

# NATIONAL SUN YAT-SEN UNIVERSITY

## Department of Chemistry Safety Guidelines

### Chapter One. Safety Guidelines for Education Laboratories

- I. Personnel are required to wear safety glasses while performing experiments at the laboratories.
- II. Laboratory personnel shall understand the use of first aid and fire-fighting equipment such as first aid kits, showerheads, fire extinguishers, and fire extinguishing sand that the laboratories are equipped with.
- III. When accidents occur, teaching assistants or professors in charge shall be notified immediately and injured individuals shall be treated.
- IV. Performing unauthorized experiments, which are not recognized by professors in charge, is strictly prohibited.
- V. All product containers must be clearly labelled. Labels of chemical products on the containers must be read and confirmed prior to use. Controlled chemical products and equipment by laws and regulations must be stored and locked.
- VI. Contacts of chemicals with skin shall be avoided. In cases of skin-chemical contacts, affected areas shall be rinsed and cleaned immediately. Inhaling solvent vapor shall be avoided.
- VII. Transportation of large bottles of acids or alkalis shall be carried out using safety containers.
- VIII. Pouring organic liquid wastes into sinks is strictly prohibited; liquid wastes shall be placed in waste bottles and processed collectively.
- IX. Liquids shall be withdrawn using pipette fillers; withdrawing liquid using mouths is strictly prohibited.
- X. Processing flammable chemical products near fire sources is prohibited.
- XI. Features and use of experiment-use chemical products, equipment, and apparatuses shall be fully understood.
- XII. When inserting a glass tube into a rubber stopper, the rubber stopper shall be applied with glycerol or other lubricants and covered with a towel before the glass tube is slowly inserted.
- XIII. Heating glassware directly with fire shall be avoided. Wire gauzes shall be used when heating glassware. Damages of glassware shall be prevented by avoiding heating only a particular section of the glassware.
- XIV. Use of broken glassware is prohibited. Broken glassware shall be disposed immediately and shall not be left in sinks.
- XV. Heating a closed glass container is prohibited.
- XVI. Using a thermometer as a stirring rod is prohibited. Mercury spilling from a broken thermometer must be collected.
- XVII. When using the Bunsen burner, the fire shall be lit before turning on the gas.
- XVIII. It is prohibited to wear flip-flops or other types of sandals in the laboratories.
- XIX. It is prohibited to chat or talk loudly in the laboratories.

- XX. Laboratory workbench and chemical product bench shall be kept clean at all times. Withdraw only the required amount of chemical products. Caps of chemical product container should be placed back on once products have been removed, and dispersed products shall be tidied up and cleaned. It is prohibited to relocate chemical product containers to laboratory workbench.
- XXI. Eating, drinking, and smoking in the laboratories are prohibited.
- XXII. Non-laboratory-related personnel are not allowed to enter the laboratories without permission.
- XXIII. After performing an experiment and before leaving the laboratories, equipment and apparatuses shall be cleaned, gas, water, and electricity shall be switched off, laboratory workbench shall be cleaned, and storage cabinets should be locked.

Approved by the 2<sup>nd</sup> Department General Meeting in School Year 78.

Amended and approved by the 2<sup>nd</sup> Department General Meeting in School Year 84.

## Chapter II. Safety Guidelines for the Research Laboratories

- I. Office hours: Monday to Friday from 8:00 a.m. to 5:30 p.m.; Saturday from 8:00 a.m. to 12:00 p.m. Any personnel performing research experiments outside the aforementioned office hours must be accompanied to ensure that others can be notified when accidents occur.
- II. Chemical products: All laboratory chemical products must be labelled. The label shall contain the following information:
  - 1. Name of chemical product
  - 2. The potential dangers, flammability, toxicity, etc. of the chemical product.
  - 3. New chemical products manufactured by the laboratories must be labelled with names of the products and dates of manufacture.All products fail to comply with the aforementioned regulations will be confiscated by the safety committee during inspection. The laboratories/laboratory personnel will be held solely responsible for any losses incurred.
- III. Equipment: Please read carefully the operation manuals prior to operating laboratory equipment. Please do not operate the equipment if operational knowledge is not learned so accidents may be prevented.
- IV. In cases of fire: Students are responsible for knowing the number of the fire department (#119), where phones are located, and how to operate the phones.
- V. The department's laboratory safety requirements are listed as follows:
  - 1. Floor: The floor must remain dry and be clear of liquids, oil stains, and material pile-ups.
  - 2. Countertop: Used equipment shall not be dispersed for prolonged periods of time; non-experiment materials should not be placed together with experiment materials.
  - 3. Chemical products: Chemical products shall be properly categorized and acidic and alkaline products shall be stored separately. Solvents shall not be stored in areas with direct sunlight exposure. Materials that are toxic and/or have unpleasant odors should be properly stored.

4. Equipment and apparatuses: Equipment and apparatuses shall be properly operated and stored; logs of use shall be appropriately recorded.
5. Hazardous experiments or experiments with offensive smells: Warning signs shall be posted outside the doors of the laboratories when performing experiments. Experiments shall be performed inside fume hoods and chemical products shall remain inside the fume hoods during experiments.
6. Fume hood: When in use, the glass panel must be opened for more than 5 cm wide and not exceed shoulder height.
7. Gas cylinders: Lock chains shall be securely tightened and locations of the locking chains shall be between  $\frac{2}{3}$  and  $\frac{1}{2}$  of the heights of cylinders. Wrenches must not be left unattended at the top of gas cylinders. Gas types shall be appropriately labelled.
8. Warning signs: Warning signs include warnings of experimental conditions as well as presence of hazardous materials.
9. Safety checks: Examined items include fire extinguishers, first aid kits, showerheads and eyewash stations, and rope ladders.
10. Waste management: Appropriateness of waste management shall be examined.
11. Unless approved by department general meetings, laboratory equipment and/or wastes must not be placed in hallways.