LAB SAFETY INDUCTION
SCHOOL OF ENGINEERING

An Introductory Lab House Rules Briefing by:
Lab Management Office
NAVIGATION

- Rules
- How to deal with an emergency?
- How to report a hazard or incident in the lab?
- Know your lab emergency equipment and learn how to use them
- How to safely work in the lab?
- Understanding Risk Assessment and Risk Control
- Managing chemicals and waste in the lab
- Chemical Labelling
- Chemwatch
- Managing Scheduled Waste
- Scheduled Waste Labelling
- Working with Laboratory Equipment
Laboratory House Rules

General & Personal Safety Procedures

➔ **All accidents**, no matter how minor, **should be reported** to the School/Staff member supervising the laboratory or, if unavailable, call **333** from internal phone or **03-55146333**.

➔ **Bags. DO NOT** leave bags in the hallway outside the laboratory. All bags must be stored in the lockers provided outside of the laboratories, under the benches and cupboards, and well away from the walkways to avoid tripping over.

➔ **No food in the laboratories.** It is against the university safety guidelines for any food or drink to be present in any laboratory unless it is used for specific supervised experiment.

➔ **No smoking.** Monash University at Sunway Campus is a non-smoking campus.

➔ **Workplace must be kept tidy and clean**

➔ **Avoid working alone** in laboratory. Obtain approval from your supervisor.
Laboratory House Rules

Personal Protective Equipment (PPE)

➔ Students and Staff must observe safety requirements given at the beginning of each laboratory session. All laboratory experiments must have additional safety requirements and you will be told at the beginning of the practical session. Make sure you observe the safety requirements.

➔ Laboratory coats. This must be worn at all times when working in the laboratory.

➔ Eye protection. Safety glasses or face shield must be worn whenever provided in the laboratory. The wearing of contact lenses is not considered to be a substitute for the wearing of eye protection provided.

➔ Footwear. Students must wear shoes that are closed-in. Sandals; opened toed or high heeled shoes are not permitted in the laboratory.

➔ Gloves. Students are required to wear an appropriate for the hazardous materials.
## Who to reach during an emergency?

<table>
<thead>
<tr>
<th>NAME</th>
<th>TITLE</th>
<th>CONTACT</th>
<th>ROOM</th>
<th>EMAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wong Cheng Yeow (Daniel)</td>
<td>Lab manager</td>
<td>603-5514 6090 (Ext: 46183)</td>
<td>5-2-04</td>
<td><a href="mailto:wong.cheng.yeow@monash.edu">wong.cheng.yeow@monash.edu</a></td>
</tr>
<tr>
<td>Nurul Hidayah Binti A. Rahman</td>
<td>Senior Technical Officer</td>
<td>03-5514 4462 (Ext: 44462)</td>
<td>5-5-39</td>
<td><a href="mailto:nurul.hidayah@monash.edu">nurul.hidayah@monash.edu</a></td>
</tr>
<tr>
<td>Wong Weng Yan (Sharon)</td>
<td>Senior Technical Officer</td>
<td>03-5515 9785 (Ext: 59785)</td>
<td>5-5-37A</td>
<td><a href="mailto:Wong.WengYan@monash.edu">Wong.WengYan@monash.edu</a></td>
</tr>
<tr>
<td>Nur Azreen Binti Ariffin</td>
<td>Technical Officer</td>
<td>03-5514 5620 (Ext: 46200)</td>
<td>5-5-35</td>
<td><a href="mailto:nur.azreen@monash.edu">nur.azreen@monash.edu</a></td>
</tr>
<tr>
<td>Mohammad Firdaus Bin Jamaludin</td>
<td>Technical Officer</td>
<td>03-5514 5620 (Ext: 46200)</td>
<td>5-5-35</td>
<td><a href="mailto:firdaus.jamaludin@monash.edu">firdaus.jamaludin@monash.edu</a></td>
</tr>
<tr>
<td>Amir Syafiq Bin Samsudin</td>
<td>Senior Technical Officer</td>
<td>03-5514 4489 (Ext: 44489)</td>
<td>5-2-22</td>
<td><a href="mailto:Amir.Syafiq@monash.edu">Amir.Syafiq@monash.edu</a></td>
</tr>
<tr>
<td>Muhammad Afiq Fadly Bin Anuw</td>
<td>Technical Officer</td>
<td>03-5514 4482 (Ext: 44482)</td>
<td>5-2-22</td>
<td><a href="mailto:muhammad.afiq.fadly@monash.edu">muhammad.afiq.fadly@monash.edu</a></td>
</tr>
<tr>
<td>Nur Liyana Afiah Binti Zar Khan</td>
<td>Technical Officer</td>
<td>03-5514 4464 (Ext: 44464)</td>
<td>5-2-16</td>
<td><a href="mailto:nur.liyana@monash.edu">nur.liyana@monash.edu</a></td>
</tr>
<tr>
<td>Hadrzin Hafidz</td>
<td>Technical Officer</td>
<td>03-5514 5615 (Ext: 45615)</td>
<td>5-3-17</td>
<td><a href="mailto:Hadrzin.Hafidz@monash.edu">Hadrzin.Hafidz@monash.edu</a></td>
</tr>
<tr>
<td>Murugan @ Suresh A/L Suppillah</td>
<td>Principal Technical Officer</td>
<td>03-5514 4626 (Ext: 46262)</td>
<td>5-2-13</td>
<td><a href="mailto:murugan.suppillah@monash.edu">murugan.suppillah@monash.edu</a></td>
</tr>
<tr>
<td>Paremanan A/L Periasamy</td>
<td>Senior Technical Officer</td>
<td>03-5514 4626 (Ext: 46262)</td>
<td>5-2-03</td>
<td><a href="mailto:paremanan.periasamy@monash.edu">paremanan.periasamy@monash.edu</a></td>
</tr>
<tr>
<td>Ku Nursul Fatiah binti Ku Mamat</td>
<td>Senior Technical Officer</td>
<td>03-5514 4466 (Ext: 44466)</td>
<td>5-2-11</td>
<td><a href="mailto:kunursul.fatiah@monash.edu">kunursul.fatiah@monash.edu</a></td>
</tr>
<tr>
<td>Balya Darohini</td>
<td>Technical Officer</td>
<td>03-5514 4587 (Ext: 45871)</td>
<td>5-5-02</td>
<td><a href="mailto:balya.darohini@monash.edu">balya.darohini@monash.edu</a></td>
</tr>
<tr>
<td>Wan Nursul Ain Mohd Sallehuddin</td>
<td>Technical Officer</td>
<td>03-5514 4466 (Ext: 44466)</td>
<td>5-2-11</td>
<td><a href="mailto:wannursulaimi.mohdsallehuddin@monash.edu">wannursulaimi.mohdsallehuddin@monash.edu</a></td>
</tr>
<tr>
<td>Azlan Bin Abdul Aziz</td>
<td>Technical Officer</td>
<td>03-5514 4623 (Ext: 46263)</td>
<td>5-3-02</td>
<td><a href="mailto:azlan@monash.edu">azlan@monash.edu</a></td>
</tr>
<tr>
<td>Mohamad Hanif Bin Abdul Kahar</td>
<td>Technical Officer</td>
<td>03-5514 5600 (Ext: 56000)</td>
<td>4-1-09A</td>
<td><a href="mailto:mohamad.hanif@monash.edu">mohamad.hanif@monash.edu</a></td>
</tr>
<tr>
<td>Muhamed Fadilur Rahman Bin Abdul Rahman</td>
<td>Technical Officer</td>
<td>03-5514 4623 (Ext: 46263)</td>
<td>5-1-03</td>
<td>fadilur <a href="mailto:rahman@monash.edu">rahman@monash.edu</a></td>
</tr>
<tr>
<td>Muhammad Nasuha Bin Mazha</td>
<td>Technical Officer</td>
<td>03-5514 4589 (Ext: 46099)</td>
<td>5-1-03</td>
<td><a href="mailto:nasuha.mazha@monash.edu">nasuha.mazha@monash.edu</a></td>
</tr>
<tr>
<td>Panneerselvam A/L Arjun Coundan</td>
<td>Principal Technical Officer</td>
<td>03-5514 4627 (Ext: 46267)</td>
<td>5-3-10</td>
<td><a href="mailto:panneerselvam.arjun@monash.edu">panneerselvam.arjun@monash.edu</a></td>
</tr>
<tr>
<td>Khilal Bin Othman</td>
<td>Senior Technical Officer</td>
<td>03-5514 5674 (Ext: 56764)</td>
<td>5-3-07</td>
<td><a href="mailto:Khilal.Othman@monash.edu">Khilal.Othman@monash.edu</a></td>
</tr>
<tr>
<td>Tharmee A/L Varatharajaa</td>
<td>Technical Officer</td>
<td>03-5514 5687 (Ext: 56877)</td>
<td>5-6-07</td>
<td><a href="mailto:tharmee.varatharajaa@monash.edu">tharmee.varatharajaa@monash.edu</a></td>
</tr>
<tr>
<td>Bathmanathan A/L Arjuna</td>
<td>Senior Technical Officer</td>
<td>03-5514 4625 (Ext: 46256)</td>
<td>2-4-11</td>
<td><a href="mailto:bathmanathan@monash.edu">bathmanathan@monash.edu</a></td>
</tr>
<tr>
<td>Aliq Bin Anwar</td>
<td>Technical Officer</td>
<td>03-5514 5649 (Ext: 45649)</td>
<td>5-1-06</td>
<td><a href="mailto:Aliq.Anwar@monash.edu">Aliq.Anwar@monash.edu</a></td>
</tr>
<tr>
<td>Azaruddin Bin Ahmad</td>
<td>Senior Technical Officer</td>
<td>03-5514 5649 (Ext: 45649)</td>
<td>5-1-06</td>
<td><a href="mailto:azaruddin.ahmad@monash.edu">azaruddin.ahmad@monash.edu</a></td>
</tr>
</tbody>
</table>
How to deal with an emergency?

➔ If the alarm goes off while you're working in a lab:
  ➔ Inform the nearest Technical Officer (TO) / Staff member
➔ Is there any equipment that needs to be shut off? Shut off gas supply as an example.
➔ Any chemicals to put away?
➔ Experiment in progress? Inform your supervisor or Technical Officer accordingly.
➔ Do keep calm
➔ Walk to the Assembly Area using the nearest staircase.
MONASH UNIVERSITY MALAYSIA EMERGENCY ASSEMBLY MAP

BRT DEPOT

JALAN LAGOON SELATAN

SC

ASSEMBLY AREA
(PLATINUM FIELD)

1) Line up according to your respective building.
2) Follow the instructions of the Evacuation Controller.
3) Remain calm and never leave the assembly area without the instructions by the Evacuation Controller.
4) You may leave the assembly area once the Evacuation Controller announces that the situation is safe and under control.
How to deal with an emergency?

If you are injured (Wound cuts, burns etc),
→ Inform the nearest Technical Officer (TO)/ Staff member/ Supervisor
→ Use the nearest first aid kit (if you use any first aid item, inform the first aider)
→ Contact a First Aider if you need first aid

If there is a spill,
→ Inform the nearest Technical Officer (TO)/ Staff member/ Supervisor
→ Use the chemical spill kit to control, contain and clean the spill

If you inhaled any chemical or gas,
→ Inhalation is the most common risk due to chemical use.
→ Always use a fume hood.
→ If you feel unwell, inform your lab tech.
How to deal with an emergency?

If there’s a splash (body/eyes etc),
→ Use an emergency eye wash or emergency shower (15 - 20 mins)
→ Remove contaminated clothing immediately
→ Inform the Technical Officer / Supervisor

If there’s a fire,
→ If you know how to use a fire extinguisher, evaluate the situation and put off the fire
→ Or else, break the nearest fire alarm glass and leave the area and head to the Assembly Area
Emergency procedure

Notify Security on 333 (Monash Landline) or 03-55146333 (External Phone)
How to report a hazard or incident in the lab?

➔ Inform the Technical Officer / Supervisor
➔ Lodge an incident / accident to OHSE via the Hazard & Incident Reporting form online via Safety & Risk Analysis Hub (S.A.R.A.H). Link: Safety And Risk Analysis Hub (S.A.R.A.H+)
What is S.A.R.A.H +?

Safety and Risk Analysis Hub is the University’s online reporting tool which enables staff and students to report any OHS related near misses, hazards and incidents.

Don’t wait any longer and report all near misses and hazards around you because you can prevent an injury!
Know your lab emergency equipment and learn how to use them

Learn how to use the equipment by clicking on their respective links:

- Fire Extinguisher
- First Aid Kit
- Emergency Eye Wash
- Emergency Safety Shower
- Appropriate Spill Kit (chemical and biological)
- Safety Cabinet (for chemicals - solid, solvents)
- Fume Hood
- Biosafety Cabinet
- Emergency Phone
- Break Glass Fire Alarm

**DO NOT BLOCK ACCESS to any of these equipment/items.**
Examples of lab emergency equipment

- Eyewash Station
- First Aid Kit
- Fire Extinguisher
- Spill Kit
- Safety Cabinet
- Emergency Shower
How to safely work in the lab?

→ Must observe safety requirements given at the beginning of each laboratory session.
→ Wear lab coats. This must be worn at all times when working in the laboratory.
→ Wear safety goggles
→ Wear covered footwear
→ Wear gloves
→ Do not leave bags unattended
→ No food and drink is allowed in the laboratories.
→ Do not leave work area untidy.
→ Do not work alone in the lab.
Understanding Risk Assessment and Risk Control

This is a tool for you to know what are the dangers in the work you are doing. i.e. hazards, risks

Where can you get it?

→ Learn and do it yourself via this link
→ Ask your supervisor
→ Ask TO
→ Listen to the briefing done by tutor before experiment

What is “risk control”?
The steps we have taken to make the activity is safe.
For example, use of gloves, fume hoods etc.
These controls will keep us and others safe in the lab.
Managing chemicals and waste in the lab

➔ Practice proper chemical segregation and labelling
➔ Take and use chemicals in adequate amount
➔ Use Chemwatch to monitor and manage your chemicals
➔ Read, understand and keep a copy of the SDS (Safety Data Sheet)
➔ Wear your personal protective equipment (PPE). Eg: lab coat, gloves, goggles etc
➔ Ensure proper ventilation in the lab
➔ Maintain good housekeeping
➔ Segregate, label and place wastes (chemical, biological, general waste) appropriately
➔ Never keep waste for more than 6 months in the lab
Chemical Labelling

New Chemical Labels

Correct label needs to be placed on all chemicals that is transferred to another smaller container.

→ Must have labels identifying the chemical, concentration, hazards and the name of the person using it and the date it was prepared
Chemwatch

What is Chemwatch?

Chemwatch is the mandatory tool for managing chemical registers. Chemwatch is an online chemical management system that allows users to create their local chemical registers to help keep track of their chemical inventories and provides access to Safety Data Sheets (SDS). Users are required to update the chemical manifest in Chemwatch whenever they receive any new chemicals, or when any chemicals are finished and discarded. The quantity in the Chemwatch should be tally with the physical quantity available in labs at all times.

Locate Site:
https://www.monash.edu/ohs/info-docs/safety-topics/chemical-management/chemwatch

If you need access contact your lab management office
(Mr. Daniel Wong Cheng Yeow
wong.cheng.yeow@monash.edu)
Chemical Storage

To store chemicals in the cabinets, take note of the following measures and rules of conduct:

➔ Read and understand the restrictions mixed storage of chemicals from the poster provided in the rooms
➔ Read the SDS (Safety Data Sheet) and keep a copy of the SDS in the file provided
➔ Read and understand the spill control measures.
➔ Do not store large volume of chemicals in the laboratory
➔ Prepare chemical reagents in small quantity enough for your bench work
Managing Scheduled Waste

SCHEDULED WASTE – Any waste from your lab activity that is dangerous and can affect the public health and environment

Eg: gloves that are contaminated with chemicals, syringes etc

a) **Biological Waste (Infectious and Potentially Infectious Waste)**
   ➔ All biohazard materials and all contaminated equipment/apparatus should be sterilized (autoclaved) before being washed, stored and discarded
   ➔ For solid wastes, put the waste in a heavy duty autoclavable plastic bag with a biohazard symbol (Blue/clear)
   ➔ All biological waste is put in the biohazard bin in the laboratory for the disposal
   ➔ Sharp items go into the yellow plastic ‘Sharps Bin’

a) **Chemical Waste**
   ➔ Must be properly segregated
   ➔ Do not use dented, damaged or broken containers for disposal
   ➔ Dispose empty chemical containers too. Do not recycle containers
   ➔ It is forbidden to dispose chemical into the sink or the sewage
Managing Chemical Waste

Chemical in solid form (powder etc.) should be disposed in the original container with full information on the material

- **Hydrofluoric Acid** (HF) - should be disposed in polypropylene container.
- **Nitric Acid, concentrated** - should be disposed in a glass bottle
- **Halogen Solvents** (Such as Chloroform, Methyl Chloride) - should be disposed in glass bottle

Prior to disposal of waste,

- Identify and use the right printed label provided.
- SDS shall be referred to when deciding the waste categories for segregation.
- Fill up necessary information on the printed label. Make sure the writing is clear and legible.
- Paste the printed label on the waste container provided.
# Chemical Waste Labeling

<table>
<thead>
<tr>
<th>No</th>
<th>Waste Code</th>
<th>Description</th>
<th>Category</th>
<th>Type of Waste Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SW 430</td>
<td>Chemicals that are discarded or off specification</td>
<td>Toxic/ Inflammable/ Inflammable and Toxic</td>
<td>Solvent/Neutral pH /Reagent</td>
</tr>
<tr>
<td>2</td>
<td>SW 430</td>
<td>Chemicals that are discarded or off specification</td>
<td>Corrosive</td>
<td>Acidic Waste</td>
</tr>
<tr>
<td>3</td>
<td>SW 430</td>
<td>Chemicals that are discarded or off specification</td>
<td>Corrosive</td>
<td>Alkaline Waste</td>
</tr>
<tr>
<td>4</td>
<td>SW 430</td>
<td>Chemicals that are discarded or off specification</td>
<td>Oxidizer</td>
<td>Oxidizing Waste</td>
</tr>
<tr>
<td>5</td>
<td>SW 410</td>
<td>Rags, plastics, papers, contaminated gloves, metal mesh or filters contaminated with Scheduled Waste</td>
<td>Toxic</td>
<td>Contaminated Lab Trash</td>
</tr>
<tr>
<td>6</td>
<td>SW 409</td>
<td>Disposed containers contaminated with Scheduled Waste</td>
<td>Toxic</td>
<td>Contaminated Containers</td>
</tr>
<tr>
<td>7</td>
<td>SW 404</td>
<td>Biological waste</td>
<td>Infectious</td>
<td>Biological/ Clinical waste</td>
</tr>
<tr>
<td>8</td>
<td>SW 311</td>
<td>Waste Oil</td>
<td>Inflammable</td>
<td>Waste of oil and oily sludge</td>
</tr>
<tr>
<td>9</td>
<td>SW 109</td>
<td>Mercury Waste</td>
<td>Toxic</td>
<td>Mercury Waste</td>
</tr>
</tbody>
</table>
Scheduled Waste Disposal Procedures

**Scheduled Waste (SW) generated**
- SW collection into container
  - Transfer into provided plastic containers available at SW Area

**SW Inventory**
- Scan QR code and transfer all details on SW label into the google form
- Declare quantity and high risk chemical
- Key in 4 last digits of user ID as reference number

**Placement at SW Area**
- Once SW is ready to be discarded, place container with complete label at SW rack
- Ensure cap is tight to prevent spillage
- For gas releasing mixtures, loosen cap and notify Technical Officer for precautions during handling

**Waste Collection and Transfer**
- Every Friday, 10 am.
- Only SW with complete label and inventory recorded will be collected by TO
- SW transferred into Central Chemical Waste Store

**Waste Segregation, Transfer in Drums and Disposal**
- Segregation on rack is based on waste stream
- SW container will be transferred into drums as required
- Final disposal will be done by appointed body

---

**CONGENCY WASTE**

**WASTE CODE: SW430**

**Hazardous Substance: Hydrochloric acid, methyl orange, phenolphthalein filtration waste**

**Name of Waste Generator:** Nurul

**Date:** 11/10/21

**Location:** S540

**Address & Tel No.:** 5540

---

Scheduled Waste Inventory

Scheduled Waste Inventory is required by the Environmental Quality (Scheduled Waste) Regulations 2005 to capture all waste generated on campus into a central inventory.

* Required

**Email**
- mail@hey@gmail.com

**School**
- Engineering
Waste Disposal

- **DO NOT** throw any chemical products down to drain.
- **DO NOT** mix various chemical waste indiscriminately!
- **DO NOT** evaporate chemical waste in fume hood.
- **Label** all waste product according to the label provided in the laboratory.
- Place all your waste bottles in chemical storage room.
- Dispose all the broken glassware into a proper container.
- Sharps disposal, (e.g. syringes), throw in assigned container in the laboratory.

Used gloves and tissues
Fume Hood Guidelines

➔ Conduct all operations that involve hazardous chemicals inside a hood.
➔ Minimize storage of chemicals or apparatus in the hood.
➔ Keep the hood sash closed at all times except when the hood is in use.
➔ Minimize foot traffic and other forms of potential air disturbances past the face of the hood.
➔ Do not have sources of ignition inside the hood when flammable liquids or gases are present.
➔ Use sash as a safety shield when boiling liquids or conducting an experiment with reactive chemicals. Nevertheless, safety google must be used.
Working with Biosafety Cabinet

The following is recommended to avoid most sources of contamination:

➔ Disinfect work surfaces before and after working to minimize and eliminate surface contamination.
➔ Disinfect or sterilize materials brought into the hood.
➔ Disinfect gloves after touching a non-sterile surface outside the BSC’s.
➔ Practice aseptic technique.
➔ Do not block the air intake grills in the front or back of the work surface.
➔ Do not store materials in the BSC’s as they may disrupt airflow.
➔ Do not place BSC’s in high traffic areas or near doors.
➔ Avoid using volatile chemicals in the BSC.

To clean a spill, inform your technical officer and refer to the spill management procedure.
Use sterile water to rinse the area to prevent corrosion inside the cabinet.
Conclusion

Last but not least

- **Safety is everybody’s responsibility, If you are careful everybody will be safe too**
- Making a small mistake could cause serious incident to happen
- **Prevention is better than cure**

It is very important to know that safety is about learning how to carry out laboratory work safely and not only about rules and regulations.

Working safely is a basic responsibility of everyone.

Report any safety concerns and hazards to your supervisor, laboratory staff or your Safety Officer.
Useful Website Links

1. Monash University Malaysia OHS
2. Covid-19 Update
3. Occupational Health & Safety
THANK YOU

BE SAFE AND STAY SAFE!