



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and
Information Technology

DEPARTMENT OF CHEMICAL ENGINEERING

GENERAL LABORATORY RULES

YOU ARE ULTIMATELY RESPONSIBLE FOR YOUR OWN SAFETY AND THAT OF YOUR FELLOW STUDENTS, WORKERS AND VISITORS.

DO NOT work alone in a laboratory, especially after hours, over weekends and during recess periods. In case you have to work, request permission from the relevant laboratory manager/your supervisor and arrange for official electronic access to code-locked laboratories. You will only be allowed to do so, if you are accompanied by another person.

DO NOT perform any unauthorized experiments.

DO NOT work in a laboratory if you are under the influence of alcohol.

Before you start working, familiarise yourself with the safety, flammability, toxicity and general physical properties (including volatility and flammability) of the materials, chemicals and compounds you plan to work with. Material Safety Data Sheets (MSDS) containing most of this information are available from <http://www.ilpi.com/msds>. These MSDS's should be available at your workspace and a copy for each component that you work with should be handed to the laboratory manager.

Know where the emergency exits, fire extinguishers, first aid boxes, fire blankets, safety showers, eye wash devices and first aid posters are in the laboratory where you work.

All outside security doors and inside mechanical lock doors should be in the locked state at all times. If you do not have access to a laboratory, request access by completing the application form for access via your supervisor.

Never hesitate to ask questions especially if there is any question concerning proper operating procedure. Be sure that you understand every instruction before proceeding with an experiment.

Clothing and Personal Protective Equipment (PPE)

- (i) The following PPE (Personal Protective Equipment) must be worn at all times in the laboratory:
- Laboratory coat.
 - Eye protection: Splash proof chemical goggles. If you do get a chemical in your eye, rinse your eye immediately using large quantities of water or an eye wash bottle.
 - Closed shoes with socks must be worn at ALL times – open-toed shoes, backless shoes, sling backs, clogs, and sandals are not permitted.
 - Always wear gloves when working with unknown substances.
 - Always wear the appropriate breathing masks when working with toxic or irritating vapours.
 - Long hair and loose clothing pose a potential safety risk and must be tied together and/or appropriately covered while in a laboratory.

- (ii) It is compulsory to wear long trousers when you are working in a laboratory.

General Safety

- (i) Always work in a well ventilated area.
- (ii) Use the fume hoods when toxic or irritating vapours are involved.
- (iii) Eating, smoking or drinking is not allowed in any laboratory.
- (iv) Labels and equipment instructions must be read carefully before use.
- (v) Observe good housekeeping practices. **Work areas should be kept clean and tidy at all times.**
- (vi) Dispose of all chemical waste properly. Use the waste containers marked for this purpose and update the waste register every time. Liquid and solid waste containers must be only be used for their intended purpose.
- (vii) Thoroughly wash your hands after working with chemicals and before leaving the laboratory.
- (viii) To prevent the possibility of contamination, unused chemicals should not be put back into the original container without the permission of the laboratory instructor/supervisor/manager.
- (ix) Do not return empty containers to the chemical store. Report it to the laboratory manager so that replacements can be ordered.
- (x) Take note that acids and bases are never stored next to each other, or next to solvents.
- (xi) Securely replace lids, caps, and stoppers after removing reagents from containers.
- (xii) All flammable reagents must be removed before lighting a burner.
- (xiii) Never pour water into concentrated acid – add small quantities of acid to water.
- (xiv) Mouth suction is never used to fill a pipette.
- (xv) Always wipe spatulas clean before and after inserting into reagent bottles.
- (xvi) Report any accident and/or injury, however minor, to your instructor immediately.
- (xvii) Clean up any spill immediately.
- (xviii) Before leaving the laboratory, make sure your work area is clean and dry and also ensure that all equipment, gas, water, vacuum, and air valves are completely turned off.

Toxicity of chemicals

Laboratory work involves the use of a number of chemicals that are potentially hazardous. Toxic chemicals can enter the body by ingestion, skin absorption, and inhalation. Procedures that are performed correctly have minimum risk. You are required to do the following before working with any chemical substance:

- (i) Read the MSDS of each chemical to be used, carefully. There must be a file in the laboratory containing the MSDS's of the all the chemicals used in the laboratory. Please obtain the relevant MSDS; if not in the file, and read it, before working with the particular chemical.
- (ii) By signing the form that will be made available to you when you get the chemical(s), you are stating that you have read the relevant MSDS's of the chemicals to be used and understand the content of the MSDS's of the chemaicals you are using.
- (iii) Read the label and instructions on the chemical container carefully
- (iv) Make sure the correct PPE is used when working with any chemical substance.
- (v) Return materials taken from the storage facility.
- (vi) Label sample material and store safely.

Laboratory Records

Laboratory work records are to be maintained in a laboratory record book; to include the work done, the material used, quantities, methods and processes.

Equipment and instrumentation

- (i) Computers dedicated to the operation of an instrument should not be used for any private work or the storing of private information, for example music.
- (ii) Follow the correct operating procedure for each instrument. If you do not know how to use any equipment, read the operating manual or ask for help.
- (iii) Do not use equipment that malfunctions, or in your opinion, may endanger yourself or your colleagues. It remains your responsibility to report malfunctioning equipment.
- (iv) Use the correct equipment for a specific task. Do not use pH probes or electrodes as stirrers. Use glass equipment for the application it was designed for.
- (v) **Apparatus** should be booked out of the relevant apparatus store and, after use, cleaned and returned.
- (vi) When booking shared equipment, like ovens etc. always specify your name, contact details, date and for how long the equipment is expected to be in use. (ie a start date & time and an end date & time). This should be clearly displayed on the apparatus.
- (vii) At the end of a working day all **tools** taken from tool cupboards must be cleaned and returned to the same cupboards where they were taken from.
- (viii) No electrical leads/cables to be positioned/constructed between benches or passages.
- (ix) No chemicals, samples or apparatus to be stored in any fume cupboard.
- (x) At no time may components be taken from any existing laboratory setup when you need such a component for your own setup.
- (xi) All **glassware** used must be cleaned and put back in the cupboards where they were taken from.
- (xii) Do not use broken or cracked glassware.
- (xiii) Leave benches and cupboards neat and cupboard doors closed after each practical session.
- (xiv) No chemicals, samples or equipment must be stored in a way that may cause an obstruction, or in front of fire extinguishers, passages or emergency outlets.
- (xv) Delivery notes and invoices for new equipment should be handed to the staff member who generated the order or to the project supervisor. **Unless this is done, invoices cannot get paid.**

Agreement

This is to confirm that I have read and that I understand the content of this '**General laboratory rules**'-document. I also declare that I will obey and adhere to each and every rule stated above. I have received a duplicate copy of this signed document and will keep it available for review throughout my studies at the University of Pretoria.

Student Surname, Initials & Student number

Student Signature

Date

Supervisor/Laboratory supervisor

Signature

Date