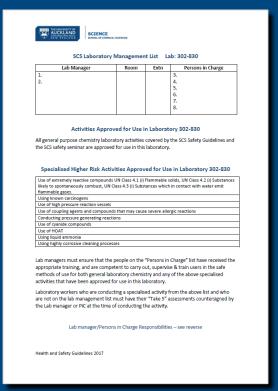
Carcinogens, explosives, radioactive material, highly toxic chemicals (e.g. CO, HF, cyanide) or controlled drugs

Any experiment that would need **immediate medical treatment** if something goes wrong

Must be **approved and signed off** by lab manger



Lab managers Person in charge (PiC) list



Work **above low risk** must have another adequately trained person within earshot to assist. **One person on the Lab**Manager | PiC list must be present

Staff and PhD students only

Lab managers & PIs are responsible for ensuring **PiCs** are trained and competent to carry out and supervise junior lab workers, and to approve **specialised higher risk activities**.

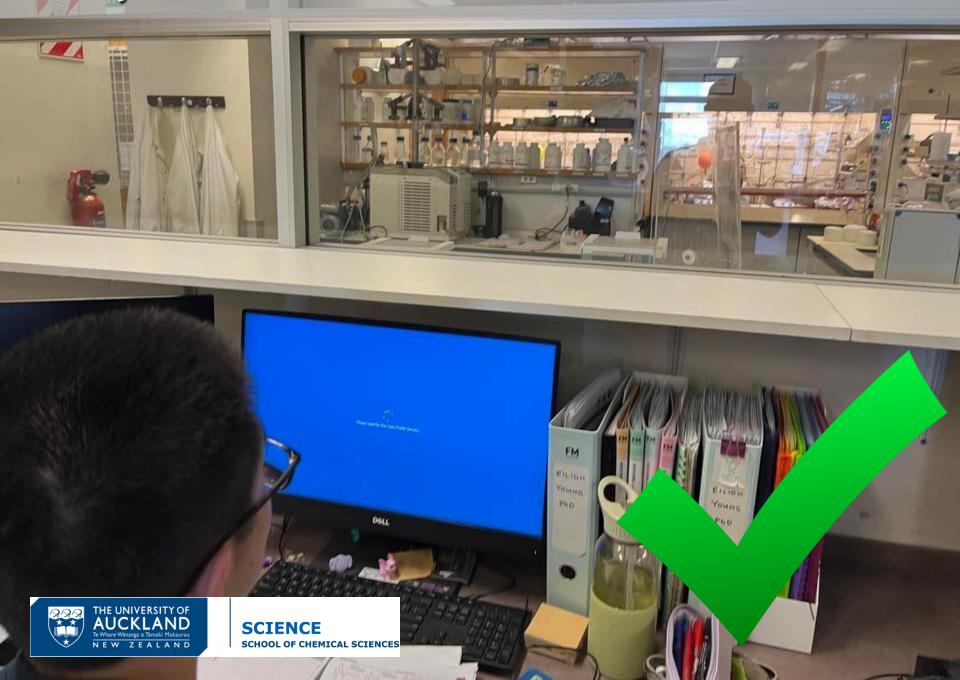
Take 5 assessments signed by the Lab manager or PiC must be available for any work being done in the lab

Working alone in labs **is prohibited**. There must always be one person **within earshot**

Specialised higher risk activities must be approved by Lab Manager



A nearby co-worker with a view of the lab and within earshot



A co-worker WITHOUT a view of the lab and NOT within earshot



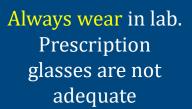
Safe lab wear Personal protection equipment



Always wear in lab. Remove in offices & normal lifts



Wear in lab.
Remove one to open doors or touch communal objects
See SMOUs







Available if required







Safe lab wear Safety glasses

Safety glasses must be worn properly at all times in laboratory areas



Prescription glasses provide no protection from chemical splashes coming from the sides and are inadequate for labwork

PhD students may not use PRESS accounts to buy labcoats or safety glasses from the Science Student Centre

PhD students are eligible to use PRESS accounts to order prescription safety glasses from the UoA Optometry Clinic. See your lab manager or professional staff.

Long hair tied back safely.



Safe lab wear Shoes



If unsure, ask your lab manager for guidance



Lab safety Location of key equipment











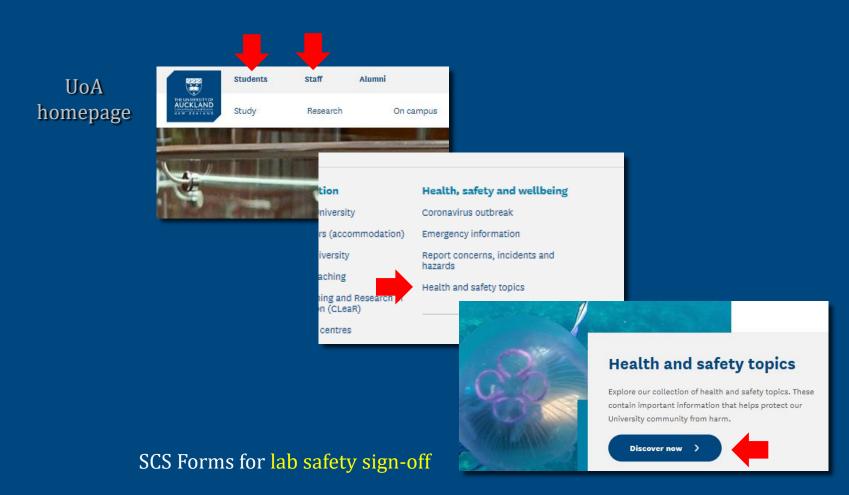


You must know where these items are and be shown them during your lab induction



Defibrillator at SCS reception in 302 L6

Safety information UoA HSW Website



Safe Method of Use (SMOU) guidelines for common reagents. These should be consulted before beginning or quenching a reaction.



Material Safety Data Sheets (MSDS) information under Databases/GoldFFX for all chemicals. Required for Take 5 assessments.

Safety information UoA HSW website

Health and safety topics

Explore our collection of health and safety topics. These contain important information that helps protect our University community from harm.

Home / Health, safety and wellbeing / Health and safety topics +





Asbestos

Learn about asbestos and the actions the University is taking to ensure that all our buildings are safe.

Find out more >



Biological materials

Learn about the University's biological safety and containment requirements.

Read now >



Chemical safety

Find out about chemical safety, including how to transport and store chemicals, important rules to follow and more.

Explore now >



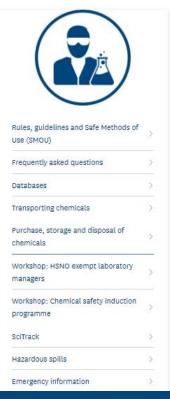
Scroll down for many more topics below!



Safety information UoA HSW website

Chemical safety

Learn more about chemical safety, including how to transport and store chemicals, what to do in an emergency, important rules to follow and more.









Again, scroll down for many more topics below

Safety information Important form and agreement

See email and attachment from Mike Wadsworth earlier this week. (The last two pages contain the form)



Name	ID Number	Access Card number	Signature	_`ate
Supervisor/Line Manag	er	Please complete and scan th		+
Signature:		Guidelines Acknowledgement form back to fos.accessrequest@auckland.ac.nz including "Safety Forms" and your name in the subject line.		

Complete, sign and return a scanned copy



Wellbeing information UoA HSW website

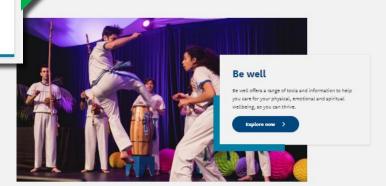


Wellbeing

Your wellbeing plays an essential role in your achievements at Universit Learn how to grow and maintain it.

Find out more >









Wellbeing information Bullying & harassment

Bullying and harassment are aspects of health and safety, that fall under the official oversight of Worksafe, as well as affecting our health & wellbeing.

THEY ARE NOT ACCEPTABLE AT UoA or SCS

If you do encounter or experience these problems, make sure to raise the issue in confidence with a trusted staff member or mentor (often, but not necessarily your supervisor). This applies to any situation, either in person or online.

SCS promotes a teamwork-based culture among our research staff and students.



Wellbeing information Discrimination

Our University

- √ safe
- ✓ inclusive
- ✓ equitable

racism
sexism
ableism
ageism
homophobia
transphobia

Equity Office

equity@auckland.ac.nz

Te Ara Tautika

AUSA Student Advice cityhub@ausa.org.nz

ZERO tolerance for discrimination

He wāhi whakatoihara kore



www.equity.auckland.ac.nz/zerotolerance

Safety information Transporting chemicals



Chemical transport is regulated. Fines of \$2K (individual) and \$10K (UoA) are possible.



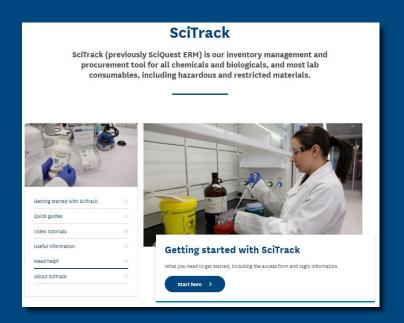
ChemCouriers can used between UoA sites. See Tasdeeq to arrange.

Public transport must NOT be used

Use a sturdy carrier or trolley and a secondary container when moving chemicals within SCS



Safety information SciTrack



Chemical storage is regulated.

Accurate locations of all chemicals are kept in SciTrack. See your professional staff member to query or update these records.

Any time chemicals are moved see your professional staff team member to update the location

When chemicals are disposed of make sure you see your professional staff team member to update the records * this is very important

UoA and SCS are easily searched for existing chemicals in stock, that may usually be borrowed from other groups on request



Safety information Chemical storage

Chemicals must be segregated by hazard class (no matter how few and in all locations) This is a legal requirement. All labs in SCS have designated chemical storage areas.



All samples and reagents must be labelled, including research samples. Structure, name or CAS number is required, and a lab book reference if relevant.

Large samples (>50g) should display complete safety information

Consult your professional staff team member or supervisor before storage. Check the MSDS for storage details.



Class 1. Explosive

- 1.1 Substances with a mass explosion hazard
- 1.2 Substances which present a projection hazard but no mass explosion hazard
- 1.3 Substances which present both a fire hazard and a minor blast or projection hazard (or both) but not a mass explosion hazard
- 1.4 No significant hazard
- 1.5 Very insensitive substances with a mass explosion hazard
- 1.6 Very insensitive articles with no mass explosion hazard

Class 2. Gases

- 2.1 Flammable gases
- 2.2 Non-flammable, non-toxic gases
- 2.3 Toxic gases

Class 3. Flammable liquids

Class 4. Flammable solids

- 4.1 Flammable solids, self-reactive substances and solid desensitized explosives
- 4.2 Materials liable to spontaneous combustion
- 4.3 Substances which, in contact with water, release flammable gases

Class 5. Oxidizing substances and organic peroxides

- 5.1 Oxidizing agents
- 5.2 Organic peroxides

Class 6. Toxic and infectious substances

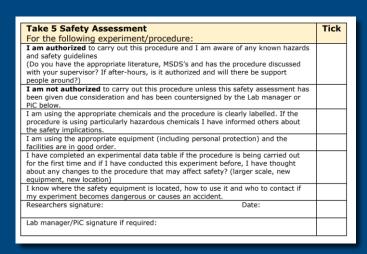
- 6.1 Toxic substances
- 6.2 Infectious substances
- Class 7. Radioactive substances and articles
- Class 8. Corrosive substances
- Class 9. Miscellaneous dangerous substances

UN

HAZARD

CLASSES

Reaction safety Take 5 assessment



Consult your supervisor or PiC before starting a new type of experiment, or scaling up, or using unfamiliar equipment.

Complete and sign a Take 5 assessment before beginning each experiment. This is a legal requirement. It needs to be available while the reaction is in progress.

For new or junior researchers the Take 5 assessment should be signed by a PiC or supervisor.

Part of the Take 5 involves finding and reading the MSDS and SMOU guidelines for potentially dangerous reagents.

You are stating that necessary safety equipment is available and you know where it is



Reaction safety Unattended experiments

UNIVERSITY OF AUCKLAND, DEPARTMENT OF CHEMISTRY UNATTENDED/OVERNIGHT EXPERIMENT PERMISSION FORM							
UNATTENDED/OVERNIGHT EXPERIMENT PERMISSION FORM Reaction Scheme including Reagents, Solvents and Scale (µg, mg, g) SPECIFIC HAZARDS AND EMERGENCY PROCEDURES:							
Name:			Lab Book Ref:	Fumeho No.	ood/Bench	Date:	
IN USE	Electricity	Nitrogen	Water	Heating	Other relevant information		
TICK OR FILL				Temp:			
Has a Take 5 Assessment been completed? NO Has the experimental setup been checked? NO			YES YES	EXPERIMENT DURATION (date and time) Start: Finish:			
Contact Telephone No. Supervisor/delegated							
	(Experimenter) person-in-charge:						
	lephone No.				Sign:		Date:
(Supe	ervisor)						

Complete and sign an unattended experiment form before leaving any experiment. It needs to be clearly visible while the reaction is in progress

For new or junior researchers the unattended experiment form should be signed by a PiC or supervisor

The PiC or supervisor must inspect the reaction before signing the form

An all-hours contact phone number must be clearly visible

Consider long-term risks including cooling water failure, reaction exotherm, unreliable gas supply and breakage.



Risk assessments Coming in 2023-24

approval, risk

Identify Hazards and Control the Risks: 1. An activity may be divided into tasks. For each task identify the hazards and associated risks. Also list the possible scenarios which could sooner or later cause harm. 2. Determine controls necessary based on University standards, legislation, codes of practice, AS / NZ standards, manufacturer's instructions etc. 3. List existing risk controls (take credit for what you do) 4. Rate the risk once all controls are in place using the matrix in 5. List any additional controls that need to be implemented and take action 6. Communicate the findings The boxes will resize to suit your situation/the amount of text you need to use - press tab after last cell to create new rows Current Additional Controls Risk Rating required (L)Likelihood x Task sequence Who may be Existing controls Hazard (C)Consequence harmed and how = (R)Rating c R Access restricted to staff and SCS students who Access to Untrained or Staff unsafe personnel Students laboratory have: Visitors Baseline BSc chemistry training as approved by their PI. Attended an annual safety seminar or Inappropriate activities, unsafe completed the Canvas safety course practices, dangerous Completed and signed off the SCS Safety use of hazardous Guidelines Acknowledgement form materials. Completed and signed off the SCS Access to Facilities form Access is provided to service and facilities personnel for specific tasks only eq: service work, inspections etc. Laboratory Unsafe or Staff There is a Lab management system in place which management unregulated Students working Visitors Lab managers and PiC's are identified and the document is held in a prominent place. environment Unregulated or Duties of the lab manager or PiC are dangerous activities documented in the list. could take place in Adequate supervision is provided on-site at the lab without all times by a Lab manager or PiC.



Risk assessments Coming in 2023-24

HSW	HSW Risk Assessment Matrix							
Likelihood Level	4	Very likely Probably expect the event to occur in most circumstances	Moderate (4)	High (8)	Extreme (12)	Extreme (16)		
	Likely Event likely to occur at least once over the coming year		Moderate (3)	High (6)	High (9)	Extreme (12)		
	2	Possible Low Event may occur at some time (2)		Moderate (4)	High (6)	High (8)		
	1	Unlikely Occurrence is conceivable, but not expected to occur	Low (1)	Low (2)	Moderate (3)	Moderate (4)		

Will be associated with relevant Safe Method of Use (SMOU) resources for specific reagents and equipment. PIs will ensure that researchers have the necessary skills to apply them.



Reaction safety Waste disposal

HAZARDOUS WASTE DISPOSAL attach form clearly on waste container NAME CONTACT DETAILS (E-mail, Phone No., Lab number) CONTENTS (include full chemical names, mass, hazards etc) UN HAZARD CLASS

Collect waste in a suitable container by type and compatibility. Consult your professional staff team member, PiC or supervisor to check.

The more information the better. Disposal costs are very high for unlabeled waste.

NO NEEDLES in chemical waste under any circumstances!

This is a serious problem in chemical waste and very dangerous for the disposal company.

Please read the relevant SMOU guidelines.



Reaction safety Waste solvents

Keep aqueous waste, halogenated solvents and non-halogenated solvents separate.

All waste goes to the SCS chemical stores

No chemical waste in the normal rubbish bins

SCS waste water is monitored. Only minimally contaminated waste with acceptable pH and low organic content can go down the lab sinks.

Please read the relevant SMOU guidelines.



Reaction safety Solvent cabinets



Make sure all solvents not in use are returned to the solvent cabinets, especially when leaving the lab.

Do not overfill past the recommended volume rating – each lab has a permitted amount of solvent storage that must not be exceeded. Make extra weekly trips to stores if you run out.



Reaction safety Glass and needles



Collect used needles in the dedicated sharps bin

Broken or waste glass is collected in a dedicated glass bin.

Some broken glassware can be repaired. Ensure it is cleaned of chemical residues before taking to the glassblower



Reaction safety Glass and tubing

Better to hold here, so joint doesn't break

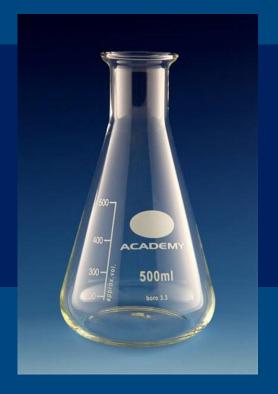


Pay extra attention and do not use excessive force when attaching rubber tubing to glass! This includes gas adaptors, manifolds or any other weak joints. Rotate the joining partners with steady pressure or use a tiny smear of grease (*if appropriate for your work*).

If the glass breaks the edges are extremely sharp and will deeply cut your hand. Each year (*including this one*) SCS has several incidents of this kind.



Reaction safety What causes the most lab incidents?



Cuts due to broken glass are the main source of injuries needing first-aid treatment each year at SCS!

Take care in attaching hoses to any glass equipment, capping NMR tubes, using glass pipettes and disassembling gas manifolds



Reaction safety Syringes



Syringes are used to safely transfer solvents and reagents into reaction vessels through rubber septa

Disposal plastic syringes are suitable for many uses

Add the solvent or reagent carefully – the needle can pop off if pressure builds up, and the syringe contents will be sprayed across you and your surroundings



Luer lock syringes MUST be used for any transfer of toxic or corrosive reagents

Ensure the needle is securely twisted in place

Ask your supervisor or professional staff if you need help to get hold of a Luer lock syringe.



SCS safety Incidents and spills



One of the purposes of the Take 5 assessment is so that you know how to deal with potential reagent spills -before they happen.

Consider reagent quenching, disposal and spill clean-up measures. Warn researchers nearby if appropriate.

Are there volatility, flammability or toxicity issues to manage?

Spill kits are required to be available in all labs. Consult your professional team member if uncertain.

In the event of a spill, make sure a PiC is notified immediately so the clean-up can be managed.

Don't tackle a large solvent spill alone.

If in doubt, evacuate and call 111



SCS safety Fire

Fire extinguishers can be found in every lab (CO₂ and powder)

Only tackle small fires. If no progress is made after 20 seconds trigger the fire alarm and evacuate. Call 111

Particular dangers are pyrophoric materials (NaH, LAH) and organic solvents. If you are able, remove solvent containers from the site of the fire and secure in solvent cabinets.

If the fire was in your area, inform the fire warden or SCS staff at the SCS fire alarm board at the Symonds St steps after evacuating. Explain to any wardens why you must speak to staff.

Notify your supervisor or PiC immediately





SCS safety First aid







First aid cabinets are on every floor of 301 and 302

Smaller first aid boxes are available in labs

Diphoterine spray should be used immediately on any chemical burn (solvent, acid, base but not HF). Can be used in eyes. Ask your supervisor or a PiC where it is kept in your laboratory.

Immediately notify your supervisor or PiC.

If there is any doubt, call 111 and request an ambulance

Obtain the relevant MSDS to assist medical staff and accompany the patient to hospital

If you have an existing medical condition (known allergies, asthma) make sure notify your supervisor and PiCs

SCS safety Defibrillator

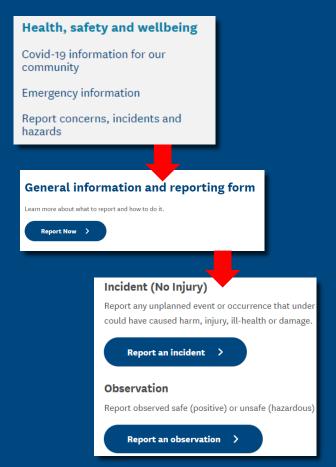
302 Level 6 near the lifts and 302 Ground near the green helpdesk.







SCS safety improvement Incident reporting **



An incident or near-miss or accident needs to be reported, so that we can understand any problems and avoid them in future.

Any use of first aid requires an incident form to be submitted.

See your professional staff team member for assistance in completing the online incident form on the UoA website

No blame is attached to reporting!

All this information is very valuable in working out the best H&S plans and keeping everyone safe at all times. Make sure to submit a form each time.

If you have any concerns about any issue anywhere in SCS don't hesitate to contact SCS H&S staff, your supervisor, PiC or professional team member. Ensure you are satisfied that the issue has been addressed.





SCS safety improvement Incident reporting

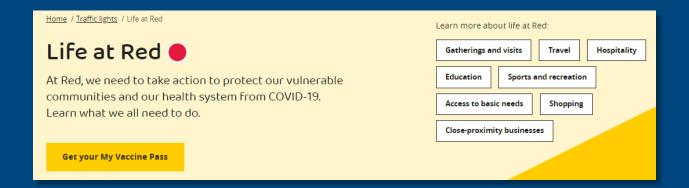








SCS & COVID









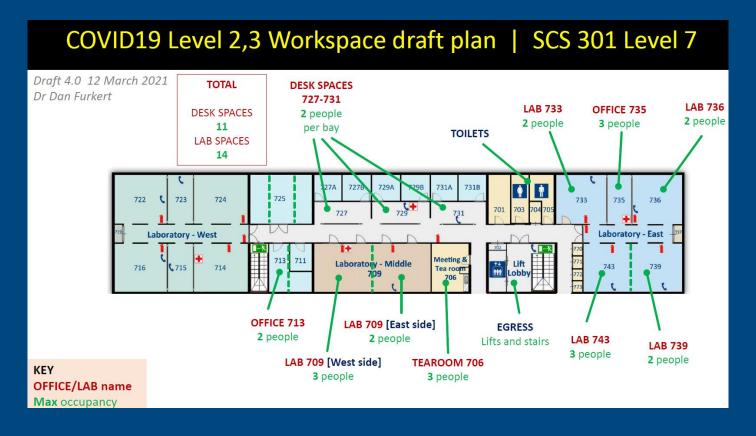
vaccinepass.auckland.ac.nz

On-site work only where necessary

Upload your vaccine pass, wear a mask on campus, observe social distancing Lab research carries on Work from home if you don't require lab facilities



COVID Levels Lab and office work



Lab & office access, and personnel limits are by approval (e.g. floorplan above). You must adhere to them.





COVID Levels Risk assessment

COVID19 Level 2,3 Workspace draft plan | SCS 301 Level 7

Draft 2.0 24 Aug 2020 Dr Dan Furkert

ACCESS

MASKS

GENERAL

GENERAL SAFETY CONSIDERATIONS

ACCESS is requested for a maximum of 35 people to work in these labs at one time 21 in the MAB,DPF research group and 14 in the JS group

LAB USE

Numbers for maximum occupancy are indicated on the floorplan (previous page). Lab users should exercise discretion in maintaining 1m physical spacing during work, paying particular attention to workflow pinch points such as sinks, communal instruments/equipment, corridors and entry/exit points. Lab managers are asked to reduce occupancy or apply a roster system if necessary to maintain spacing.

TOILETS These are in normal usage. Users are asked to use common sense and wait if necessary, to maintain 1m physical spacing during entry/exit and hand washing.

Everyone who enters the floor must sign the access register in the lift lobby. Full contact details of all lab users must be kept by the lab manager or professional staff member responsible for the area. Visitors or service personnel are permitted but must make contact with the lab manager or professional staff member responsible and supply their details. Researchers may access other areas in SCS including NMR and 302. Transfer between SCS and SBS is permitted.

Masks or face coverings must be <u>worn at all times</u> in labs, offices and while moving around University property. **Disposable** masks must be worn in laboratories and workshops.

In all situations researchers are asked to apply common sense to maintain 1m physical spacing and conduct their daily operations <u>so</u> <u>as to</u> minimize any risk of spread of COVID19 should it be carried into the workspace.

Risk assessments and procedures have been agreed and approved by FoS, and may sometimes seem unexpected. You must adhere to them.



Real-time Safety Information UoA Alert app

Download from AppStore or Play Store by searching for 'UoA Alert'



UoA Alert is the official emergency and safety app of the University of Auckland. The app will send you important safety alerts and provide instant access to campus safety resources, information and other useful links.

See https://superuoa.custhelp.com/app/answers/detail/a_id/16329 for more



COVID Levels Summary

Confirm with your supervisor or PiC that you are permitted to access the offices or labs, before travelling to work at UoA. Access only possible after official approval.

On arrival check the working regulations and personnel numbers with professional staff or your supervisor

Use the government COVID Tracer app

Raise any questions or concerns about personal spacing, lab hours and permitted activities with your supervisor or professional staff, quickly

Please be patient with approvals and information supply. There are many backroom processes to provide access to SCS.

Your access may be withdrawn if guidelines are not followed



Seminar sign-off SCS form to submit

Complete the two forms at the end of the Guidelines document, scan and email back to fos.accessrequest@auckland.ac.nz
You need to include "Safety Forms" and your name in the subject line.
The originals should be kept in your lab book.

Farnaz will collate the emails at her end.

Download the guidelines pdf and print out the last two pages

Submit a copy of the completed and signed form to SCS reception



SCS Safe working practice

We all need to wear personal protection equipment

Transport and store chemicals safely

Use chemicals according to safe guidelines

Dispose of waste safely

Know how to deal with incidents if they occur

Ask for help if uncertain or inexperienced!

