



# LABORATORY SAFETY HANDBOOK

DEPARTMENT OF CHEMICAL AND ENVIRONMENTAL ENGINEERING  
FACULTY OF ENGINEERING  
UPM

*"be safe than sorry"*



## LAB RULES AND REGULATIONS

### General Rules

1. Laboratory class times are at 8.00 am - 1.00 pm and 2.00 pm - 5.00 pm (Monday–Thursday), 8.00 am – 12.30 pm and 2.45 pm – 5.00 pm (Friday).
2. Leave all baggage outside the laboratory. Only essential items should be taken into the laboratories.
3. Although you may be admitted into a laboratory you are **NOT** allowed to commence work unless authorized to do so by a supervisor.
4. You **MUST wear a laboratory coat and safety goggles** at all times in designated safety goggles areas. Soft contact lenses should not be worn in a laboratory where hazardous chemicals are in use.
5. **Covered shoes** must be worn in the laboratories.
6. Be aware of the safety equipment available, its location and method of use, i.e. fire extinguishers, fire blankets, safety shower, eyewash stands, telephone, chemical spill kit and first aid boxes.
7. Observe and obey all safety sign and warnings.
8. Familiarize yourself with the layout of the building and its fire escapes.
9. **DO NOT EAT, DRINK or SMOKE** in the laboratories and workshops.
10. Wash your hands as required, during and at the end of each practical session. Use the antibacterial soap and paper towels provided.
11. Take off protective gloves before leaving the laboratory.



12. Keep your work space clean and tidy.
13. Use common sense and do not rush in the laboratory. Never be complacent about chemicals or chemical reactions.



14. Horseplay of any sort is absolutely prohibited in the laboratory.
15. **Please fill Safety Acknowledgement, Risk Assessment, and COSHH forms before starting your lab.**
16. Get MSDS for every chemical purchase.
17. Know the hazardous characteristics of the materials you will be using in your experiment (from MSDS).
18. Use proper container for different trash (glass, empty chemical containers, general rubbish, and contaminated items/glassware).
19. Keep the sink clean. Do not throw any unwanted chemicals or hazardous waste down the drain.
20. Do not store any food in laboratories. DO not use food containers to store chemicals or laboratory samples.
21. Sleeping is prohibited in the laboratory.
22. No operating equipment will be left unattended.
23. The laboratory floor must be kept dry, clean and uncluttered at all times. Any spills should be cleaned up immediately. Mops, buckets and squeegees are available in the storage room.

### **General Safety Procedures**

1. Work with flammable, toxic or corrosive liquids should be carried out in a fume cupboard.
2. Be aware of any short or long-term effects due to inhalation, injection, or absorption of chemical compounds.
3. Clearly label all items/cultures, container, beaker, etc.
4. Clear away equipment and materials from your bench before leaving the laboratory. Wipe down the bench tops with suitable disinfectant.
5. Make sure that you can quickly and easily switch off all electrical equipment which you use, and that you could do so even if the equipment were overheating or on fire.
6. Never carry out any electrical work yourself.
7. Never climb onto a chair or desk to gain access to heights – always use a proper ladder, stepladder or kick stool.
8. DO NOT use chipped or cracked glassware.



### Penalty of Lab Rules Violation

Students fail to abide to lab rules will be penalized according to the following procedures.

First offence: verbal warning from KM (Ketua Makmal)

Second offence: written warning from DSO (Department Safety Officer)

Third offence: Suspend from lab until future notice. Need to appeal by writing to Dept. HOD (Head of Department)

### WORKING OUTSIDE OFFICE HOURS

1. No students are permitted to work outside office hours in the lab without the permission of the Supervisor, Department Safety Officer and Head of Department.
2. Please fill in all the necessary forms for working out of office hours and **GET APPROVAL FIRST BEFORE START DOING WORK.**
3. Students are no longer allowed to hold lab keys.
4. You are responsible for your own safety and please take extra precautions in lab.
5. If permission is given, you must not work alone unless accompanied by a member of staff
6. Fill in log book at lab for time in and out.



## ACCIDENTS

1. **Report all accidents, spillages, work-related health conditions and near misses**, no matter how trivial, on the day of occurrence to a supervisor. Use the forms available in the lab, (UPM/FK/JKKP6 and UPM/FK/JKKP7).
2. If your skin becomes contaminated, wash it thoroughly with antibacterial soap.
3. First Aid Kit is available in each laboratory.
4. Fire.
  - a. Personal safety is most important. If a person's clothing catches on fire, he/she needs help. Prevent him/her from running. If he/she is close enough, put him/her under the safety shower because it is more effective than a blanket. If not, make him/her lie down and smother the flames by rolling, wrapping with lab coats, blankets, towels, etc. Never turn a carbon dioxide extinguisher on a person.
  - b. If a fire breaks out, turn off all burners and remove solvents if time allows. There are carbon dioxide extinguishers in the laboratory and the positions and operation of these should be known. Point the extinguisher at the base of the flames. Very small fires can be put out with a damp towel by smothering. Only after the safety of all is assured should the matter of extinguishing the fire be considered.
  - c. When the fire alarm sounds, leave the building immediately. Do not stop to collect personal belongings. Do not use the lifts. Shut doors behind you. Go to the assembly point and don't return to the building until you are told that it is safe for you to do so.
5. Chemicals
  - a. If corrosive chemicals are spilled on the clothing, immediate showering (with clothing on) is the best remedy. Safety showers are located in each laboratory. If chemicals are spilled on the skin, wash them off with large volumes of water.
  - b. If corrosive chemicals are spilled on the desk, dilute them with a large volume of water and then neutralize with sodium bicarbonate if an acid, or dilute acetic acid if a base.
  - c. For all chemicals, please refer to MSDS for specific safety procedure of the particular chemicals

## CONTACT PERSONS

If you require advice, assistance or have a complaint concerning safety matters, first contact one or more of the following people:-

1. Your academic supervisor or research co-workers.
2. The KM and Technician in charge of that area.(03-89466268:General Office)

Lab	KM	Technician
Process Engineering I Lab	Dr. Tinia Idaty Ext: 4427	En. Ismail Ghani (ismail@eng.upm.edu.my)
Process Engineering II Lab	Dr. Zurina Ext: 4371	En. Ismail Abd. (isma@eng.upm.edu.my)
Biochemical Engineering Lab	Dr. Tey Beng Ti Ext: 6289	En. Termizi (termizi@eng.upm.edu.my)
Engineering and Material Science Lab	Dr. Hamdan Mohamed Ext: 6284	Pn. Maslinda (masida@eng.upm.edu.my)
Environmental Engineering Lab	Dr. Shafreeza Ext: 4456	En. Joha (joha@eng.upm.edu.my)
Product and Process Sustainability Lab	Dr. Intan Salwani Ext: 4407	En. Norisham (norisham@eng.upm.edu.my)
Material Characterization Engineering Lab	Dr. Norhafizah Ext: 4453	En. Adli (linda86@eng.upm.edu.my)

3. If you cannot reach any of the above or are not satisfied with their response then contact:-
  - a. Department Development Coordinator, Dr. Mohd Halim Shah Ismail (ext 4397)
  - b. Head of Department, Prof. Dr. Azni Idris (ext. 6268)

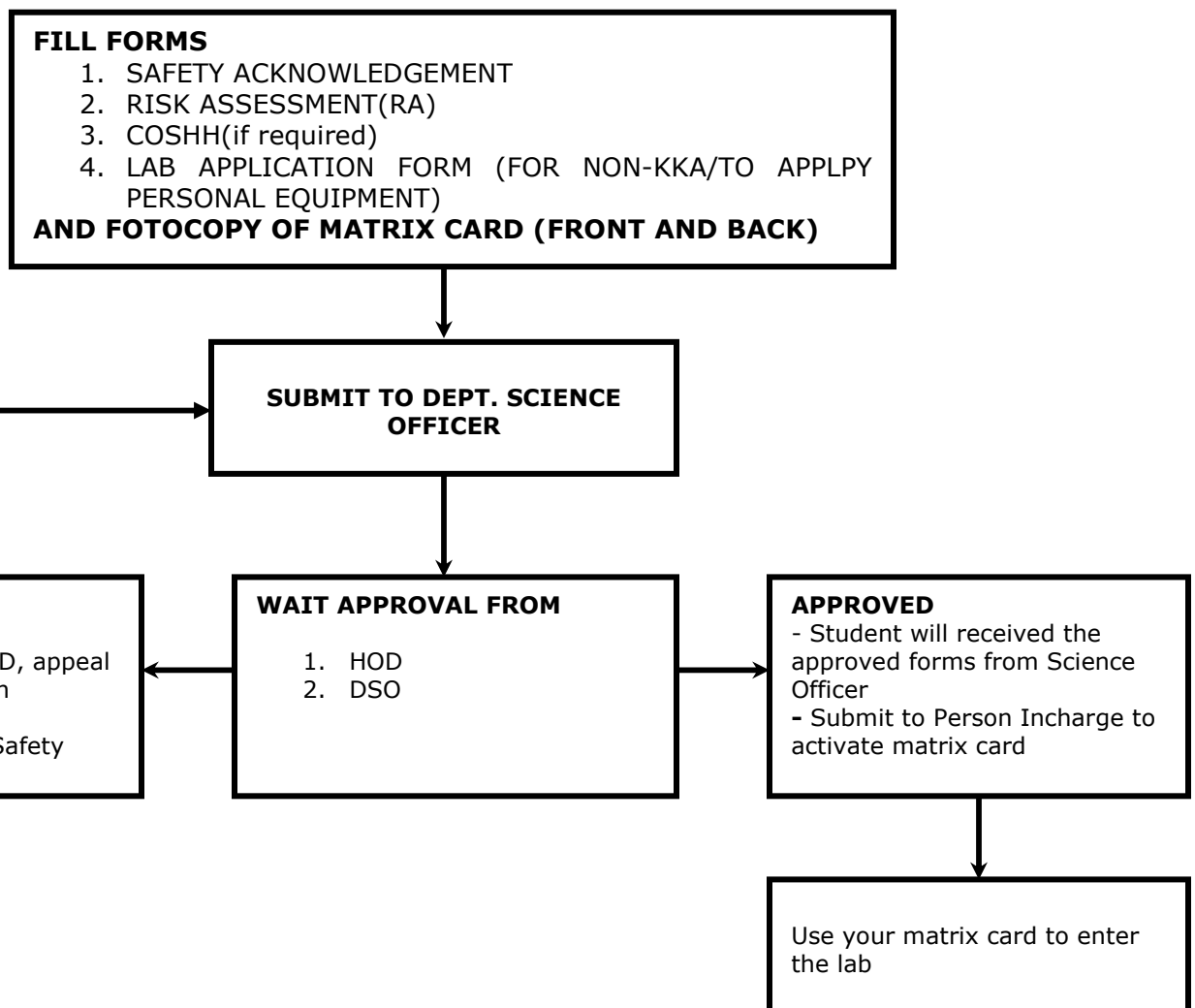
### Emergency Contact Number

- a. Police Serdang : 999 or 03-89848 2222
- b. BOMBA (fire) Seri Kembangan : 999 or 03-8941 6281
- c. Central University Safety Office: 03-8946 7990
- d. Hospital Serdang : 03-8947 5200
- e. Pusat Kesihatan Universiti (University Clinic for Emergency): 03- 8946 7332/7334
- f. Faculty Development Section Office: 03- 8946 6256
- g. En. Zavior: 017-3035296, Hj. Ideris: 012-6191954



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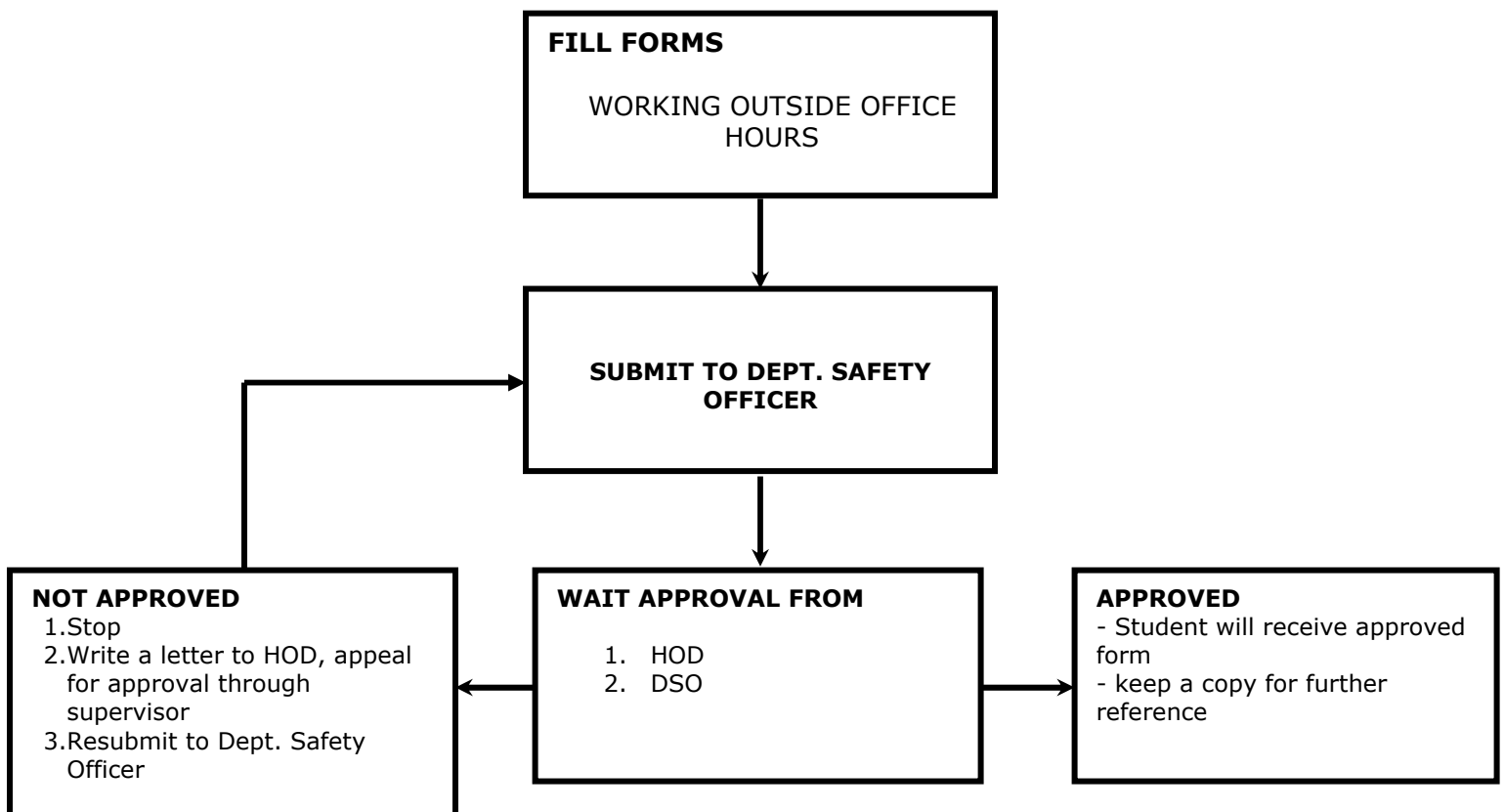
### PROCEDURE OF WORKING IN LAB





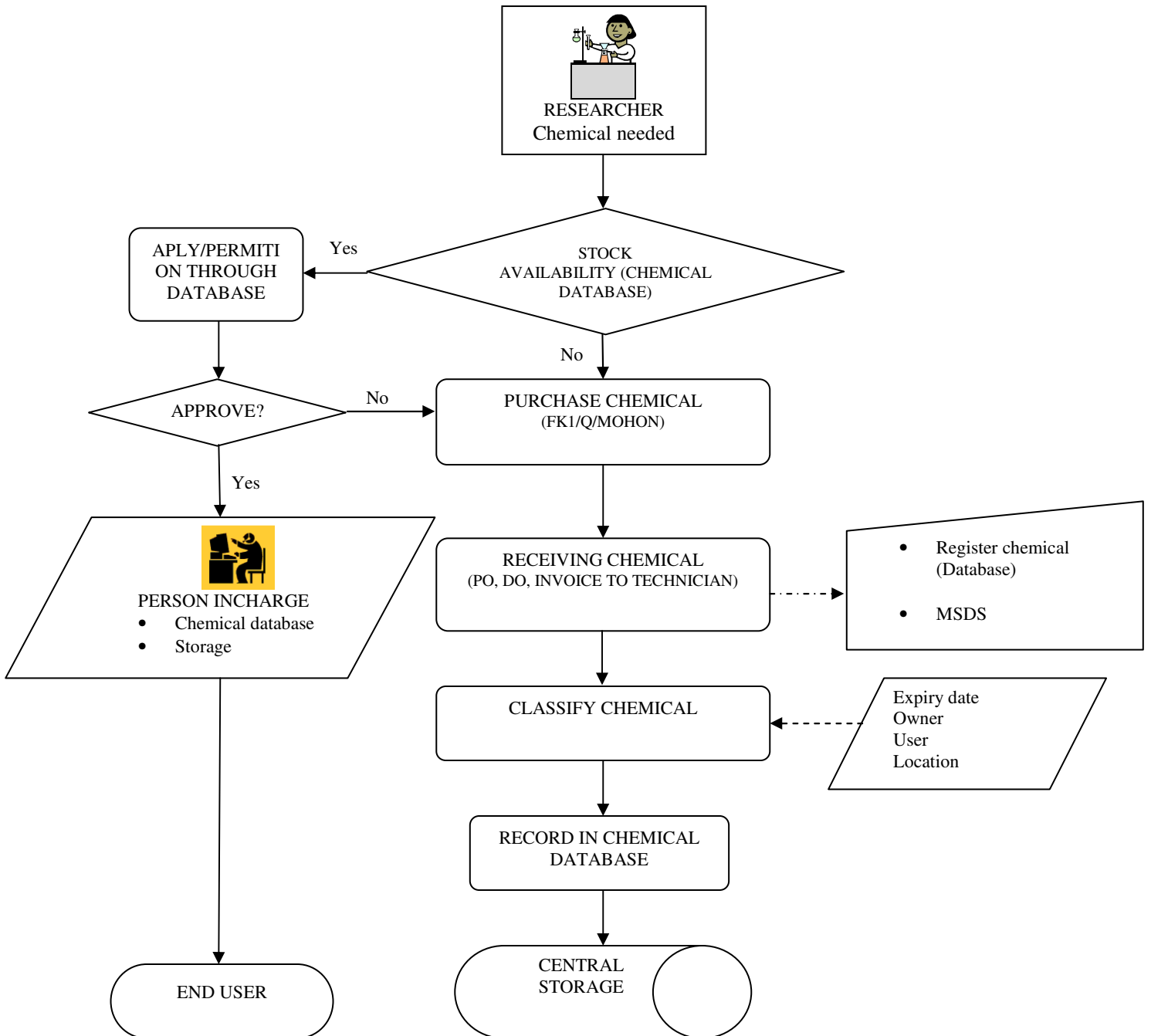
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### PROCEDURE OF WORKING OUTSIDE OFFICE HOURS





### FLOWCHART FOR CHEMICAL HANDLING AND PURCHASING





## DEPARTMENT OF CHEMICAL & ENVIRONMENTAL ENGINEERING

### **Guidelines to fill up Risk Assessment, (RA) and Control of Substance Hazardous to Health, (COSHH) Forms**

**DEFINITION:**

**ASSESSOR** = Supervisor

**DSO** = Department Safety Officer

**NOTE:**

- 1. One RA form is required for each experiment.**
- 2. Assessor must fill COSHH forms when using Hazardous Chemicals.**
- 3. All COSHH forms must be submitted together with RA form and MSDS.**