Chung Yuan Christian University Waste Management Procedure

1.Purpose

To effectively control waste that may cause environmental pollution and to prevent environmental contamination, this procedure has been established in accordance with relevant environmental protection laws and regulations.

2. Scope

This procedure applies to all waste generated by the university, including general waste and industrial waste (hereinafter collectively referred to as *laboratory waste*).

3. Responsibilities

3.1 General Affairs Office – Service Division

Responsible for handling general waste and managing recycling operations.

3.2 Environmental Protection and Occupational Safety and Health Center

Responsible for the removal and reporting of laboratory waste.

3.3 Individual Units

Responsible for waste classification, collection, and temporary storage within their areas.

4. Definitions

4.1 General Waste

Refers to waste other than that generated from wastewater treatment facilities, laboratories, and testing facilities (hereinafter referred to as laboratories).

- Sources: Offices, classrooms, dormitories, cafeterias, and public areas.
- Examples:
  - General waste generated on campus, kitchen waste, fallen leaves, and bulky items such as furniture.

- Recyclables: Designated recyclable items, including waste glass, paper, plastics, metals, batteries, CDs, lighting tubes, bicycles, home appliances, IT products, and used cooking oil.

4.2 Laboratory Waste

Refers to waste generated from laboratory operations that is not part of employees' daily living waste. It includes both hazardous industrial waste and general industrial waste.

- Hazardous Industrial Waste:

Waste generated by laboratories that is toxic or hazardous and may harm human health or the environment.*Examples:* Waste liquids, expired or unused chemicals, infectious waste, medical waste from the Health Services Unit, and sharp waste such as needles.

- General Industrial Waste:

Non-hazardous waste generated by laboratories.
Examples: Decontaminated empty chemical bottles, non-infectious waste, discarded laboratory materials (glass beakers, plastic pipettes, gloves), bedding materials, used lubricants, and sludge from wastewater treatment plants.

4.3 Storage

Refers to the act of temporarily keeping waste in designated areas or containers prior to disposal.

4.4 Removal

Refers to the collection and transportation processes of waste.

4.5 Treatment

Refers to the intermediate or final processes that alter the physical, chemical, or biological properties of hazardous laboratory waste to achieve reduction, detoxification, stabilization, or solidification of the waste.

4.6 Compatibility

Refers to efforts and condition to ensure that the wastes are chemically and physically compatible with its storage container and with other types of waste. Incompatible waste must not cause:

- Heat generation
- Violent reactions, fires, or explosions
- Emission of flammable fluids or toxic gases
- Degradation of the container material
  (*Refer to Section 6.3: Laboratory Chemical Compatibility Table*)

5. Operational Procedures

5.1 Waste Classification and Treatment

(Refer to Section 6.1: CYCU Waste Classification Guidelines)

5.1.1 General Waste:
Handled through outsourcing by the Service Division of the General Affairs Office, contracting qualified disposal companies to collect and remove waste at designated campus locations according to the waste classification rules *(see Section 6.2: CYCU General Waste Classification).*

5.1.2 Laboratory Waste:

5.1.2.1 Waste Liquids:

- Stored in high-density polyethylene (HDPE) or corrosion-resistant 20-liter containers. Containers must be kept in good condition and replaced immediately if they are damaged or leaking.
- Waste liquids must be segregated by hazardous properties *(see Section 6.4: Waste Liquid Classification).* Containers must be clearly labeled with classification and hazard stickers *(see Section 6.5)* and marked with waste type, characteristics, and storage date.

5.1.2.2 Solid Waste:

1. Empty Chemical Bottles: Normally recycled by chemical suppliers. If no supplier is listed, laboratories shall collect and package the bottles for removal by a licensed waste contractor under the coordination of the *Environmental Protection and Occupational Safety and Health Center Departments*.

2. Broken Glassware: Must be collected in sealed cardboard boxes and removed by qualified and licensed contractors.
3. Infectious Waste: Collected and packaged by each laboratory, then removed by qualified and licensed contractors.
4. Animal Bedding Waste: Collected and packaged by animal facilities, then regularly removed by qualified and licensed contractors.
5. Other Laboratory Solid Waste: Must be properly sorted, labeled *(see Section 6.6),* and transported to designated storage areas for periodic removal by qualified and licensed contractors.

5.3 Waste Storage Management

5.3.1 General Waste:

Campus garbage bins and recycling stations are managed by the *General Affairs Office – School Service Division*.

5.3.2 Laboratory Waste:

Temporary storage areas are managed by each producing unit. Waste liquid storage cabinets are managed by the *Environmental Protection and Occupational Safety and Health Center Department*.

5.3.3 Storage Requirements:

1. Containers must remain clean and intact. A spill tray must be placed underneath to prevent leakage.
2. Waste must not spill, scatter, or pollute the ground.
3. Containers must be compatible with the stored waste. Incompatible waste types must be stored separately.
4. Containers must be kept sealed at all times.
5. Storage trays for waste liquids must have a total volume capacity of at least 110% of the total stored waste.
6. Containers must be clearly labeled with classification and hazard tags.
7. Storage facilities must include fire prevention systems. In the event of fire, follow the *"CYCU Laboratory Emergency Response Plan."*

5.4 Outsourced/ Third-Party Waste Collection and Treatment Process

5.4.1 General Waste:

General wastes are collected by qualified and licensed contractors from Monday to Saturday at fixed times and locations on campus.

5.4.2 Laboratory Waste:

The collection and storage of laboratory waste is managed by the *Environmental Protection and Occupational Safety and Health Center Department*, which procure hazardous waste management services from the qualified and licensed companies.

- *"Waste Disposal Manifest"* document must be completed by each laboratory before removal.
- Within four days after removal, the hazardous waste disposal records must be verified online to ensure accuracy, transparency, and traceability *(see Section 6.7: Laboratory Waste Disposal Flowchart).*

5.4.3 Contractor Qualification Requirements:

1. Must hold valid permits issued by the competent environmental authority.
2. Permit scope must meet the university's needs.
3. Vehicles must be properly registered for waste transportation.

5.4.4 Cost Sharing:

Following the *"polluter pays"* principle, laboratories are charged partial disposal fees for the disposal of liquid waste since August 1, 2022, and solid waste since January 1, 2024. The fee standards and payment methods are defined separately.

5.5 Waste Monitoring and Control

5.5.1 General Waste:

The general wastes are weighed and incinerated at licensed municipal waste incineration plants.

5.5.2 Laboratory Waste:

Hazardous laboratory waste needs to be recorded in the "Record of Proper Industrial Waste Disposal." affidavits which are publicly available in the university database.

5.5.3 Contractor/ Third Partyaa Supervision:

To ensure compliance, waste disposal responsibilities are clearly stipulated in contracts. Any violations will result in legal claims, and staff may be assigned to verify waste handling on-site if necessary.

5.6 Record-keeping and Reporting

5.6.1 General Waste:

Each responsible party who generates general waste needs to complete the "General Waste Statistics Form" and "Recycling Work Achievement Report" which are publicly available in the university database.

5.6.2 Laboratory Waste:

The *Environmental Protection and Occupational Safety and Health Center Department* shall report monthly waste generation and storage records from the previous month to the Taiwan Ministry of Environment (TW MOENV) through the official reporting platform website as written below:

https://waste.epa.gov.tw/prog/IndexFrame.asp?Func=2(Control Code: H4302078)

5.6.3 Record-keeping:

All relevant records must be safely stored and managed for at least three years.