Laboratory Safety Induction and Safety Tour

ANFF-NSW Node

Updated 2012 for WHS Laws
Revised July 2014 for South Labs
Minor Updates April 2016
Add Tagouts, Staff changes Oct 2017
Laser Lab changes April 2019
Phone numbers, shoes
SWP/RMF/East TMAH edits Aug 2022

Session Outcomes

At the end of this session you will be able to:

- Protect yourself in the laboratory environment
- Understand your WHS responsibilities and those of the University
- Understand concepts from the Work Health and Safety (WHS) Act, 2012
- Identify the key hazards in ANFF-NSW laboratories
- Recognise some health effects caused by chemicals, gases, lasers, liquid nitrogen
- Understand concepts of chemical labelling, SDS's, RMF's & SWP's
- Understand emergency procedures and warning lights/sounds, EWIS, toxic gas, oxygen depletion, fire suppression, laser and duress alarms
- Have a functional overview of laboratory (tour)

Why is Safety Important?

- **Consequences for individual include:**
  - **Pain and suffering**
  - **Reduced mobility**
  - **Illness and treatments**
  - **Disruption to family life**
  - **Impact on colleagues**
  - **Psychological trauma**
  - **Death**
- **Consequences for the organisation include:**
  - **Low workplace morale**
  - **Absenteeism**
  - **Reduced productivity**
  - **Litigation**
  - **Insurance cost**
  - **Damage to assets or environment**
  - **Poor corporate image**

Don't underestimate these & your effects on others eg colleagues

Your approach to your work must compliment a safe workplace culture demonstrating compliance with Work Health & Safety (WHS) laws

WHS Act 2012 – Key Terms & Concepts

- Reverse onus of proof is gone. ie the legal onus of proof is now back with the prosecutor to prove the offence
- “Absolute liability” upon the employer for worker health & safety has been replaced instead with, “reasonably practical”
- The term “employer” is replaced by “Person Conducting a Business or Undertaking” (PCBU)
- The term “Employee” is replaced with “Worker”, which is broader and includes anyone who carries out work for a PCBU eg students, volunteers, contractors etc
- The term “Director” and “Manager” will be replaced by the term “Officer”.
- At UNSW an “Officer” are those in the hierarchy from the Head of School upwards ie members of Council, the executive team and the VCAC

WHS Act – What it Means for you

- At UNSW it means there is an overarching principle that health and safety will be ensured by minimising or eliminating risks, “so far as is reasonably practical”
- “Reasonably Practical” is defined by documents like the Australian Standards and Codes of Practice
- So the Act has made Australian Standards and Codes of Practice more important in terms of compliance.
- Safework NSW enforcement options include: Prohibition and Improvement Notices, on the spot Fines, Prosecution
- Fines and jail terms for offences are higher than previous system eg fines for individuals of up to $50,000. For corporation $550,000. Two years jail in severe cases or more for a death.
- Fines and jail terms are almost double for second offence.
- N.B. You can still be prosecuted for your *acts* **and** your *omissions* under the WHS law. *ie failure to act when you know something is unsafe is punishable by law as much as acting in an unsafe manner.*

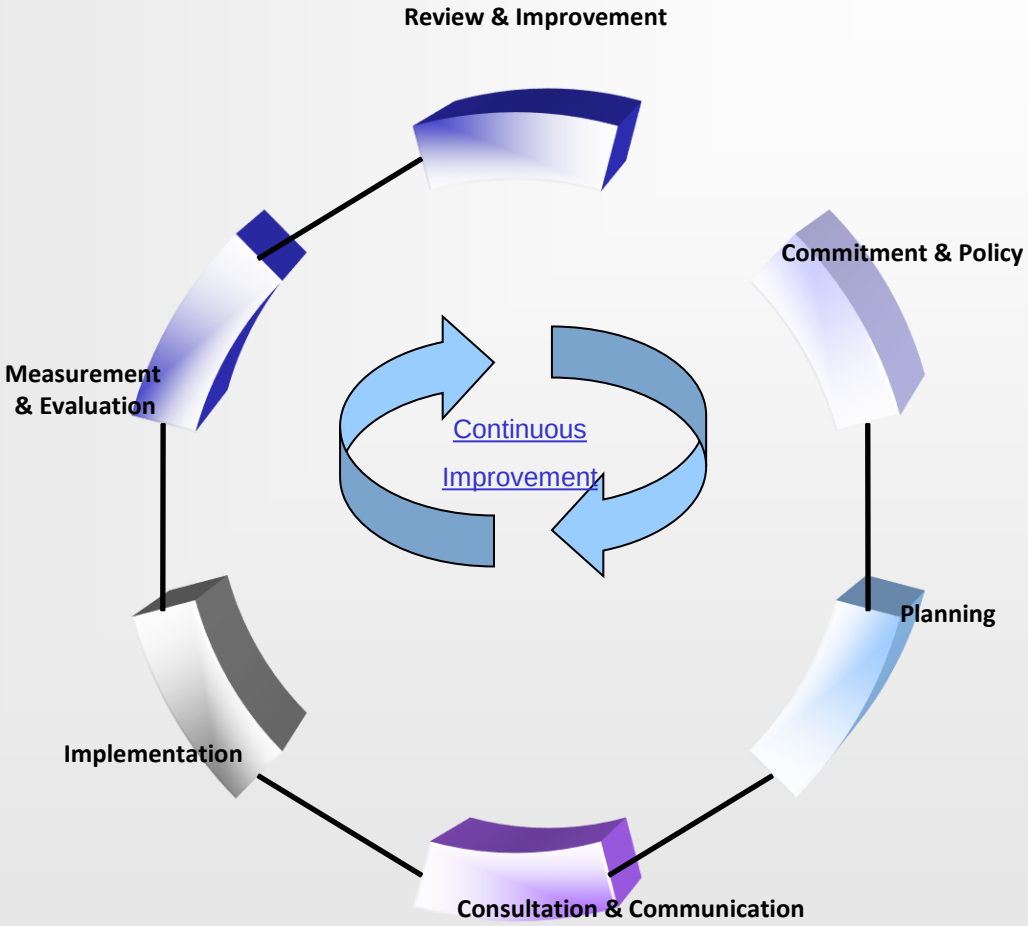
Aim of the Law

1. The WHS laws protect everyone providing greater consistency, certainty and clarity across Australia
2. Minimise risks and improve health & safety in the workplace
3. Ensure chemicals, gases have labels, SDSs and Risk Assessments
4. Ensure all hazardous processes have Risk Assessments and Safe Work Procedures
5. Ensure employees and emergency services are provided with information
6. Enable risk assessment and control of risk for your process or task.

There are est 2000 deaths in Australia each year due to occupational exposure to hazardous substances, including asbestos.

UNSW WHS Management System (ISO9000 - ISO9001)

WHS AWARENESS



Who has Responsibility for WHS at UNSW?

- ✓ Vice Chancellor and Council have overall responsibility for ensuring the health, safety and welfare of employees, students, visitors and contractors at UNSW
- ✓ Managers and Supervisors must:

– Ensure a safe and healthy premises, access and egress

– Provide plant and substances that are safe when properly used

– Ensure safe work systems and safe work environment

– Provide safety information, instruction and supervision

– Provide adequate facilities for welfare, eg 1st aid, EAPS.

Who else has WHS Responsibilities?

✓ Employees and Students:

- Take reasonable care of themselves and others
- Notify Staff of hazardous substances breaches or any WHS issue
- Work safely as directed by ANFF Staff
- Cooperate with UNSW and local WHS policies, procedures training, monitoring and any health surveillance
- Cooperate with UNSW and ANFF Area Managers reasonable requests in fulfilling their “duty of care” under WHS Laws

✓ Other persons in the workplace eg trade contractors:

- Work safely and as directed by ANFF Staff
- Cooperate with UNSW & ANFF requirements eg assess risks before starting tasks, work to safe work procedures, do not allow others to enter labs without lab managers permission etc
- Not deliberately interfere with health, safety, welfare of others
- Not hinder aid to injured worker
- Not create health and safety fears

Laser Hazard in South Labs

- Two lasers in Room 234 ANFF South:
  - 20 Watt 248 nm (UV-C) excimer (Compex Pro 102F)
  - 120 Watt 808 nm (Near IR) solid state diode continuous wave laser (LIMO 120 DL808)
- Lasers are classed in the AS 1 – 4
- Class 1 = probably won't hurt you. Class 4 = will definitely hurt you eg skin burns, blindness)
- Room 234 Lasers are Class 4 without covers, Class 1 with covers
- Excimer optics panels and laser heater fibre optic connections are interlocked to chamber alarm systems
- Chambers are not to operate under the alarmed state
- **Do not remove optics panels from laser beam paths**

Laser Hazard ctd.

- Room interlocks to Australian Standard are provided to the heating and excimer lasers.
- First complete the online Level 3 Laser Safety Course offered by UNSW ADFA.
- Entry protocol – First person in the lab for the day must enter with laser goggles.
- Exit protocols:
  - Place the goggles by the laser doors
  - User interlock “override button” to exit when laser is turned on
  - Do not use red doors unless there is an emergency. Opening these doors will shutdown the lasers
- For all emergencies, hit the shoulder height red EMO buttons available at each chamber and evacuate
- If in doubt call the Area Supervisor or Lab Manager

Potential F2 leak in Laser Labs

- Minute Fluorine gas (F2) may still have a small potential to leak in KrF Laser Gas Premix.
- Corrosive and Toxic are main F2 hazards, however, the quantity is low enough (<1%) in the premix used in the laser to be classed as non-toxic
- F2 is diluted with Helium. Also Krypton and Neon as trace gases
- Leaks will create strong pungent smells like sweet burning plastic (As advised by Nick Cole of Coherent)
- The laser is on an exhaust duct to remove gas from the room in case of a leak
- Fluorine sensors are located in room 234 and the exhaust duct and will sound an alarm and shutdown the laser in the event of a leak

Liquid Nitrogen (LN2) South Labs

- LN2 is used in ANFF South (room 233) as cooling for the Veeco MBE
- Contained in a double walled insulated tube to prevent condensation and ice.
- There may be some icing around the connections to the MBE - often it's impossible to prevent.
- Icing on the hosing away from the MBE connections is suggestive of a thermal short, not of an LN2 leak.
- An LN2 leak is most likely to look like puffs of snow, rather than a ball of ice. A dramatic leak is very obvious - Leave immediately and alert lab management.
- Main hazard is asphyxiation if liquid or gas escapes
- Oxygen depletion level sensors will sound an alarm if LN2 or N2 gas escapes.
- Be aware of your surroundings, visual clues and alarms
- If alarm sounds leave area immediately and inform Lab Manager or Area Supervisor

Chemical forms

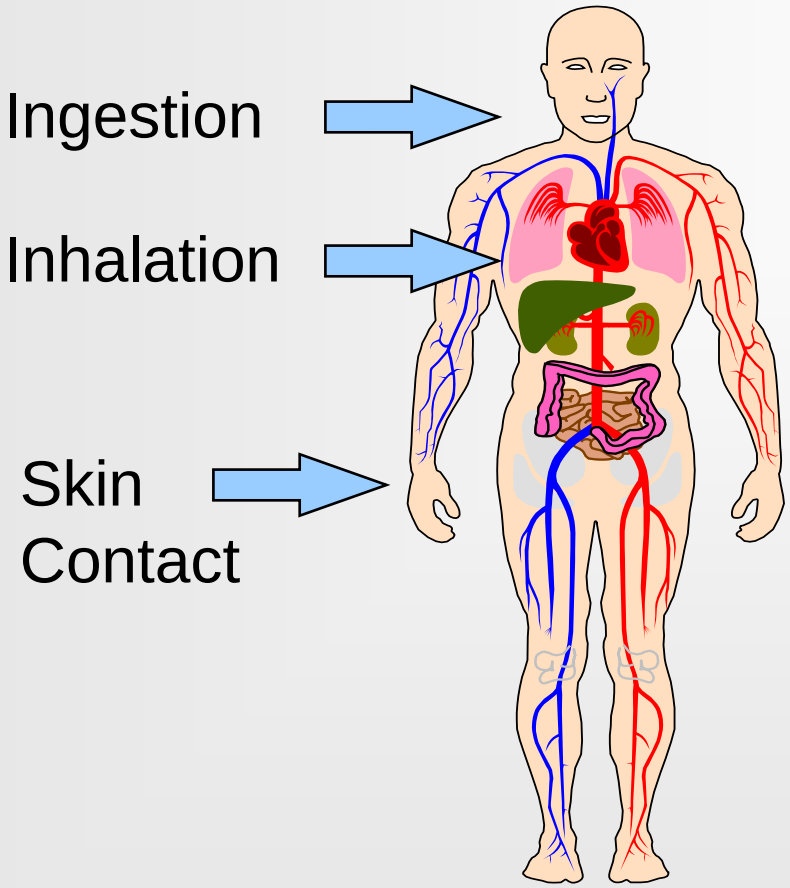
Chemicals can be:

1. Solids (dust, powder, smoke and fumes)
2. Liquids (vapours and mists)
3. Gases
4. Visible or invisible

Chemicals may be directly or indirectly made on site or may be by-products of a process.

It's not always obvious what is treated as a chemical, under law. If in doubt please ask.

Chemical & Gas exposure routes



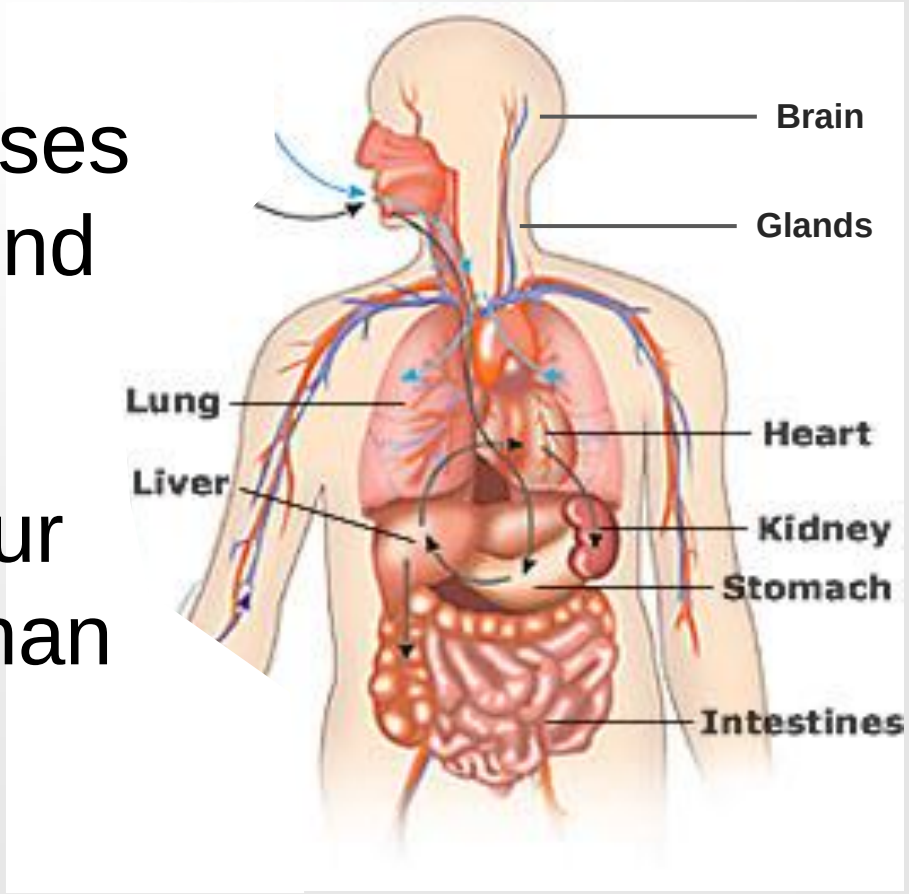
How much harm done depends upon exposure:
- Dose
- Frequency
- Duration
- Route into body

Think about:
- Cross contamination
- Some people more sensitive to effects of chemicals & gases

In practical terms at UNSW we treat *all* chemicals as hazardous

Once they are in

1. Chemicals, Gases can travel around the body
2. Injury may occur at sites other than the original contact point



Damage to the body – How the body copes (or doesn't)

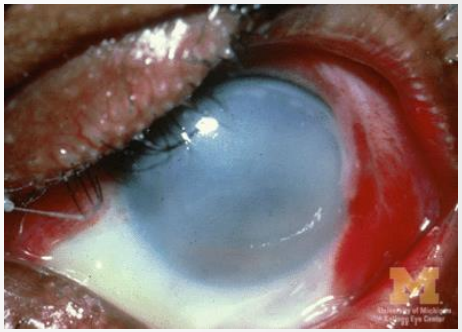
Metabolism: The chemical may be converted or detoxified - generally in the Liver

Excretion: Mainly at the kidneys (processing) & bladder (holding), sometimes skin.

Storing: The chemical may be stored/ bound in an organ or tissues where it bio-accumulates

Common Chemical & Gas Injuries

1. Dermatitis
2. Eye, skin and lung burns
3. Headaches
4. Brain and nerve damage
5. Cancer
6. Asthma
7. Allergies



Always wear Goggles, Gloves and Protective Footwear

Always work to the SWP and safely as directed

Personal Protective Clothing and Equipment (PPCE)

Shoes

- Fully enclosed, non-porous footwear must be worn.
- No canvas or mesh trainers, no bare feet, no thongs, no sandals, no shoes with high heels.

Gloves

When should gloves be worn?

- Chemical hazard
- Temperature hazard
- Physical hazard

When selecting glove material consider

- degradation rating
- breakthrough time
- permeation rate
- Compatibility information

See Area Manager for selection guidance if unsure

Personal Protective Clothing and Equipment (PPCE) in the White Areas of the Labs

Goggles or glasses, SWP dependent

Cleanroom Suit

Correct gloves for task

Non-porous enclosed shoes under clean room boots

Lab Incidents & Injuries - Common Factors

Normally it's a combination of factors (aka "Swiss Cheese" Model) mostly related to behaviors i.e:

- taking shortcuts
- inexperience (lack of training, inadequate assessment of hazards and risks)
- over familiarity leads to overlooking of hazards
- inadequate PPCE
- working alone
- poor supervision
- equipment problem

Personal Factors that affect your Safety

Be aware of the states which cause injury. Know your own limits & monitor your own behaviour. Always work safely and respectfully with other lab users and staff:

- Rushing
- Frustration – what gets you angry
- Sleep deprivation -> errors
- Fatigue –> loose judgement (+ body clock)
- Complacency vs experience
- Different personal risk acceptance traits

Factors contributing to “concentration based” critical errors:

- Eyes not on the task
- Mind not on the task
- Line of fire
- Loss of Balance/ Traction/ Grip

Safe Lab Conduct

- **Never** adopt a casual attitude in the laboratory.
- Ensure that your personal clothing is suitable.
- Wear eye protection and other PPE & clothing appropriate to the type of work. eg gloves, shoes, aprons, sleeve protectors. Check the SWP for each specific task.
- For equipment breakdowns seek help. DON'T ATTEMPT REPAIRS YOURSELF. We will "tag out" (add signage) to equipment that needs repair. Do not operate tagged out equipment.
- For chemical spills, seek help. DON'T ATTEMPT TO CLEAN UP BY YOURSELF.
- Do not handle, store or consume food or drink in the lab
- Dispose of all wastes correctly and maintain good housekeeping practices.
- **YOU ARE NOT AUTHORISED TO ALLOW TRADE CONTRACTORS or COLLEAGUES/FRIENDS/OTHERS TO ENTER ANY ANFF LAB AREA.**
  Call the Lab Manager on 0405108676 or 93856224 to arrange

Fume Cupboards

Use whenever you are using chemicals eg:

- Flammables, Corrosives and Oxidisers
- Toxics
- Noxious (objectionable odours)

*If you work with any of the above you should work with them in a fume cupboard.

*You should ALWAYS lower the sash to protect you & other lab users from the chemical

*Do not sit at a fume cupboard – may delay escape from a chemical spill or flashup, you may trip over stool.

*Never put your head inside the fume cupboard

*Do not block the opening with your body or too much equipment – fumes can come back out!

After Hours Work

- Risk assessment MUST be done as some risks are greater when working after-hours:
  - identify the hazards, then the risks
  - assess and control the risks
- Certain tasks cannot be done after-hours
- A “Buddy System” is in place for after-hours work
- You must have your “Buddy's” contact details written up on the lab white board at lab entries so UNSW Security can contact your Buddy in case of incident
- You must work with or stay in touch with your “Buddy”

After hours means before 8:00am and after 6:00pm on weekdays and also right throughout Public Holidays, Weekends and University Holidays

See the After Hours Policy in the WHS Guidelines Document and SWPs for specific information

Alarm Tones

1. Building Wide (EWIS) – Alert and Evacuation
2. FM200 & VESDA (fire suppression in White areas)
3. Special Gases System – East Lab Grey Area & Gas Shed
4. Oxygen depletion Alarm – East Lab Grey Area, East Lab Gnd Floor White Area, South Labs.
5. Fume Cupboard low air flow – Local to Fume Hood. Do NOT use Fumehood.
6. Excimer and IR laser panel alarms (part of South Lab Training)

GHS Chemical Classifications

GHS01 Explosive 	GHS02 Flammable 	GHS03 Oxidising 
GHS04 Gas Under Pressure 	GHS05 Corrosive 	GHS06 Acute Toxic 
GHS07 Harmful / Irritant / Skin sensitiser 	GHS08 Carcinogen / Germ cell mutagen / Reproductive toxin 	GHS09 Hazardous to the aquatic environment 

ANFF
NSW Node

The Basic Parts of A GHS-Compliant Label

1. **Product Identifier** - Should match the product identifier on the Safety Data Sheet.
2. **Signal Word** - Either use "Danger" (severe) or "Warning" (less severe)
3. **Hazard Statements** - A phrase assigned to a hazard class that describes the nature of the product's hazards
4. **Precautionary Statements** - Describes recommended measures to minimize or prevent adverse effects resulting from exposure.
5. **Supplier Identification** - The name, address and telephone number of the manufacturer or supplier.
6. **Pictograms** - Graphical symbols intended to convey specific hazard information visually.

Sample label courtesy of Weber Packaging Solutions • www.weberpackaging.com

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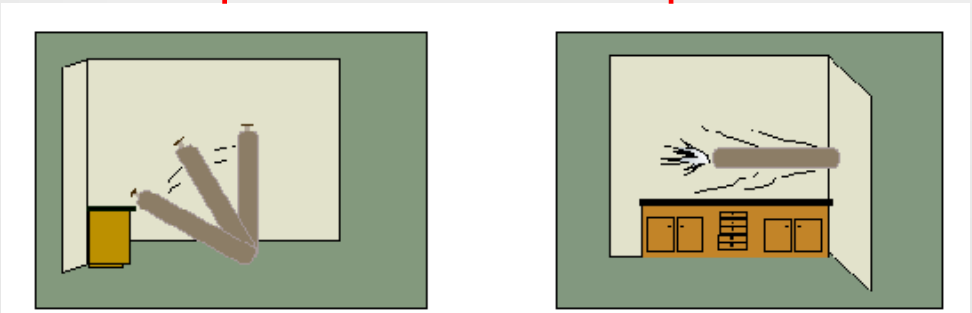
Hazards of Gases

Asphyxiant If no other chemical hazard
Oxygen leak Creates an oxygen enriched atmosphere
Flammable Hydrogen, town gas, methane
Toxic May be lethal at concentrations in ppm
Pyrophoric Ignites on contact with air *eg. Silane*
Corrosive Burns to skin and respiratory tract

Lab users are not authorised to open the gas cabinets or adjust gas settings. Get help from the Area Supervisor or Lab Manager



Pressure mechanical energy stored in gas cylinder = car travelling at 180km/h

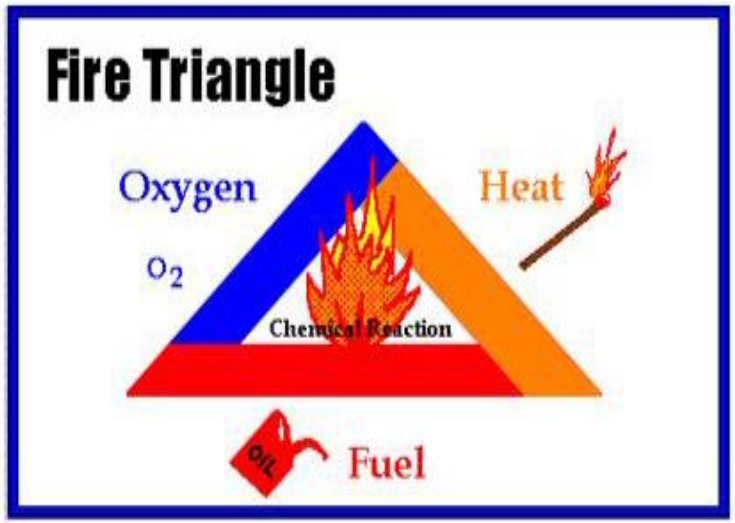
Safe use of Flammable Liquids

Have a flash point below 62^{O}C – Main chemicals in this class at ANFF are Acetone and Isopropanol

- No naked flames or ignition sources in work area
- **In South Labs, be wary of using flammables when MBE chambers are being baked**
- Heat only by mantle, bath, steam or infra red – *never on a hotplate*
- Work in a fume hood behind a LOWERED safety screen/sash
- Avoid overfilling squirt bottles (Acetone/IPA)
- Use intrinsically safe & tested electrical equipment
- Only use the required volumes in the work area – return excess/ large volumes to storage cabinets

For a fire to occur three conditions must exist:

1) Concentration of flammable vapour is within the flammable limits of the substance *(the broader the flammability range the higher the risk)*
2) an oxidizing atmosphere
3) a source of ignition *eg flames, sparks,heating liquid on hotplate, static electricity, pumps, any electrics, power points*



Spontaneous Ignition - *material itself produces enough heat to reach the ignition temp*

Oxidising Agent

Class 5.1 Oxidising Agent
eg. Perchloric Acid

Class 5.2 Organic Peroxides
eg. ethyl ether

- Can explode violently when shocked or heated
- various degrees of chemical instability – unpredictable eg. nitric acid, chromic acid, permanganate
- Chlorates, mixed with combustible material, may form FRICTION SENSITIVE explosive mixtures

- STORE AWAY FROM FLAMMABLES to decrease the severity of a fire – oxidisers enrich oxygen in a area increasing risks of flammable liquid combustion

Corrosives

Definition:

A liquid or solid that causes full thickness <u>destruction</u> of human skin at the point of contact

First Aid:

Wash exposed area in water for 15mins & seek help

<u>Inorganic acids</u> (mineral acids): e.g H_2 SO_4,
HCL – concentrated solutions evolve a very toxic irritant
Sulfuric acid – react vigorously with water

- Chars organic material liberating sulfur dioxide
- Fuming sulfuric on lino floors produces sulfur dioxide
- Reacts with $KMnO_4$, Na azide, Na chlorate – explosives

Corrosives:

- can cause severe burns (3rd degree) to skin, eyes and lungs. Note - some gases like Chlorine are corrosive
- May form toxic or flammable gases as they react with metal or other chemicals

HYDROFLUORIC ACID

Colourless & Strongly corrosive - causes severe burns. HF is one of the most corrosive of the inorganic acids as HF binds to the calcium and magnesium in the body

Dilute solutions (2% HF) will penetrate deeply. Death of skin, tissues, blood vessels, even bone may follow, requiring amputations or causing death (2.5%). If inhaled, damage is likely as it is a highly volatile liquid; effects are worse than HF liquid

The 2 mechanisms that cause tissue damage are:

- **corrosive burn from the free hydrogen ions**
- **chemical burn from tissue penetration of the fluoride ions**

The initial extent of the burn depends on the **concentration, temperature, duration of contact, and quantity**.

If concentration <=7% It may take several hours before onset of symptoms, resulting in delayed presentation, deeper penetration of the un-dissociated HF, and a higher severity of burn

HYDROFLUORIC ACID

Where possible:

- Substitute for less hazardous substance
- Use the most dilute HF solution practicable
- Experienced staff should prepare the dilutions
- Neutralise waste product immediately (lime in Na_2CO_3 sol'n)

ALWAYS

- Work in a chemical fume hood at least 200mm from the edge
- Wear goggles – eye treatment is difficult (can't use gel in eyes)
- Use good housekeeping and laboratory practices & regularly check yourself for contamination.
- Have a second person in the lab when you are using HF (Buddy System) in full PPCE
- Keep a supply of Calcium Gluconate Gel at home for delayed onset pains from unnoticed exposures

NEVER

- Never use in a squirt bottle
- Never attempt to clean up a spill (>100ml)
- Never store with ammonia, bases, flammables or combustibles

HYDROFLUORIC ACID

First Aid

- Remove person from contamination (liquid or vapour).
- For Liquid exposure:
  - Wash with copious amounts of running water for 5 mins. Remove contaminated clothing & jewellery (place all in plastic bag) under shower – remove safety goggles LAST
  - Wash hands and dry with paper towel. Self - apply **calcium gluconate gel** on and around the area with your fingers – **NOTE TIME OF APPLICATION**.
  - Continue application of calcium gluconate gel (15 min intervals) until medical treatment is available.
  - For eyes: get to eyewashes. Irrigate eyes for 5 minutes then apply 1% sterile SOLUTION of calcium gluconate via syringe. Put gel on skin.
- For vapour exposure, get to fresh air & administer 0_2
- Obtain SDS and phone security service 93856666 to get help to evacuate the person to hospital.

Note: Tri-fluoracetic acid can form HF acid on contact with water

Tetramethylammonium Hydroxide (TMAH)

- Classed as toxic (as well as corrosive)
- Exposure to 7% of the body at 25% concentration is lethal because there is no treatment in such cases. TMAH concentration is the most important factor associated with fatalities.
- The key differentiator in survival is percentage of body surface affected.
- TMAH etch process is performed in the White Area on Level 1 at high concentrations (25%). Main control is small quantities (100-200ml) + PPCE
- TMAH is a constituent (2.35%) in some developers and is used by many lab users. Main control is low concentration.

Chemical Labels

Labels allow you to recognise hazards and should:

1. Provide information and instructions
2. Be firmly fixed to beakers, test tubes & storage bottles
3. A copy should be attached to any bund or outer container
4. Be legible and be in English
5. Provide contact details for more information
6. Conform to the relevant Code of Practice

If in any doubt, contact the supplier.

Label Contents

1. Product identification (name in words not chemical symbol)
2. Signal Words and Symbols (from Code of Practice)
3. Risk and Safety Phrases (from Code of Practice)
4. Safe use directions (from MSDS)
5. First aid and emergency procedures
6. Contact details of the supplier + Your name
7. Chemical expiry date (if relevent)
8. *Waste* chemicals also need to be labelled. Under the law they are treated the same way as *new* chemicals regarding labelling and MSDSs
9. Label templates for *new* and *waste* chemicals are available from Area Supervisors/Process Engineers
10. Different label requirements for quantities under 500ml vs over 500ml

Labelling of Hazardous Substances used for a short time frame

1. A container into which a hazardous substance is decanted for use within the next 12 hours need only be labelled with the product name and the relevant risk phrases and safety phrases. *(We would also want your name on the label)*
   OR
2. A container into which a hazardous substance is decanted for immediate use need not be labelled, so long as it is cleaned immediately after it has been emptied of the substance . . . *(We have the additional requirement that the container must not be left unattended)*

New Materials and SDSs

1. A **S**afety **D**ata **S**heet must be provided before you bring ANY new chemicals or new materials into the Labs (to check safety and compatibility with lab storage and processes)
2. Full information sheets and safe use guide
3. Legal content requirements
4. Must be accessible to workers & emergency crews
5. SDSs are kept in each laboratory entry area and at http://anff-nsw-scheduler.org/
6. Do not use the chemical if the work area does not meet the safety directions on the SDS or if you feel uncertain. Seek help from the local Area Supervisor, Process Engineers or the Laboratory Manager.
7. *No new Materials or new Chemicals are permitted in the labs without formal permission.* ANFF Staff can help assess and assist here.

Mandatory SDS Sections

1. Product & Common Name {& formula}
2. Supplier Details
3. Dangerous goods details / UN number
4. Uses
5. Chemical composition (& concentration)
6. Properties {appearance, smell, flammability)
7. Chemical properties {eg. BP, flash pt., solubility, pH, SG}
8. Hazard identification {risk phrases & signal word e.g Hazardous}
9. Safety precautions for use and PPE {safety phrases}
10. Stability and Reactivity
11. Health Effects {short & long term, toxicological, advice to Doctors e.g HF}
12. Storage
13. Emergency Procedures
    - First Aid Procedures
    - Spillage Procedures
    - Fire Fighting
14. Transport requirements
15. Waste disposal {incl. ecological information}

Source: CCH Australia Limited

Safe Work Procedures and Risk Assessment

1. *A Safe Work Procedure* (SWP) is a list of instructions of how to perform a task safely and successfully. Read the SWPs for your tasks before commencing your lab training or lab work.
2. All lab process training at ANFF-NSW is performed to the SWPs
3. A Risk Assessment, is documented on a *Risk Management Form* (RMF). Risk is assessed using the *"Hierarchy of Controls"* to:

Eliminate the risk. eg not use that nasty acid/flammable liquid etc to do the process or the work required

Substitute for lower risk. Use less hazardous equipment, processes, or chemicals eg dilute the acid to 5% for the process

Isolate the risk. eg close down an area, cordon it off to limit access to one trained person, separate the hazard from the person put at risk; this can done with physical barriers, distance or time

Engineering Controls to minimise risk. eg use chemical only in a fume cupboard, use guards on equipment, change the design of the workspace to improve safety

Administrative Controls to minimise risk. eg rules, training, signage supervision and instruction

Personal Protective Equipment (PPE). eg gloves, goggles, lab coat. This should not be solely relied upon and should only be used as a last resort to control risks

A combination of the above will often be required to provide the safest result

4. Standard processes will already have a SWP and an RMF
5. We can help you to assess risk and develop SWPs for non-standard processes

Assess the risk = “Risk Rating”

What is the risk?

- The chance of harm occurring

How is it rated?

- Its a combination of “Consequence” and “Likelihood”
- Consequence of exposure to the hazard – “the event”
- Likelihood of those exposure consequences

- The UNSW process is less concerned about the likelihood of the event occurring – most hazards are foreseeable, and the law requires us to eliminate both potential and actual (known) hazards

UNSW WHS Risk Rating System

Likelihood Level	Consequence Level				
	Insignificant 1	Minor 2	Moderate 3	Major 4	Severe 5
A (almost certain)	M	H	H	VH	VH
B (likely)	M	M	H	H	VH
C (possible)	L	M	H	H	VH
D (unlikely)	L	L	M	M	H
E (rare)	L	L	M	M	M

Key: VH = Very **H**igh risk; **H**=**H**igh risk; **M**=**M**edium risk; **L=L**ow risk;

Chemical Spill – Major 93856666

- If someone has been exposed, get that person to a safety shower or eyewash station immediately.
- Remove any affected clothing and have them flush the exposed areas for fifteen minutes. Follow the first aid instructions in the SDS which should also make reference to *symptoms of exposure and emergency precautions and procedures*
- Shut the doors to the spill area.
- Call the Lab Manager, Gordon Bates 93856224 or 0405108676 or others on contact lists in labs
- In the white areas use the Duress Alarm button which will summon staff and UNSW Security assistance
- Call 93856666 to report the accident or sound the nearest fire alarm.
- Evacuate the area if necessary
- If it is a very minor spill then it may be cleaned up by the people in the lab, if it is not health threatening. If in doubt call the Area or Lab Manager
- If you are unsure if a spill is minor or major, consider it major: Act accordingly.

Spill Kits

- Contain the spill
- Absorb the spill
- Some have a neutraliser too
- Dispose of used materials
- Report the spill
- Restock spill kit

Summary

1/ Be aware of your surroundings and how your actions can affect your safety and the safety of others in the lab.

2/ Please follow reasonable requests to work safely, as directed. Area Supervisors or Process Engineers may correct your actions - They are in the position to help you work safely while getting the best results .

3/ Labels, SDS, RMFs and Safe Work Procedures give safety information that is vital to a safe workplace. *No new Materials or new Chemicals are permitted in the labs without formal permission and completion of these documents.* ANFF Staff can assist.

4/ Most processes use the standard Risk Assessment and Safe Work Procedures for hazardous tasks – These are accessible to staff & students, http://anff-nsw.org/scheduler/ Read them before your training starts!

5/ Continued swipe card access to ANFF-NSW laboratories is a privilege (not a 'right') earned by working safely and respectfully with others.

6/ You must use, store & label new and waste chemicals properly.

7/ Exposure to Hydrofluoric Acid or TMAH is potentially life threatening.

8/ Be aware of issues like chemical class and cross contamination when working with chemicals. Always work to a Safe Work Procedure.

9/ This is general information only, it does not cover all possible scenarios – stay alert!

10/ See an Area Supervisor, Process Engineer or Trainer for specific advice and training. *If you are uncertain, ask questions before proceeding with the task*.

Useful Contacts

In the first instance call ANFF Area Supervisors/Process Engineers for all processing and safety related matters:

Andrew See, Acting Facility Projects Manager: a.see@unsw.edu.au 93850456
Fay Hudson, Process Manager: f.hudson@unsw.edu.au 93854409,
Joanna Syzmanska, Process Engineer: j.syzmanska@unsw.edu.au 93859869
Pierrette Michaux, Process Engineer: p.michaux@unsw.edu.au 93850464
Ute Schubert, Process Engineer: u.schubert@unsw.edu.au 93854558
Hien Nguyen, Process Engineer & ANFF South Area Supervisor hien.nguyenthidieu@unsw.edu.au

Email lab problems to the ticketing system*:* *anff@unsw.edu.au*

Additional information can be found on our WHS Website
http://anff-nsw.org/
See also: Safework NSW: http://www.safework.nsw.gov.au/
UNSW Safety: http://safety.unsw.edu.au/

What to do after your Induction and Laboratory Tour

1. We will email out the WHS Guidelines Document, the SGS Policies and Procedures Guide, Task Certification Checklist and the Quiz.
2. Please read these documents and the handout to answer the quiz.
3. When you have finished, email the ANFF-NSW Lab Technical Manager, (g.bates@unsw.edu.au) your quiz answers and make an appointment for interview.
4. Allow about half an hour for this visit.
5. When you visit, you will need to demonstrate an understanding of the issues of working in the ANFF-NSW Labs and the WHS concepts, explained at the induction.
6. You'll later receive a "Welcome email" with links to the online booking and WHS systems. Please use them to register.
7. Further specific process and cleanroom training will then commence.
8. Andrew See coordinates training. a.see@unsw.edu.au

Please note that undergraduate lab access is subject to the conditions set out in the WHS Guidelines Document, section 6.5

ANFF
NSW Node

Part Two – Laboratory Tour

UNSW
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