NESİBE AYDIN EDUCATIONAL INSTITUTIONS

GAZIANTEP CAMPUS

Biology Laboratory

Chemical Waste Management and Safe Disposal Policy

Effective Date: 25.02.2026

1. Purpose and Scope

This policy defines the minimum rules for the separation at source, labeling, temporary storage, and delivery of chemical waste generated during laboratory experiments in the biology laboratory to licensed facilities for disposal or recovery.

The policy covers chemical waste generated from student experiments, teacher preparations, and cleaning or maintenance processes.

This policy also supports safe laboratory practices conducted within the IB Diploma Programme and promotes the development of responsible scientific practices among students.

When planning laboratory experiments, teachers conduct risk assessments, and chemical waste management is considered as part of this risk assessment process.

2. Legal Basis and Fundamental Principles (Summary)

• Preventing or minimizing waste generation (micro-scale experiments, proper stock management)
• Separation of waste at the source and avoiding the mixing of incompatible chemicals
• Temporary storage in labeled, sealed containers placed within secondary containment
• Delivery of hazardous waste to licensed waste transporters and disposal/recovery facilities with proper documentation and traceability

3. Responsibilities

Laboratory Supervisor (Department Head / Laboratory Manager)
Responsible for maintaining chemical inventories, establishing waste streams, organizing training, and monitoring compliance.

Teachers
Responsible for minimizing waste during experiment design and ensuring that waste is placed into the correct containers.

Laboratory Technical Staff (if available)
Responsible for labeling, organizing temporary storage, and preparing documentation for waste transfer.

Students
Students may only participate under teacher supervision. Students must not dispose of chemicals in sinks or directly handle waste containers. Students are not permitted to transport, mix, or dispose of chemical waste.

4. Chemicals Selected from the Inventory and Waste Streams

The table below is prepared based on the chemical and reagent inventory list of the biology laboratory.

For substances with uncertain names (e.g., "phenol"), the final classification must be confirmed by checking the container label and the relevant SDS (Safety Data Sheet).

4.1 Waste Stream Codes

A: Acidic aqueous waste (e.g., HCl, acidic dyes)
B: Basic aqueous waste (e.g., NaOH, alkaline reagents)
C: Oxidizing or halogen-containing aqueous waste (e.g., H_2O_2, Lugol solution)
D: Flammable organic solvents (alcohols, spirit alcohol, diethyl ether)
E: Aqueous waste containing heavy metals (Cu^{2+} / Zn^{2+}; copper-containing reagents such as Benedict, Fehling, or Biuret)
F: Low-hazard biological or organic solutions (e.g., starch, glucose) provided they are uncontaminated and non-hazardous

5. Separation, Collection, and Labeling Rules

• A separate sealed and durable container must be used for each waste stream (preferably UN-certified containers).
• Containers must be placed inside secondary containment trays or basins, and filling must not exceed 80% of capacity.
• Labeling is mandatory and must include: waste type (A/B/C/D/E/F), contents, concentration (if known), date, and responsible person.
• Students must not transport waste containers. Waste transfers must be performed by the teacher or laboratory technician.

6. Temporary Storage and Chemical Incompatibilities

• Waste must be stored in a locked and ventilated cabinet or designated storage area.

Basic incompatibility rules include:

- **A (acids)** must not be mixed with **B (bases)**.
- **C (oxidizers)** must not be stored near **D (flammable solvents)**.
- **E (heavy metal waste)** must never be disposed of in sinks and must not be mixed with A or B streams.
- Solvents capable of forming peroxides (such as diethyl ether) must be dated, and old or unlabeled containers must not be opened.

7. Disposal and External Transfer Principles

• Hazardous waste streams (A, B, C, D, E and contaminated solids) must be transferred to licensed hazardous waste transport companies and delivered to licensed disposal or recovery facilities.

• **D (flammable solvents)** must never be evaporated intentionally or disposed of through sinks.

• **E (copper, zinc, or copper-containing reagents)** must never be disposed of in sinks.

• Only aqueous solutions within the **F stream** that are non-hazardous and uncontaminated may be discharged into the sewer system if permitted by school procedures. Otherwise, F stream waste must also be collected and transferred for disposal.

8. Spill, Exposure, and Emergency Procedures (Short Protocol)

• In case of a spill, the area must be evacuated, ventilation ensured, and the teacher or laboratory supervisor must be informed.

• In case of skin or eye contact, the affected area must be rinsed thoroughly with water and the individual must be directed to the school health unit.

• Spilled materials must be absorbed using appropriate absorbent materials and collected as **contaminated solid waste** in sealed bags.

• SDS (Safety Data Sheets) must be accessible in the laboratory for all chemicals.

• Spill kits, eyewash stations, fire extinguishers, and first-aid equipment must be accessible in the laboratory.

9. Records, Training, and Monitoring

• A waste record log must be maintained including the waste stream type, approximate quantity, date, and responsible person.

• At least once per year, teachers and laboratory staff must receive training on waste separation and chemical safety.

• Monthly inspections must be conducted to check labeling, possible leakage, container fill levels (not exceeding 80%), and proper segregation of incompatible chemicals.

10. Policy Review

This policy will be periodically reviewed to ensure the effectiveness of laboratory safety practices. Updates may be made when necessary.

Appendix 1: Waste Label Template (Example)

WASTE STREAM: (A/B/C/D/E/F)
CONTENTS: (e.g., "Aqueous HCl waste", "Benedict reagent containing Cu")
CONCENTRATION: (if known)
DATE: (dd.mm.yyyy)
RESPONSIBLE PERSON: (Name Surname)
UNIT: Biology Laboratory
HAZARD CLASS: (corrosive / oxidizing / flammable, etc.)