

Chemical Waste

Effective Date: 1 September 2020

Amended: 30 June 2023

1.0 Purpose

- 1.1 The Chemical Waste policy applies to all staff members and students at Sunway University.
- 1.2 It is developed to ensure that proper procedures for the safe packaging, labelling and handling chemical waste are followed.

2.0 Guidelines

- Packaging, labelling, and storage of scheduled wastes are the ways the waste contents will not degrade. These are due to their characteristics that can pose risks to human health and the environment if not managed properly.
- To facilitate the proper handling of scheduled wastes, information about the hazards associated with the wastes must be communicated through proper labels and should be used by waste handlers.
- To ensure that the waste is safely handled, waste generators also need suitable containers. It is the responsibility of the waste generators to ensure that scheduled wastes are packed based on their composition in a manner suitable for handling, storage, and transportation.
- These guidelines are prepared to facilitate proper packaging, labelling and storage of scheduled wastes in accordance with the requirements of Regulation 8, Regulation 9 and Regulation 10 of the Environmental Quality (Scheduled Wastes) Regulations 2005, which came into force on 15th August 2005.

3.0 Selection Criteria for Storage Area

The storage area of scheduled wastes should be designed, constructed and maintained adequately in accordance with the following criteria to prevent spillage or leakage of scheduled wastes into the environment.

Selection of storage area should take into consideration the following criteria:

- A properly designated area in the waste generator premises, away from the manufacturing/processing area and area of employee activities.
- Storage area should be located away from sources of heat or fire.
- The designated area should not be located in areas that have the potential to be flooded or close to the edge of hills or slopes.
- Providing 25% extra storage capacity of the actual maximum amount of waste generated
- Storage duration should not be more than 180 days or as prescribed by the Department of Environment (DOE).
- Adequate signage should be put up clearly according to the hazardous group and visible with the word "SCHEDULED WASTES STORAGE".
- There should not be any opening in the container to prevent any waste leakage.
- The storage area should have a ventilation system for volatile wastes.
- Separate containers should be provided for different groups of waste.

4.0 Packaging of scheduled waste containers

4.1 Identification of Waste Characteristics

- The scheduled waste should be sampled and analysed to identify the hazards and contaminants in the waste.
- During the sampling and analysis of the waste, the Material Safety Data Sheet (MSDS) / Chemical Safety Data Sheet (CSDS) / Safety Data Sheet (SDS) and/or waste card should be referred to in order to get their hazard properties such as physical hazards, human health hazards and environmental hazards including any special protection requirement needed.
- The scheduled wastes may have the following hazardous characteristics:
 - corrosive substances
 - explosive substances
 - infectious substances
 - inflammable liquids
 - inflammable solids
 - organic peroxides
 - oxidising substances
 - solid: spontaneously combustible
 - solid: dangerous when wet
 - toxic substances; and
 - mixture of miscellaneous dangerous substances

4.2 Selection of Containers

- An appropriate container should be selected according to the characteristics of the scheduled wastes.
- The characteristics of scheduled wastes shall be compatible with the type of material used for the container to prevent any reaction that will cause the container to deteriorate.
- In standard practice, scheduled wastes are stored in the following containers:
 - Bung hole drum (steel/plastic)
 - Open top drum (steel/plastic) with cover and clamp
 - Intermediate bulk container
 - Corrugated box/carton box
 - Flexible Intermediate Bulk Containers (FIBCs) /Jumbo Bags /Bulk Bags / Polypropylene Big Bags

4.3 Important information

- The quantity of the wastes should be taken into consideration to estimate the appropriate size and strength of container to avoid over spilling or container breakage.

- The container used should be in good condition (free from any damage such as tear or hole).
- Assigning specific containers for specific wastes will allow the containers to be reused without further washing/cleaning.
- Containers containing residues of chemicals or scheduled wastes which are not compatible with the waste to be stored should be properly rinsed prior to usage.
- The solution generated from the rinsing activity should be contained and characterised prior to treatment or disposal at sites approved by the Department of Environment.

4.4 Labelling of scheduled wastes containers

- For identification and warning purposes, containers of scheduled wastes shall be clearly labelled in accordance with the Third Schedule of the Environmental Quality (Scheduled Wastes) Regulations 2005 (Department of Environment) and marked with the scheduled wastes code as specified in the First Schedule of the Environmental Quality (Scheduled Wastes) Regulations 2005.
- The characteristics labelled in the Third Schedule of the Environmental Quality (Scheduled Wastes) Regulations 2005 are illustrated in Appendix 1.
- The text shall be printed in black on all labels except when the background of the label is black, red or blue; the text shall be in white.
- The labels may be of the following types:
 - stick on;
 - metal plates;
 - stencilled on the container; or
 - printed on the container.
- Information to be included in the label for scheduled waste containers:
 - The date when the scheduled wastes are first generated and
 - The name, address and telephone number of the scheduled
 - waste generator.

Appendix 1

SCHEDULED WASTES OF POTENTIAL INCOMPATIBILITY

The mixing of a waste in Group A with a waste in Group B may have the following potential consequences:

Group 1-A

Alkaline caustic liquids
Alkaline cleaner
Alkaline corrosive liquid
Caustic wastewater
Lime sludge and other corrosive
alkalies

Group 1-B

Acid sludge
Chemical cleaners
Electrolyte, acid
Etching acid, liquid or solvent
Pickling liquor and other corrosive acid
Spent acid
Spent mixed acid

Potential consequences: Heat generation, violent reaction

Group 2-A

Asbestos
Beryllium
Unrinsed pesticide containers
Pesticides

Group 2-B

Solvents
Explosives
Petroleum
Oil and other flammable wastes

Potential consequences: Release of toxic substances in case of fire or explosion

Group 3-A

Aluminium
Beryllium
Calcium
Lithium
Magnesium
Potassium
Sodium
Zinc powder and other reactive
metals and metal hydrides

Group 3-B

Any waste in Group 1-A or 1-B

Potential consequences: Fire or explosion; generation of flammable hydrogen gas

Group 4-A

Alcohols

Group 4-B

Any concentrated waste in Group 1-A or 1-B
Calcium
Lithium
Metal hydrides
Potassium
Sodium
Water reactive wastes

Potential consequences: Fire, explosion or heat generation; generation of flammable toxic gases

Group 5-A

Alcohols
Aldehydes
Halogenated hydrocarbons
Nitrated hydrocarbons and other
reactive organic compounds and
solvents
Unsaturated hydrocarbons

Group 5-B

Concentrated Group 1-A or 1-B wastes
Group 3-A wastes

Potential consequences: Fire, explosion or violent reaction

Group 6-A

Spent cyanide and sulphide
solution

Group 6-B

Group 1-B wastes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulphide gas

Group 7-A

Chlorates and other strong oxidizers
Chlorites
Chromic acid
Hypochlorites
Nitrates
Nitric acid
Perchlorates
Permanganates
Peroxides

Group 7-B

Organic acids
Group 2-B wastes
Group 3-B wastes
Group 5-A wastes and other
flammable and combustible wastes

THIRD SCHEDULE

LABELLING REQUIREMENT FOR SCHEDULED WASTES



**EXPLOSIVE SUBSTANCES
(WASTE)**

Symbol (exploding bomb): black; Background: light orange
Label 1



**INFLAMMABLE LIQUIDS
(WASTE)**

Symbol (flame): black or white; Background: red
Label 2



**INFLAMMABLE SOLIDS
(WASTE)**

Symbol (flame): black; Background: white with vertical red stripes
Label 3



SOLID: SPONTANEOUSLY COMBUSTIBLE
(WASTE)

Substance liable to spontaneous combustion
Symbol (flame): black;
Background: upper half white, lower half red

Label 4



SOLID: DANGEROUS WHEN WET
(WASTE)

Substances which, if in contact with water, emit inflammable gases
Symbol (flame): black or white; Background: blue

Label 5



OXIDIZING SUBSTANCES
(WASTE)

Symbol (flame over circle): black; Background: yellow

Label 6

Label 6



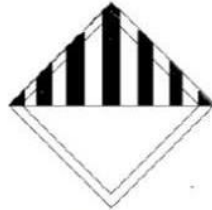
**INFECTIOUS SUBSTANCES
(WASTE)**

Symbol (three crescents superimposed on a circle): black;
Background: white
Label 9



**CORROSIVE SUBSTANCES
(WASTE)**

Symbol (liquids spilling from two glass vessels and attacking a hand and a metal): black;
Background: upper half white, lower half black
Label 10



**MIXTURE OF MISCELLANEOUS DANGEROUS SUBSTANCES
(WASTE)**

Symbol (nil); Background: white with upper half vertical black stripes
Label 11