

# SCS Safety Seminar 2020

*Dr Dan Furkert*

*School of Chemical Sciences  
The University of Auckland*



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NEW ZEALAND

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, answer any questions, ensure the practices above are followed – and talk to SCS colleagues if necessary



Whiteboard marker only

Setting up a **chemical reaction**

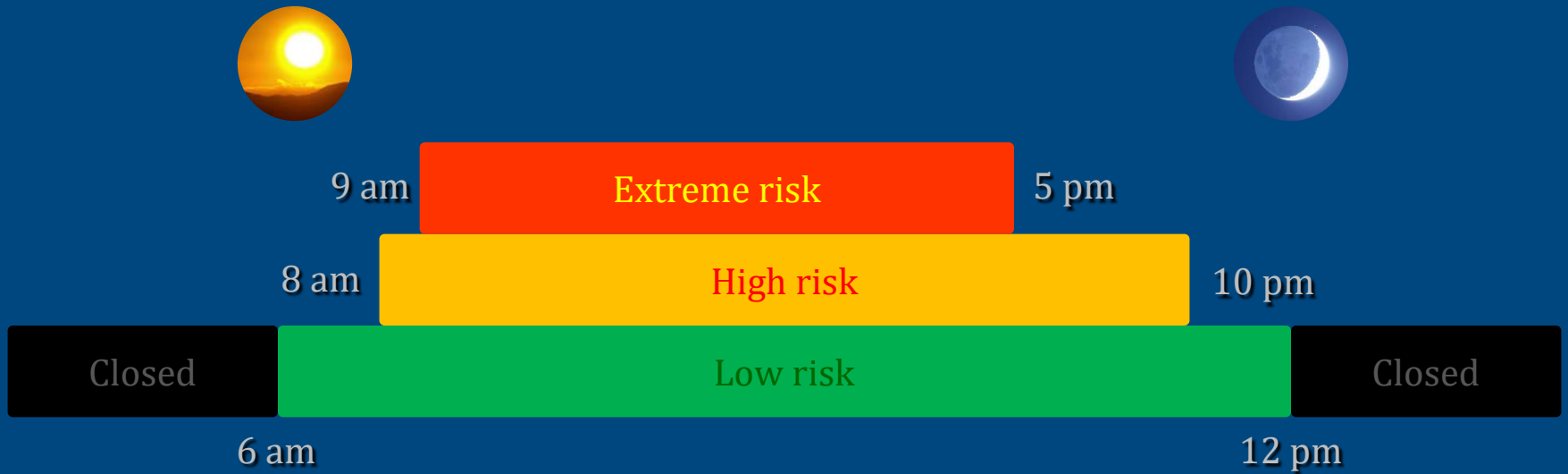


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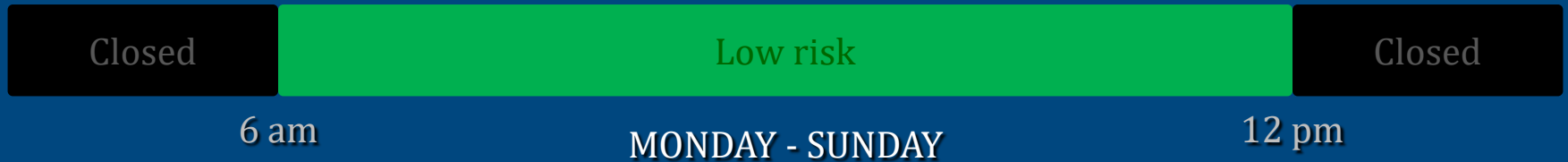
**SCIENCE**  
SCHOOL OF CHEMICAL SCIENCES



# SCS Working hours



# SCS Types of work



**Definition** | Office work

Instrument measurements such as UV, IR, NMR

**No SCS access outside these hours**

If stuck inside, call **security** on 85000 or (09) 3737 999

# SCS Types of work



8 am

High risk



10 pm

MONDAY - SUNDAY

**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



9 am

Extreme risk

5 pm



MONDAY - FRIDAY

**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 manager



# 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

 SCS Laboratory Management List Lab: 302-830

Lab Manager	Room	Extn	Persons in Charge
1.			3.
2.			4.
			5.
			6.
			7.
			8.

**Activities Approved for Use in Laboratory 302-830**

All general purpose chemistry laboratory activities covered by the SCS Safety Guidelines and the SCS safety seminar are approved for use in this laboratory.

**Specialised Higher Risk Activities Approved for Use in Laboratory 302-830**

Use of extremely reactive compounds UN Class 4.1 (i) Flammable solids, UN Class 4.2 (i) Substances likely to spontaneously combust, UN Class 4.3 (i) Substances which in contact with water emit flammable gases.
Using known carcinogens
Use of high pressure reaction vessels
Use of coupling agents and compounds that may cause severe allergic reactions
Conducting pressure generating reactions
Use of cyanide compounds
Use of HOAT
Using liquid ammonia
Using highly corrosive cleaning processes

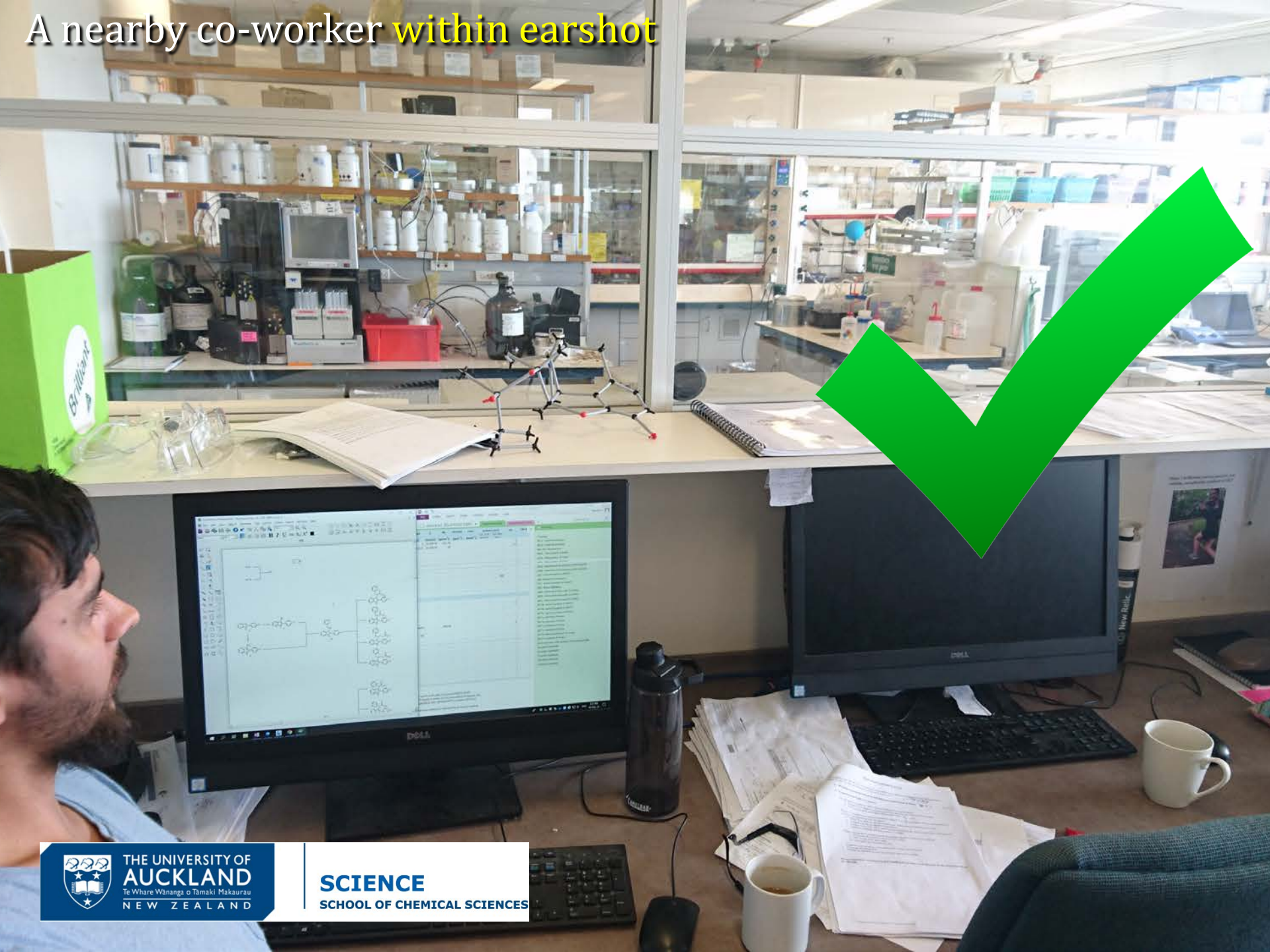
Lab managers must ensure that the people on the "Persons in Charge" list have received the appropriate training, and are competent to carry out, supervise & train users in the safe methods of use for both general laboratory chemistry and any of the above specialised activities that have been approved for use in this laboratory.

Laboratory workers who are conducting a specialised activity from the above list and who are not on the lab management list must have their "Take 5" assessments countersigned by the Lab manager or PiC at the time of conducting the activity.

Lab manager/Persons in Charge Responsibilities – see reverse

Health and Safety Guidelines 2017

A nearby co-worker **within earshot**



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A co-worker **NOT** within earshot



301.757

# 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**



**Always wear** in lab.  
Prescription  
glasses are not  
adequate



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.

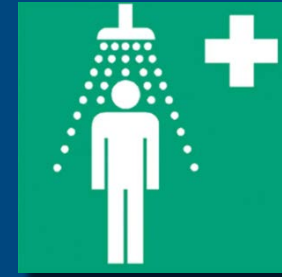
**Long hair** tied back safely.

# Safe lab wear **Shoes**



If unsure, ask your **lab manager** for guidance

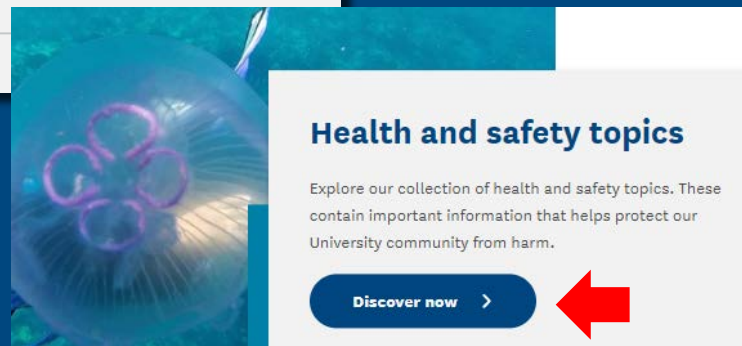
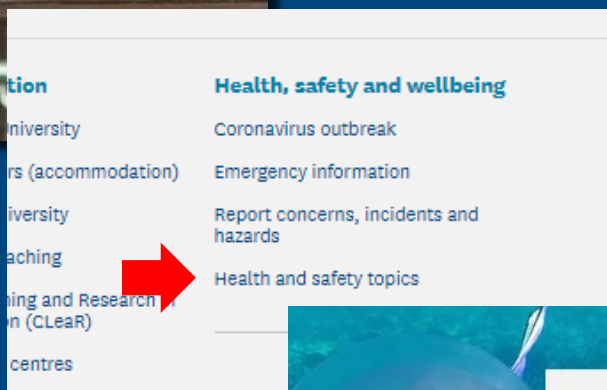
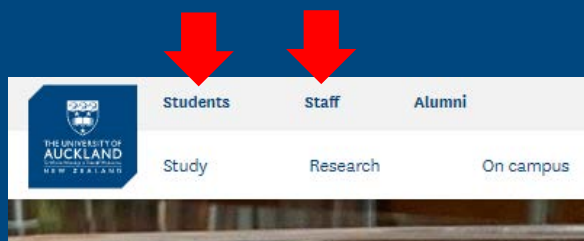
# Lab safety Location of key equipment



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

# Safety information UoA HSW Website

UoA homepage



SCS Forms for **lab safety sign-off**

**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 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.



- [Rules, guidelines and Safe Methods of Use \(SMOU\)](#)
- [Frequently asked questions](#)
- [Databases](#)
- [Transporting chemicals](#)
- [Purchase, storage and disposal of chemicals](#)
- [Workshop: HSNO exempt laboratory managers](#)
- [Workshop: Chemical safety induction programme](#)
- [SciTrack](#)
- [Hazardous spills](#)
- [Emergency information](#)



### Rules and Safe Methods of Use (SMOU)

Stay safe in our chemical labs by following the rules and the SMOU.

[View now >](#)



Again, scroll down for many more topics below, and **important forms**



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# Safety information **Important forms**

## Safety at the School of Chemical Sciences

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The following downloadable documents contain information that is specific to the School of Chemical Sciences.



### [Guidelines](#)

Offers local rules and advice for operating safely within SCS research spaces.



[Download this PDF](#) 1.6 MB



### Safety seminar

Annual attendance at this seminar is a requirement for students wish to access SCS research spaces.



[Download this PDF](#) 2.6 MB

## General information and reporting form

Learn more about what to report and how to do it.



### [Accident, incident and hazard reporting form](#)



[Download this PDF](#) 319.1 KB

## Defining accidents and incidents

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### Incidents

Any unplanned event or occurrence resulting in, or having a potential for injury, ill-health, damage or other loss.

### Accidents

An incident that has caused harm, fatality, ill-health, damage or other loss.



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# Safety information **UoA HSW website**

Tour

# Safety information **Transporting chemicals**

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



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

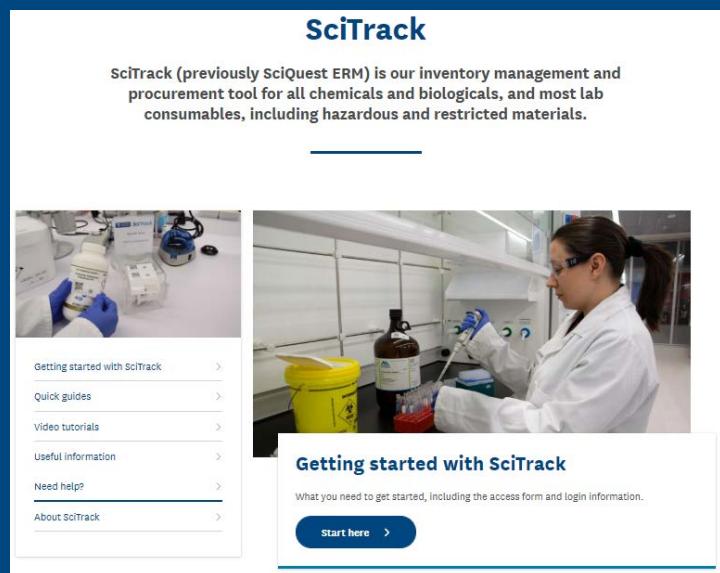


**Public transport** must NOT be used

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

# Safety information SciTrack

Chemical storage is regulated.



The screenshot shows the SciTrack website interface. At the top, the title "SciTrack" is displayed. Below it, a paragraph states: "SciTrack (previously SciQuest ERM) is our inventory management and procurement tool for all chemicals and biologicals, and most lab consumables, including hazardous and restricted materials." To the left is a vertical navigation menu with items: "Getting started with SciTrack", "Quick guides", "Video tutorials", "Useful information", "Need help?", and "About SciTrack". To the right is a main content area featuring a photograph of a scientist in a lab coat and safety glasses working with a pipette. Below the photo, the heading "Getting started with SciTrack" is followed by the text "What you need to get started, including the access form and login information." and a prominent blue button labeled "Start here" with a right-pointing arrow.

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

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.

Take 5 Safety Assessment	Tick
For the following experiment/procedure: <b>I am authorized</b> to carry out this procedure and I am aware of any known hazards and safety guidelines (Do you have the appropriate literature, MSDS's and has the procedure discussed with your supervisor? If after-hours, is it authorized and will there be support people around?)	
<b>I am not authorized</b> to carry out this procedure unless this safety assessment has been given due consideration and has been countersigned by the Lab manager or PiC below.	
I am using the appropriate chemicals and the procedure is clearly labelled. If the procedure is using particularly hazardous chemicals I have informed others about the safety implications.	
I am using the appropriate equipment (including personal protection) and the facilities are in good order.	
I have completed an experimental data table if the procedure is being carried out for the first time and if I have conducted this experiment before, I have thought about any changes to the procedure that may affect safety? (larger scale, new equipment, new location)	
I know where the safety equipment is located, how to use it and who to contact if my experiment becomes dangerous or causes an accident.	
Researchers signature: _____ Date: _____	
Lab manager/PiC signature if required: _____	

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 Reaction Scheme including Reagents, Solvents and Scale ( $\mu\text{g}$ , $\text{mg}$ , $\text{g}$ )					
SPECIFIC HAZARDS AND EMERGENCY PROCEDURES:					
Name:		Lab Book Ref:	Fumehood/Bench No.	Date:	
IN USE	Electricity	Nitrogen	Water	Heating	Other relevant information
TICK OR FILL				Temp:	
Has a Take 5 Assessment been completed?			NO	YES	EXPERIMENT DURATION (date and time) Start:
Has the experimental setup been checked?			NO	YES	Finish:
Contact Telephone No. (Experimenter)			Supervisor/delegated person-in-charge:		
Contact Telephone No. (Supervisor)			Sign:	Date:	

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.

# Reaction safety **Waste disposal**

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

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 **Glass and needles**



Collect glass/sharps waste in the dedicated **sharps bin**

Broken 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 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 team member** 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 (CO<sub>2</sub> 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 improvement **Incident reporting**

An **incident** is when something unexpected happens, but nobody is injured. A **near-miss** is a wake-up call.

An **accident** involves any personal injury, no matter how minor

**All these must be reported.** Any use of first aid requires an incident form to be submitted. See your professional staff team member for assistance in completing the **incident form**

**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.

The image shows a form titled "Accident, Incident, and Hazard Reporting Form" from The University of Auckland. The form includes a "Vault Reference Number" field, instructions to report as soon as possible, and a section for reporting incidents. It contains several numbered sections with checkboxes and input fields for details like faculty, name, contact information, location, and date.

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**Accident, Incident, and Hazard Reporting Form**

Report to be completed as soon as possible. (Line Manager or Academic Leader to complete if an injured person is unable to do so and check the accuracy of information)  
Report to HoD and HSW Service. File one copy in local files and send copy to the HSW Service.

Any health and safety issues or concerns should be reported using this form

Has there been an incident resulting in, or only narrowly avoiding serious harm?  
 Yes\*  No \*If yes, preserve the scene and notify the Health, Safety and Wellbeing (HSW) Service immediately to determine whether a formal investigation is required. For emergency assistance dial 916 (internal) or 0800 373 7350  
Health, Safety and Wellbeing Service: Phone: 09 923 4109 E-mail: HSW@auckland.ac.nz Mobile: 027 209 2763

**Section 1. Reporting**

1. What Faculty or Service Division does this involve?  
Faculty / Service Div. [ ]  
Department [ ]

2. Who is reporting the accident/incident/hazard?  
Name [ ] Staff/Student ID (if applicable) [ ]  
Contact Details Phone: [ ] Email: [ ]

3. Details of anyone injured (if applicable and different from above)  
Name [ ] Staff/Student ID (if applicable) [ ]  
Contact Details Phone: [ ] Email: [ ]

4. Where and when did it happen/arise?  
Building (or location) [ ] Date [ ]  
Level (Floor) and room [ ] Time [ ]

5. How was or could have injury, ill-health or damage been caused?  
 Being hit by objects or things  Heat, radiation or energy  Slip, trip or fall  
 Biological factors  Hitting objects with part of the body  Vehicle accidents  
 Body stressing  Psychosocial (inc. mental health)  ODS or RSI  
 Chemicals/substances  Sound or pressure  Something else: [ ]





# SCS safety improvement **Incident reporting**



# Seminar sign-off **SCS form to submit**

**Safety at the School of Chemical Sciences**

The following downloadable documents contain information that is specific to the School of Chemical Sciences.

-  **Guidelines**  
Offers local rules and advice for operating safely within SCS research spaces.  
 **Download this PDF** 1.6 MB
-  **Safety seminar**  
Annual attendance at this seminar is a requirement for students wishing to access SCS research spaces.  
 **Download this PDF** 2.6 MB



Download the **guidelines pdf** and **print out the last two pages**

**Submit one copy** of the completed and signed form to **SCS reception**

**Keep one copy** to show security if your authorisation to work is questioned

# 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, answer any questions, ensure the practices above are followed. Consult your SCS colleagues if necessary



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