The University is CLOSED between midnight and 6 am

- Work in the School is classed into **three** general categories*:
  - **LOW RISK** – Office work and taking measurements from machines such as UV, IR, NMR
  - **HIGH RISK** – Any work with hazardous, toxic or corrosive chemicals. *Virtually all laboratory work falls under this category*
  - **SPECIALISED HIGHER RISK** – *see next slide*
  - **EXTREME RISK** – Carcinogens, explosives, radioactive material or highly toxic chemicals. e.g. CO, HF, any experiment that would need immediate medical treatment if something goes wrong

- The School has the following **COMPULSORY** time schedule
  - **LOW** – 6 am-12 am, Mon-Sun
  - **HIGH** – 8 am to 10 pm, Mon-Sun
  - **EXTREME** – 9 am-5 pm, Mon-Fri **ONLY**

* Note Newmarket campus closes at 11 pm
Lab Managers and Persons-in-charge lists

SCS Laboratory Management List Lab: 302-030

<table>
<thead>
<tr>
<th>Lab Manager</th>
<th>Room</th>
<th>Exit</th>
<th>Persons in Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
<td>6.</td>
<td>7.</td>
<td>8.</td>
</tr>
</tbody>
</table>

Activities Approved for Use in Laboratory 302-030

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 302-030

- Use of extremely reactive compounds UN Class 4.1 (a) Flammable solids, UN Class 4.2 (a) Substances likely to spontaneously combust, UN Class 4.3 (a) Substances which in contact with water emit flammable gases.
- Using Excepted carcinogens.
- Use of high pressure reaction vessels.
- Use of coupling agents (compounds) that may cause severe allergic reactions.
- Conducting pressure generating reactions.
- Use of cyanide compounds.
- Use of NOx.
- Using liquid aniloids.
- 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, supervisors & 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 “Safe 5” assessments counter signed by the lab manager or PIC at the time of conducting the activity.

Lab manager/Pic in Charge Responsibilities – see reverse

Health and Safety Guidelines 2017

HSNO Exempt Laboratory Regulations have been subsumed into Part 18 of the Health and Safety at Work (Hazardous Substances) Regulations as of 1 December, 2017
Lab Managers and Persons-in-charge lists

- **All work above low risk** must have another adequately trained person within audible distance to assist. At LEAST ONE person present must be on the Lab Manager/Person-in-Charge list.

- Staff and PhD students, but **not** MSc, BScH or PgDipSci students, can be on the list.

- **Specialised higher risk activities** must be approved by Lab Manager in advance.

- 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 **approved specialised activities**.

- Laboratory workers who are conducting an approved specialised activity 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.

- Working alone in labs **IS PROHIBITED**. There must be someone in the vicinity if you are working alone in a lab. This person must be able to hear you (and vice versa).
All researchers are required to ensure...

1. ... they are wearing appropriate **personal protection**
2. ... that chemicals are **transported** in a safe manner
3. ... the safe **storage** of chemicals
4. ... the **correct usage** of chemicals
5. ... the **appropriate disposal** of chemical and physical waste
6. ... they know what to do in case of an **accident or emergency** (and act accordingly)

For all commercially available chemicals 2-6 can be determined by reading the **Material Safety Data Sheet (MSDS)** for that chemical

**Laboratory managers are EXPECTED to enforce points 1-6**
Accessing Material Safety Data Sheets (MSDS)

Gold FFX – Available through the School homepage and University library
## SODIUM FLUOROACETATE

**ChemWatch Company**

Chemwatch: 2629
Version No: 7.1.1.1
Safety Data Sheet according to HSNO Regulations

### SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY /UNDERTAKING

<table>
<thead>
<tr>
<th>Product Identifier</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product name</strong></td>
<td>SODIUM FLUOROACETATE</td>
</tr>
<tr>
<td><strong>Chemical Name</strong></td>
<td>sodium fluoroacetate</td>
</tr>
<tr>
<td><strong>Synonyms</strong></td>
<td>C2H2O-F-O-C, Fluroanal 3, Fluorasegaure, Fluoroacetate Acid Sodium Salt, Fluorocetic sodisedum salt, Fluorocetan acety, Frutel, Furanol, Ghabcar poison, Latka 1080, Mono-fluoreasegaure natrium, Natriumfluoracetat, Natriumfluoracetat, RCRA waste number P255, Ribane 1080 Sodium fluoroacetate, TI 869, Yasskinol, acetic acid, fluoro acid, sodium salt, compound no. 1080, fluoroacetate acid, sodium salt, rabbit poison, sodio fluoroacetati, Na, sodium fluoroacetate, sodium fluorooacetate, sodium fluorooacetate de, sodium nonfluorooacetate</td>
</tr>
<tr>
<td><strong>Proper shipping name</strong></td>
<td>SODIUM FLUOROACETATE</td>
</tr>
<tr>
<td><strong>Chemical formula</strong></td>
<td>C2H2O2F</td>
</tr>
<tr>
<td><strong>Other means of identification</strong></td>
<td>Not Available</td>
</tr>
<tr>
<td><strong>CAS number</strong></td>
<td>62-74-8</td>
</tr>
</tbody>
</table>

### Relevant identified uses of the substance or mixture and uses advised against

- **Relevant identified uses**
  - Dangerous POISON. Available ONLY for industrial and manufacturing purposes. To be used by or in accordance with directions of accredited pest control officers. Operators to be trained in procedures for safe use of material.

- **Details of the manufacturer/importer**
  - **Registered company name**: Metchem
  - **Address**: 5 Atheldowne Drive Glen Waverley 3150 VIC Australia
  - **Telephone**: +61 3 9561 6455

**Copyright © Chemwatch – All rights reserved 2015**
Accessing Lab Safety Videos

Database of Lab Safety Videos – Available through the School homepage
<table>
<thead>
<tr>
<th>Category</th>
<th>Title</th>
<th>Organization</th>
<th>Link</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOW LIBRARY</td>
<td>Lab Safety Academy</td>
<td>Dow Chemical</td>
<td>safety.dow.com</td>
<td>Extensive series of videos covering nearly every aspect of laboratory safety. Most module sections are approximately 7 minutes in length. Beta version.</td>
</tr>
<tr>
<td>RSC MODULES</td>
<td>Health &amp; Safety Essentials</td>
<td>RSC</td>
<td><a href="http://www.rsc.org/learn-chemistry">http://www.rsc.org/learn-chemistry</a></td>
<td>(pdf slides)</td>
</tr>
<tr>
<td>GENERAL</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Experiencing with danger</td>
<td>CSB</td>
<td><a href="http://www.youtube.com/watch?v=ALBiWxGlk64A">http://www.youtube.com/watch?v=ALBiWxGlk64A</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Introduction to laboratory safety</td>
<td>Dartmouth</td>
<td><a href="http://labsafetyworkspace.org/learning">http://labsafetyworkspace.org/learning</a></td>
<td>This introductory program covers essential topics on laboratory safety applicable to a wide range of laboratories. This course is a 2-hour flash and video presentation. Good introductory-level.</td>
</tr>
<tr>
<td></td>
<td>To be (Safe) or not to be</td>
<td>UCSD</td>
<td><a href="http://www.youtube.com/watch?v=Ya5PyzJN5E">http://www.youtube.com/watch?v=Ya5PyzJN5E</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A day in the lab (A PI's perspective)</td>
<td>UCSD</td>
<td><a href="http://www.youtube.com/watch?v=aA8mC5R@j5k">http://www.youtube.com/watch?v=aA8mC5R@j5k</a></td>
<td>Interaction between a PI and his students, with a focus on safety. A little more focus on some specific chemical reactions than other introductory videos.</td>
</tr>
<tr>
<td></td>
<td>FSU Chemistry Lab Safety</td>
<td>Florida State University</td>
<td><a href="http://www.youtube.com/watch?v=kh9ImlZ4WY">http://www.youtube.com/watch?v=kh9ImlZ4WY</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Safety Elements in Medical Laboratory Practices</td>
<td>US Department of Defense</td>
<td><a href="http://www.youtube.com/watch?v=g8hrGoBjPdcU">http://www.youtube.com/watch?v=g8hrGoBjPdcU</a></td>
<td>DOD produced presentation focusing on medical/hospital lab safety. Good overview specific to laboratories dealing with potentially infectious materials, radiation, and chemical hazards. Straight narration with annoying background music.</td>
</tr>
<tr>
<td></td>
<td>Ultimate lab safety</td>
<td></td>
<td><a href="http://www.youtube.com/watch?v=ct7o9qzZ6c">http://www.youtube.com/watch?v=ct7o9qzZ6c</a></td>
<td>A light-hearted look at some of the simple things that can go wrong in the laboratory.</td>
</tr>
<tr>
<td></td>
<td>Practicing safe science</td>
<td>HHMI (LSI YouTube channel)</td>
<td><a href="http://www.youtube.com/watch?v=LZnco1DF14">http://www.youtube.com/watch?v=LZnco1DF14</a></td>
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<td>Chemical hazards</td>
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<td></td>
<td>Safety enforcing</td>
<td>U Minnesota</td>
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<td></td>
<td>Science of dating</td>
<td>U Minnesota</td>
<td><a href="https://www.youtube.com/watch?v=5Q9k4HVGrC">https://www.youtube.com/watch?v=5Q9k4HVGrC</a></td>
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<td>87</td>
<td>PYROPHORICS</td>
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<tr>
<td>88</td>
<td>Handling pyrophoric</td>
<td>Dartmouth</td>
<td><a href="http://www.youtube.com/watch?v=gr_ONJCbqY">http://www.youtube.com/watch?v=gr_ONJCbqY</a></td>
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<td>89</td>
<td>Pyrophoric liquid safety</td>
<td>UCLA</td>
<td><a href="http://www.youtube.com/watch?v=RaMXwNBAbxc">http://www.youtube.com/watch?v=RaMXwNBAbxc</a></td>
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<td>reactive metals (3 parts)</td>
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<td>91</td>
<td>ALKALI METALS</td>
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<tr>
<td>92</td>
<td>Alkali Metals in Water</td>
<td>CS Chemists</td>
<td><a href="https://www.youtube.com/watch?v=uixx7tJPVXk">https://www.youtube.com/watch?v=uixx7tJPVXk</a></td>
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<td>93</td>
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<td>94</td>
<td>FLASH CHROMATOGRAPHY</td>
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<td>Flash chromatography 101</td>
<td>UCSD</td>
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<td>97</td>
<td>PIPETTES</td>
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<td>98</td>
<td>Pipette safety and</td>
<td>UCLA</td>
<td><a href="http://www.youtube.com/watch?v=bqAsXMSs27s">http://www.youtube.com/watch?v=bqAsXMSs27s</a></td>
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<td>102</td>
<td>Centrifuge safety</td>
<td>HHMI (LSI YouTube</td>
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<td>103</td>
<td></td>
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</table>
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For all commercially available chemicals 2-6 can be determined by reading the **Material Safety Data Sheet (MSDS)** for that chemical

**Laboratory managers are EXPECTED to enforce points 1-6**
I. Safety and Personal Protection Equipment

Know the location of and familiarize yourself with all the safety equipment in your laboratory and vicinity:

- Fire extinguishers
- Fire hoses
- Fire alarms
- Emergency exits
- Eye wash stations
- Safety showers
- First Aid kits (Diphoterine)
- Spill kits and sand buckets
- Breathing apparatus
- Defibrillator
- Telephones and emergency numbers: Emergency services (111) and/or UniSafe (966)
Safety Glasses

- Safety glasses must be worn properly at all times in laboratory areas.
- Prescription glasses DO NOT constitute safety glasses and provide no protection from chemical splashes coming from the sides.

PhD students are NOT allowed to PRESS accounts to purchase labcoats or safety glasses from the Science Student Centre [UPDATED AUG 2019].

However, PhD students are eligible to use their PRESS accounts to obtain prescription safety glasses from the UoA Optometry clinic.

Form is available on the website or from Mike Wadsworth.
Clothing and Footwear

- Protective clothing **MUST** be worn **AT ALL TIMES** in the lab
- Laboratory coat, safety glasses and covered shoes are the **minimum standard** for laboratory work
- Tie back long hair
- No headphones
- Laboratory coats **must be removed** when going from labs to office areas
UCLA's Molecular Sciences Building was closed for the holidays on Dec. 29, 2008 as research assistant Sheri Sangji worked on an organic chemistry experiment.

Only three months into her job in the lab, the 23-year-old was using a plastic syringe to extract a small quantity of t-butyllithium -- a chemical compound that ignites instantly when exposed to air.

As she withdrew the liquid, the syringe came apart in her hands. A flash fire set her clothing ablaze and spread second- and third-degree burns over 43% of her body.

Eighteen days later, Sheri died in a hospital burns unit.

Records show all that stood between her torso and the fire that engulfed her was a highly flammable, synthetic sweater.

No labcoat

In the lab alone

Apparently did not know the location of the safety shower
Examples of real incidents

- **Fire as a result of tar dripping into a Chemistry Laboratory [York University]**
  A fire broke out in the Chemistry department, probably caused by hot tar dripping through the roof, causing a full evacuation and impacting lectures and student interviews.
  [www.yorkvision.co.uk/news/fire-reported-at-chemistry-department/](http://www.yorkvision.co.uk/news/fire-reported-at-chemistry-department/)

- **Student asphyxiated as a result of hair being caught in a lathe [Yale University]**
  A student died in a Chemistry laboratory as a result of her hair being caught in a fast spinning lathe, asphyxiating her.

- **A Solvent cabinet shelf collapses, spilling a large volume of hexane which eventually ignites [Ohio State University]**

- **Laboratory fire caused by the solvent hexane [Massachusetts Institute of Technology]**
  A fire that began when a researcher in a chemistry lab accidentally broke a bottle of a flammable solvent closed parts of the main campus for several hours.

- **A students dies from injuries sustained in a fire caused by tert-butyllithium [University of California]**
  A research assistant in the University of California, Los Angeles, department of chemistry and biochemistry died from injuries sustained in a laboratory fire.

- **Nobel Laureate K. Barry Sharpless blinded in one eye due to lack of safety glasses**

- **Catastrophic fire caused by benzene solvent still [University of California, Irvine]**
  An explosion and fire ripped through a UC Irvine chemistry lab, injuring a researcher and forcing evacuation of two buildings.

- **Explosion caused by mixing acid with chemical waste [U of Maryland]**
  Students were conducting an experiment using nitric acid and sulfuric acid. The combination of these 2 acids does not normally cause such a violent reaction, however, when the combined product was introduced into a chemical waste container; a violent chemical reaction occurred causing an explosion with fire.

- **Danger associated with nickel hydrazine perchlorate [Texas Tech]**

- **The death of a French professor in a laboratory explosion caused by ethene in pressure vessel [National Institute of Higher Learning in Chemistry, France]**
  The death of a French professor in a laboratory explosion in March was a shocking reminder that research can be a risky business.

- **Explosion caused by thionyl chloride [Merkert Chemistry Center in Boston]**
  A Boston College doctoral student suffered minor injuries at a lab when a chemical used in making mustard gas and methamphetamine exploded in her hand.
All researchers are required to ensure...

1. ... they are wearing appropriate **personal protection**
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For all commercially available chemicals 2-6 can be determined by reading the **Material Safety Data Sheet (MSDS)** for that chemical

**Laboratory managers are EXPECTED to enforce points 1-6**
2. Transportation of Chemicals

- All chemicals needed at Grafton (Anderson Group) or Newmarket (Jin Group) should be delivered directly to Grafton or Newmarket to avoid secondary transport.

- Transport of chemicals is regulated by the Land Transport Rule: Dangerous Goods 1999 (Revised in 2005).

- **Failure to observe these regulations will entail prosecution**
  - Fines start at >$2,000 for the individual, >$10,000 for the university

- **Public transport**, including the inter-campus bus CANNOT be used to transport any chemical or dangerous good, **no matter how small**

- **CHEMCOURIERS** – Fully licensed (Enquire with Tasdeeq for price)

- **A Transport SoP** is currently being drafted by the University
3. Storage of Chemicals

- **Appropriate labelling** – ALL CHEMICALS must be labelled with as much detail as possible, including research samples. A minimum label is a clear lab book reference.

- All large samples (>50g) should display complete safety information (e.g. decanting)

- All chemicals (no matter how few and in all locations) must be segregated by hazard class

- All labs in SCS have designated chemical storage areas

- Peptide coupling reagents (carbodiimide based such as DCC, EDC.HCl, DIC) must be stored in a separate cupboard that is clearly labelled with the nature and hazards.

- Check the MSDS for storage details and if in any doubt consult the lab technician or your supervisor
4. Correct Usage of Chemicals

- Consult your supervisor when designing an experiment to ensure what you are doing is safe and appropriate. Think through what you are doing.

**PERFORM A TAKE 5 ASSESSMENT BEFORE EVERY EXPERIMENT**

- Affix completed Take 5 sticker into lab notebook at each experiment.
- Read the MSDS information on all chemicals.
- Know the location of safety items that may be required (e.g. Sand buckets, powder extinguishers, calcium gluconate for HF, oxygen cylinder for cyanide...).
- Think about any changes to the experiment.
- **ALWAYS** use a fumehood. Report any faulty fumehoods IMMEDIATELY.
- If you leave the experiment **AT ANY TIME**, inform all lab occupants of correct procedure if an accident was to occur. Use the yellow unattended experiment forms.
# Take 5 Safety Assessment

<table>
<thead>
<tr>
<th>For the following experiment/procedure:</th>
<th>Tick</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I am authorized</strong> 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?)</td>
<td></td>
</tr>
<tr>
<td><strong>I am not authorized</strong> 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.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>I am using the appropriate equipment (including personal protection) and the facilities are in good order.</td>
<td></td>
</tr>
<tr>
<td>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)</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Researchers signature:</td>
<td>Date:</td>
</tr>
<tr>
<td>Lab manager/PiC signature if required:</td>
<td></td>
</tr>
</tbody>
</table>
Safe methods of use (SMOU)

- Whilst MSDS provide useful information about likely hazardous properties of chemicals, they include limited guidance about handling chemicals
- Safe Methods of Use (SMOU) provide safety guidelines for use of chemicals or classes of chemicals in the laboratory which all laboratory staff must be familiar with and follow when handling chemicals

- At a minimum Laboratory personnel must have access to and follow the University General Laboratory Safe Method of Use
- Chemical that has been identified as problematic (formaldehyde or a cryogenic liquid) or highly hazardous (Hydrofluoric acid, phenol, picric acid or pyrophoric compounds) – You must consult the specific Safe Method of Use

- CANVAS course mandatory for pyrophoric compounds
Think through what you are doing

The student accidentally made TATP when following a risk assessed protocol from the literature to oxidise an aldehyde to a carboxylic acid using aqueous acidified chlorite. The reaction used 50ml of acetone as the solvent and generated some by-products associated with a yellow colour of the solution. One of these by-products potentially included a small amount of chlorine dioxide, which the risk assessment identified as toxic.

The literature indicated that 30% hydrogen peroxide should be added until the solution was no longer yellow, indicating the removal of the by-products. By focusing on removing the chlorine dioxide and waiting for the yellow colour to vanish instead of calculating how much hydrogen peroxide would be needed, the student ended up adding about 50ml of hydrogen peroxide, when 1ml would have sufficed. The hydrogen peroxide reacted with the acetone to form TATP and could have formed as much as 30-40g. ‘It was the focus on one hazard that led to the ignoring of another, even though both had been identified in the original risk assessment,’ explains Norman.

Overnight / Unattended Experiment Forms

- MUST be filled out for ALL experiments that are left overnight or unattended for significant periods.
- Filled out by the experimenter and signed by your supervisor or a delegated person in charge (Postdoc, senior PhD).
- The person signing the form must inspect the reaction setup before signing the form.
- Attach the signed and completed form next to the experiment (e.g. on fumehood sash).
- Forms are laminated - easily wiped clean and re-used.
Overnight / unattended experiments

**UNIVERSITY OF AUCKLAND, DEPARTMENT OF CHEMISTRY**

**UNATTENDED/OVERNIGHT EXPERIMENT PERMISSION FORM**

Reaction Scheme including Reagents, Solvents and Scale (µg, mg, g)

**SPECIFIC HAZARDS AND EMERGENCY PROCEDURES:**

<table>
<thead>
<tr>
<th>Name:</th>
<th>Lab Book Ref:</th>
<th>Fumehood/Bench No.</th>
<th>Date:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>IN USE</th>
<th>Electricity</th>
<th>Nitrogen</th>
<th>Water</th>
<th>Heating</th>
<th>Other relevant information</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>TICK OR FILL</th>
<th>Temp:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Has a Take 5 Assessment been completed?</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the experimental setup been checked?</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXPERIMENT DURATION (date and time)</th>
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<tbody>
<tr>
<td>Start:</td>
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<td>Finish:</td>
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<thead>
<tr>
<th>Contact Telephone No.</th>
<th>Supervisor/delegated person-in-charge:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Experimenter)</td>
<td></td>
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<tr>
<td>Contact Telephone No.</td>
<td>Sign: Date:</td>
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<tr>
<td>(Supervisor)</td>
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Safe Use of Chemical Syringes

There have been a number of incidents in SCS where researchers have been sprayed with chemicals due to separation of the needle from the syringe

- If possible, always use a luer-lock syringe
- Use only new disposable syringes or cleaned re-usable syringes
- Syringe spray-back accidents often occur when needle is blocked
- Check the free plunger movement with the needle attached
- Ensure the needle hub is engaged with the luer-lock mechanism, use a small pliers to make sure the hub is rotated into the luer-lock
- If using a slip connection ensure it is fully seated by pushing on with a twist
- Luer-lock syringes **must be used** when handling toxic or corrosive chemicals
5. Disposal of Chemical Waste

- All hazardous waste must be taken to the STORES where it will be removed by a chemical contractor.
- **NEVER** put chemical waste in the normal rubbish bins.
  - All other waste must be appropriately segregated, clearly labelled and submitted to stores for disposal.
- Waste solvent in halogenated or non-halogenated bottles ---> STORES
- **DO NOT MIX** HALOGENATED AND NON-HALOGENATED WASTE
- **NEVER MIX** ORGANIC (SOLVENTS) AND AQUEOUS WASTE
- **ALL** chemical waste disposed via STORES must be clearly LABELLED.

What can go down the drains?
- Only water miscible, non-toxic chemicals in small (<100 mL) quantities
- The School’s waste water is monitored.
Waste disposal

- **ALL WASTE SUBMITTED TO STORES MUST BE LABELLED**

<table>
<thead>
<tr>
<th>HAZARDOUS WASTE DISPOSAL</th>
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<tr>
<td>attach form clearly on waste container</td>
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<table>
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<tr>
<th>NAME</th>
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<tr>
<th>CONTACT DETAILS (E-mail, Phone No., Lab number)</th>
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<table>
<thead>
<tr>
<th>CONTENTS</th>
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<tr>
<td>(include full chemical names, mass, hazards etc)</td>
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<table>
<thead>
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<th>UN HAZARD CLASS</th>
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- The cost of disposal is up to 10x greater for unlabelled samples
- Consider OUR professional responsibility to disposal companies
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
Waste disposal

- **CLEAN, EMPTY** chemical bottles may be placed in general rubbish bins. Remove or deface their labels before disposal.

- Broken glass should be carefully placed into dedicated glass waste bins.

- Sharps (scalpels/needles) must be placed in sealable yellow Medisafe bins.

- **NEVER MIX SHARPS WITH CHEMICAL WASTE**

- **NEVER PUT SHARPS IN GENERAL WASTE BINS**

- Full glass / Medisafe bins must be sealed and sent to stores for disposal.
6. Accidents and Spills

**SPILLS** – You **MUST** know what to do for each chemical **BEFORE** you use it. **READ** the MSDS before use and fill out a Take 5 assessment. Consider:

- Quantity, volatility, ventilation, toxicity, flammability
- Suitable absorbents, neutralizers and waste containers - LOCATION
- Warn others if required and ensure help is available (YELLOW FORMS)

All labs conducting wet chemistry have large spill kits (inform me if any do not).

- **In the event of a large (> 10 L) flammable organic solvent spill:**
  - Immediately evacuate the area and inform a member of Staff
  - If no Staff member is immediately available, trigger the fire alarm and Dial 111

**NEVER** tackle a large spill on your own
Accidents and Spills - REPORTING

- **ALL** accidents and incidents in the School **must be reported** to the Technical Manager using an accident/incident report form.
- Should the incident have potentially dangerous ramifications, then an **incident investigation report** must also be filed.
- When serious injury or major incident occurs, the **accident site must be secured** pending investigation.
- **Reporting potential accidents** ("near-miss") – *same link above*
- Should you become aware of dangerous situations, **do not hesitate** to report it to your research supervisor, the H&S coordinator, the School Manager or the Head of School. **Don’t wait for an accident to happen!**
First Aid

- Lists of staff/students with First Aid certificates are located near all First Aid cabinets.
- First Aid boxes are housed throughout laboratories.
- First aid cabinets are located in the main corridor on Floors 5, 6 and 7 (B301).
- Diphtherine - use immediately on any chemical burn (solvent, acid, base but not HF). Can be used in eyes. Ask your supervisor where it is kept in your laboratory.

**For serious incidents, DIAL 111 and request an ambulance**

- If emergency is related to a chemical provide a hard copy of the **MSDS** to accompany the victim to hospital.
- If you suffer from any medical condition please inform me and your supervisor/lab colleagues so appropriate precautions can be put in place (diabetic, allergies, etc.)
Fires

- Fire extinguishers are placed throughout the School – Familiarise yourself with their location.
- Only ever attempt to tackle small fires. If no progress diminishing the size of the fire is being made after 20 seconds immediately leave the area and trigger the alarm. **Dial 111**
- Exit the building using the stairwell NOT the lifts. Don’t run.
- If the incident occurred in your lab area, proceed to the front of Building 301/302 and provide the fire wardens and emergency services with as much information as possible.
- Access to MSDS (e.g. electronic copy)
- Do not stay at Carpark 40 outside Building 302
- Make space for fire service outside Building 301/302
NOW GO to the School homepage. Using the menu go to Health and Safety then pick SAFETY GUIDELINES
READ THE GUIDELINES - PRINT OUT THE LAST TWO PAGES SEPARATELY, GET THE FORMS SIGNED AND RETURN TO 302-6th FLOOR RECEPTION

Please keep the form in a safe place – University security staff may ask to see it
Wellbeing at the University of Auckland

Resources for when you’re feeling like you “haven’t got this”

www.auckland.ac.nz/wellbeing

Support Services

• University Health and Counselling
• Doctoral Support Group
• Doctoral Skills Programme and Student Learning Services
• AUSA, Student Advice Hub, AUSA Welfare
  www.ausa.auckland.ac.nz/support
• PGSA www.pgsa.org.nz/
• Student Staff Consultative Committee (SSCC) – Chemistry
  postgraduate representative
• Faculty of Science SCS Wellbeing Group – stay tuned for events in 2019!

And many more!!

You can contact our SCS Equity Representative Erin Leitao for more info, or check out our list or resources available on Canvas.

erin.leitao@auckland.ac.nz
<table>
<thead>
<tr>
<th>Name</th>
<th>Room</th>
<th>Email</th>
<th>Phone</th>
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</thead>
<tbody>
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<td>ext 87478</td>
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<td>ext 86624</td>
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<td>ext 85567</td>
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<td><a href="mailto:aljoanand1812@gmail.com">aljoanand1812@gmail.com</a></td>
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<td>Michael Groom</td>
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<td>ext 86874</td>
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