

 UNIVERSITY OF MALAYA	TRANSPORTATION OF CHEMICAL WASTE		
FACULTY OF MEDICINE	Version : 02	Effective Date: 01 January 2020	SOP 02

1. SCOPE

This procedure applies to all laboratory personnel authorized to work in the Faculty of Medicine, and University of Malaya (UM).

2. PURPOSE

The purpose of this document is to provide procedures for Transportation of Chemical Waste in the Faculty of Medicine. All laboratories which generate such waste and transporting them to designated collection points are responsible for proper packaging, labelling and transporting of such waste. **These procedures apply to waste contaminated with/or containing chemical *only*.**

3. RESPONSIBILITY

The Principal Investigator, laboratory personnel, students or other person with operational responsibility shall assure compliance with these requirements within his/her laboratory or area of responsibility.

4. DEFINITION

The following materials are defined as chemical waste:

- 4.1. Waste from chemical mixtures containing acid, base, organic and/or inorganic chemicals NOT obtained through over-the-counter (OTC) means.
- 4.2. Excess reagent waste from experimental procedures containing acid, base, organic and/or inorganic chemicals NOT obtained through over-the-counter (OTC) means.
- 4.3. Expired chemicals/reagents containing acid, base, organic and/or inorganic chemicals NOT obtained through over-the-counter (OTC) means.
- 4.4. Obsolete laboratory chemicals containing acid, base, organic and/or inorganic chemicals NOT obtained through over-the-counter (OTC) means.

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5. PREPARATION

5.1. Materials

5.1.1. PPE as determined by risk assessment

5.2. Equipment

5.2.1. Transport cart or equivalent

5.3. Documents and records

5.3.1. Safety Data Sheet (SDS) of chemicals/reagents

5.3.2. Waste label

5.3.3. Schedule 2 (notification), Schedule 5 (inventory) and Schedule 7 (waste card)

6. PROCEDURE

6.1. Labeling and Handling

6.1.1. Waste containers must be labeled (ANNEX 1) when waste starts accumulating (i.e. as soon as the first drop of waste is put in the container), not when the container becomes full. Do not use abbreviations or chemical formulas. If you are using a trade name, the SDS for the chemicals/reagents must be available.

6.1.2. Reaction residues become wastes as soon as they are removed from the experimental equipment. Estimate the concentration of each constituent.

6.1.3. (Update 6 July 2022) Scheduled Waste (SW) code is to be determined by waste generators. Under Schedule I, Scheduled Waste Regulation, Environmental Quality Act 2005, the list of waste code consists of 5 main categories (main constituent of each category is highlighted in **BOLD**):

6.1.3.1. SW 1 (**Metal** and metal-bearing wastes, e.g. arsenic, mercury, lead, cadmium, chromium, nickel, copper, vanadium, beryllium, antimony, tellurium, thallium and selenium)

6.1.3.2. SW 2 (Wastes containing principally **inorganic** constituents)

6.1.3.3. SW 3 (Wastes containing principally **organic** constituents)

6.1.3.4. SW 4 (Wastes which may contain **either inorganic or organic** constituents)

6.1.3.5. SW 5 (Other wastes)

6.1.4. (Update 6 July 2022) Details in each category describes types of waste based on constituents, source, work process and/or nature of waste, in which the statements are general description of wastes.

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- 6.1.5. (Update 6 July 2022) The factors to be considered when determining waste code are as follow:
- 6.1.5.1. Physical form of the waste
 - 6.1.5.2. Source of the waste
 - 6.1.5.3. Process in which the waste was generated
 - 6.1.5.4. Intended use of waste (for obsolete items)
 - 6.1.5.5. Potential hazard of the waste (refer to SDS documentation and/or hazard pictogram(s) on containers)
- 6.1.6. (Update 6 July 2022) ANNEX 9 depicts the typical flow process to determine the code.
- 6.1.7. (Update 4 February 2021) Additional pictogram (ANNEX 5-B) is required to be labelled on containers used for the following codes to facilitate segregation and disposal:
- 6.1.7.1. SW 421
 - 6.1.7.2. SW 422
 - 6.1.7.3. SW 429
 - 6.1.7.4. SW 430
- 6.1.8. (Update 6 July 2022) Form 7A (ANNEX 8) containing list of chemicals is to be completed and attached to packaging designated with SW codes listed in 6.1.3. Each Form 7A is to be prepared for each SW code AND hazard depicted.
- 6.1.9. (Update 23 Mac 2023) Form 7A (ANNEX 8) is to be used for other waste codes as well, whereby there are several different chemicals in small containers packaged together or mixed into a single container. Form 7A (ANNEX 8) is required to be attached to the relevant waste packaging or container to facilitate verification process by contractor.
- 6.2.1. Segregate area for waste and working reagents/chemical with proper signage.
- 6.2.2. Segregate incompatible wastes from each other utilizing separate storage provisions, such as individual secondary containers (refer 4th Schedule, Scheduled Waste Regulation, Environmental Quality Act, 2005).
- 6.2.3. Waste container must be compatible with their contents. Do not pour chemical waste that is incompatible with previous chemical that has been contained in that bottle even if the bottle had been rinsed.
- 6.2.4. Waste containers must remain closed except when adding more waste into them. Open containers can lead to the release of toxic chemical into the atmosphere in the form of vapour, aerosol or gases. It also increases the chances of spillage.

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- 6.2.5. Biological specimens (solid) should be separated from the chemical before being disposed Do not overfill waste containers. Leave at least 10% head space to allow for expansion.
- 6.2.6. Handle all waste containers with appropriate personal protective equipment (long sleeve lab coat, covered-toe shoes, appropriate gloves, safety goggles or as recommended in Section 8 of SDS).
- 6.2.7. All wastes must be secondarily contained while in storage.
- 6.2.8. (Update 6 July 2022) For SW codes listed in 6.1.3, chemicals are to be segregated into respective SW code AND hazard depicted, as well as the type of containers used (plastic or glass). ANNEX 10-A illustrates simplified graphical depiction of typical packaging.
- 6.2.9. (Update 6 July 2022) DO NOT USE cardboard and polystyrene boxes (ANNEX 10-B) for storing SW as they can absorb leaks and become contaminated with SW, in which case they need to be disposed off accordingly.

6.3. Record of chemical waste

- 6.3.1. The 2nd Schedule (notification) form (ANNEX 2) is to be filled by the department/unit representative to notify raw materials used and all types of scheduled wastes that are expected to be generated. This form is to be submitted to the faculty representative on a monthly basis, unless there are no changes in the content, in which submission is exempted.
- 6.3.2. The 5th Schedule (inventory) form (ANNEX 3) is to be filled by the department/unit representative and submitted to the faculty representative monthly. If there is no chemical waste to be disposed during a given month, the department/unit representative is to document the record and notify the faculty representative on the situation.
- 6.3.3. (Update 18 September 2020) The 5th Schedule (inventory) form is to be produced for each waste code and attribute (ANNEX 5-A, internal definition by JPPHB).
- 6.3.4. The 7th Schedule (waste information) form (ANNEX 4) is to be filled by the department/unit representative and submitted to the faculty representative together with the 5th Schedule (inventory) for each type of waste, based on waste code (refer to 1st Schedule of Scheduled Waste Regulation, Environmental Quality Act (2005)) and attribute. If same/similar waste is produced in subsequent months, the waste information form of the same/similar waste can be used.

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6.3.5. (Update 23 Mac 2023) Guidelines on scheduled waste reporting:

- 6.3.5.1. All reporting of 2nd Schedule (notification), 5th Schedule (inventory) and 7th Schedule (waste information) is to be submitted to the faculty representative latest by the 1st week of the month for waste information of the previous month, e.g. submitting January 2023 waste information on 3 Feb 2023 (1st week of February 2023).
- 6.3.5.2. The cut off date for waste information submission is the end of the 1st week of the month, unless the department/unit representative notifies with written notice to inform delay in submission.
- 6.3.5.3. Yearly reminder of this reporting guideline will be disseminated through email to all the department/unit representative during the month of January.

6.4. Transportation and collection of waste

- 6.4.1. Waste will be collected from designated collection points (ANNEX 6-A) on pre-determined session by the waste management licensed contractor (appointment by JPPHB).
- 6.4.2. All personnel involved in transporting waste from departments/units to the designated collection points are to handle waste as per item 6.2.6 (ANNEX 6-B).
- 6.4.3. Transportation of waste is to use transport cart or equivalent to safely deliver the waste to the designated collection points.
- 6.4.4. (Update 6 July 2022) Refrain from using cardboard and polystyrene boxes for transportation UNLESS the SW are already prepackaged/contained in secondary containment.
- 6.4.5. Upon completion of the collection exercise by the waste management licensed contractor, the 5th Schedule (inventory) will be completed with collection session date and returned to respective waste generators for record keeping.

7. ANNEX 7 describes the process in a flow chart form.

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ANNEX 1

		(NAMA PTJ)
		
BAHAN TOKSIK		CECAIR MUDAH TERBAKAR
KOD SISA WASTE CODE	SW322	
PENERANGAN SISA WASTE DESCRIPTION	BUANGAN PELARUT ORGANIK BUKAN TERHALOGEN WASTE OF NON-HALOGENATED ORGANIC SOLVENTS	
TARIKH DIHASILKAN DATE GENERATED	:	TARIKH DILUPUSKAN : DATE DISPOSED <small>(KE STOR SISA PTJ)</small>
NAMA PENGELUAR SISA NAME OF WASTE GENERATOR	:	(HANYA STAF TETAP SAHAJA)
BILIK/MAKMAL ROOM/LABORATORY	:	
JABATAN/UNIT DEPARTMENT/UNIT	:	
NO. TEL. (PEJABAT/BIMBIT) TELEPHONE NUMBER	:	

NOTE: This is one of many labels developed by JPPHB for labelling chemical waste. The complete list can be obtained via UM Portal (PTj Info -> JPPHB -> Bahagian Pentadbiran).

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ANNEX 2

 UNIVERSITY OF MALAYA	JABATAN PEMBANGUNAN DAN PENYELENGGARAAN & HARTA BENDA, UNIVERSITI MALAYA	
	PEMBERITAHUAN BUANGAN TERJADUAL	
	JADUAL KEDUA (Peraturan 3) AKTA KUALITI ALAM SEKELILING 1974	
	NO. BOR : JPPHB/SISA/JADUAL/no.1	NO. REVISI : 01
	MUKASURAT : 1 DARIPADA 1	TARIKH EFEKTIF: APRIL 2019

1. PENGENALAN

Nama : _____ Jabatan/Unit: _____
 Jawatan : _____ No. Tel : _____
 No. Tel : _____ Emel : _____
 Bilik/Makmal: _____

2. DATA PENGELUARAN

Senarai bahan mentah/kimia dan kuantiti yang digunakan setiap bulan*

Bahan-bahan Mentah/ Kimia	Kuantiti (kg/Tan Metrik)

3. DATA BUANGAN

Buangan terjadual yang dikeluarkan setiap bulan**

Kod Kategori Buangan	Punca Buangan ¹	Nama Buangan	Komponen Buangan ²	Kuantiti (Tan Metrik/Bulan) ³

Nota: ¹ Unit Operasi dalam setiap proses/loji/makmal/pusat
² Namakan elemen-elemen, unsur, unsur, sebatian atau bahan
³ Panduan untuk pertukaran (hanya data dalam tan metrik/bulan sahaja boleh diterima)
 ** Anggaran

Saya mengaku bahawa maklumat yang diberikan adalah benar dan betul sepanjang pengetahuan saya.

.....
 Tandatangan pengeluar sisa/Staf makmal/
 Pensyarah/Penyelidik/koordinator sisa

Nama :
 Jawatan :
 Tarikh :

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ANNEX 3

 UNIVERSITY OF MALAYA	JABATAN PEMBANGUNAN DAN PENYELENGGARAAN & HARTA BENDA, UNIVERSITI MALAYA	
	INVENTORI BUANGAN TERJADUAL SCHEDULED WASTES INVENTORY	
	JADUAL KELIMA (Peraturan 11) AKTA KUALITI ALAM SEKELILING 1974	
	NO. BOR : JPPHB/SISA/JADUAL /no.2	NO. REVISI : 02
	MUKASURAT : 1 DARIPADA 1	TARIKH EFEKTIF: SEPTEMBER 2019

Ptj / Faculty : _____ Nama / Name : _____ Jawatan / Designation : _____ No. Tel / Handphone : _____ Bilik / Makmal (Room / Lab) : _____	SW109 SW206 SW301 SW305 SW306 SW307 SW315 SW319 SW320 SW322 SW323 SW402 SW403 SW404 SW408 SW409 SW416 SW421 SW430 OTHERS	Jabatan / Unit (Dept / Unit) : _____ No. Tel / Phone no. : _____ Emel / Email : _____
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*TARIKH <i>Date</i>	KOD KATEGORI BUANGAN <i>Waste Category Code</i>	KUANTITI <i>Quantity</i>		PUNCA AKTIVITI <i>Source Activity</i>	TARIKH HANTAR KE STOR PTJ ^b <i>Date sent to PTJ's store</i>	TINDAKAN KOORDINATOR SISA <i>For waste coordinator action</i>	
		BOTOL / BEKAS / UNIT <i>Bottle / Container / Unit</i>	TAN METRIK <i>Metric Tonnes</i>			TARIKH PENERIMAAN, T/T & COP <i>Date Received, Sign & Stamp</i>	TARIKH DIANGKUT ^c <i>Date of transported</i>

Nota / Note :

^a Tarikh bila buangan terjadual dikeluarkan buat kali pertama
Date when scheduled wastes are first generated

^b Stor Ptj – stor sementara di makmal atau Jabatan yang berdaftar di Ptj
PTJ's store – registered temporary storage at laboratory or department

^c Tarikh buangan terjadual diangkut dari stor PTJ
Date of scheduled wastes transported outside PTJ's store

Saya mengaku bahawa maklumat yang diberikan adalah benar dan betul sepanjang pengetahuan saya.
I certify that the information provided is true and correct to the best of my knowledge

.....
Tandatangan pengeluar sisa / Staf makmal / Pensyarah / Penyelidik / koordinator sisa
Signature of waste generator / Lab Staff / Lecturer / Researcher / Waste Coordinator

Nama / Name :

Jawatan / Designation :

Tarikh / Date :

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ANNEX 4



JADUAL KETUJUJUH (Peraturan 13)

(SEVENTH SCHEDULE)

WASTE CARD

A:	PROPERTIES	
1.	Category	
2.	Origin	
3.	Physical Properties of waste	
	Flash Point	
	Boiling Point	
	Consistency at room temperature	
	Vapors heavier than air	
	Solubility in water	
	Waste lighter/heavier than water	
4.	Risks	
	By inhalation	
	By oral intake	
	By dermal contact	
B:	HANDLING OF WASTE	
1.	Personal protection equipment	
2.	Procedures/Precautions in handling, packaging, transporting and storage.	
3.	Appropriate label	
4.	Recommended method of disposal	
C:	PRECAUTION IN CASE OF SPILL OR ACCIDENTAL DISCHARGE CAUSING PERSONAL INJURY	
1.	In case of inhalation of fumes or oral intake	
	Symptoms of intoxication	
	- Symptoms of poisoning	
	- Appropriate first aid	
	- Guidelines for the physicians	
2.	In case of dermal contact or contact with eyes	
	- Symptoms of intoxication	
	- Appropriate first aid.	
	- Guidelines for the physician	
D:	STEPS TO BE TAKEN IN CASE OF SPILL OR ACCIDENTAL DISCHARGE CAUSING MATERIAL DAMAGE ARISING FROM -	
1.	Spill on floor, soil , road, etc	
2.	Spill into water	
3.	Fire	
4.	Explosion	

Waste Generator Address:	
Person in Charge:	

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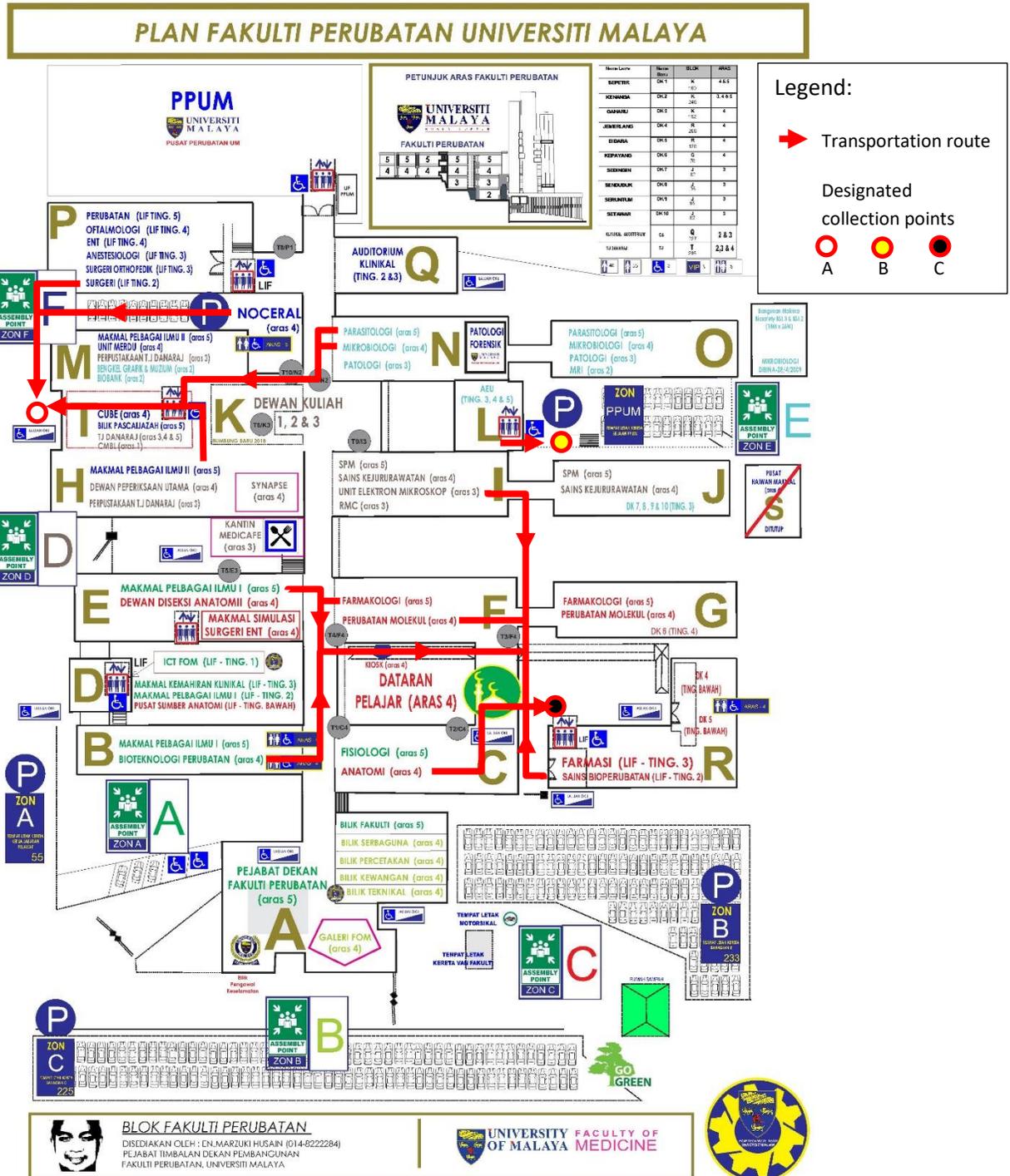
ANNEX 5-A

SOLVENT	ACID	ALKALINE	CONTAMINATED CONTAINER	OIL
SW322	SW206	SW402	SW409	SW306
SW323	SW301	SW421		SW305
SW421	SW421	SW429		
	SW429			

ANNEX 5-B

			
		<p>SW421 SW429 SW430</p> <ul style="list-style-type: none"> <input type="checkbox"/> INFLAMMABLE LIQUIDS (WASTE) <input type="checkbox"/> INFLAMMABLE SOLIDS (WASTE) <input type="checkbox"/> OXIDIZING SUBSTANCES (WASTE) <input type="checkbox"/> TOXIC SUBSTANCES (WASTE) <input type="checkbox"/> INFECTIOUS SUBSTANCES (WASTE) <input type="checkbox"/> CORROSIVE SUBSTANCES (WASTE) 	

ANNEX 6-A



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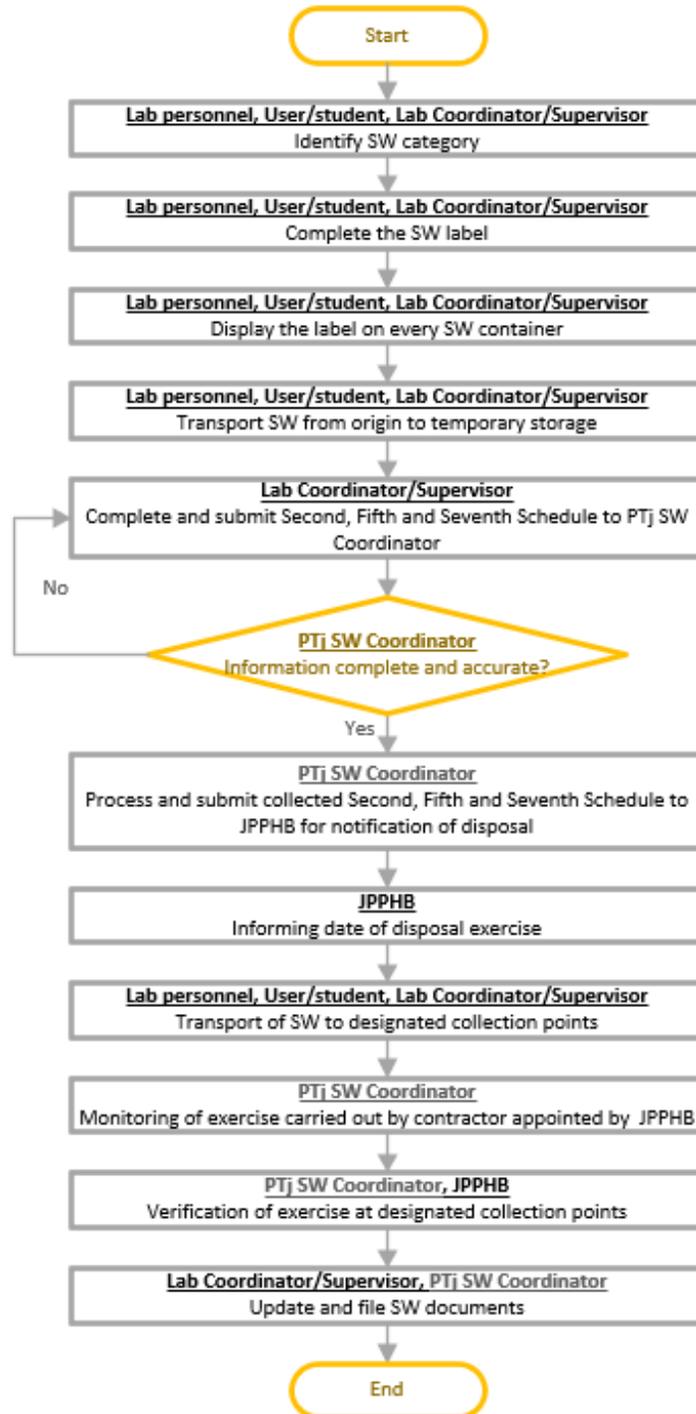
ANNEX 6-B

List of departments/unit transporting to designated collection points

Point A 	Point B 	Point C 
Department of Surgery	AEU	Department of Molecular Medicine
NOCERAL		MD1
Department of Medical Microbiology		Medical Biotechnology Laboratory (MBL)
CMBL		Department of Pharmacology
Department of Parasitology		Department of Physiology
MD2		Department of Biomedical Science

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ANNEX 7



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ANNEX 8

 UNIVERSITY OF MALAYA	JABATAN PEMBANGUNAN DAN PENYELENGGARAAN & HARTA BENDA, UNIVERSITI MALAYA	
	MAKLUMAT BUANGAN TERJADUAL	NO. BOR : JPPHB/SISA/JADUAL /no.3
	JADUAL KETUJUH (A) (Peraturan 13) AKTA KUALITI ALAM SEKELILING 1974	NO. REVISI : 01
		MUKASURAT : 1 DARIPADA 1 TARIKH EFEKTIF: MAC 2021

KOD KATEGORI BUANGAN (BULATKAN SATU SAHAJA)	CIRI-CIRI BUANGAN TERJADUAL (BULATKAN SATU SAHAJA)	NAMA BUANGAN TERJADUAL (NAMA KIMIA / SPESIFIK)	Kuantiti
			Botol / Tiub/ Jar
SW421 SW429 SW430	INFLAMMABLE LIQUID INFLAMMABLE SOLID CORROSIVE OXIDIZE INFECTIOUS TOXIC	1.	
		2.	
		3.	
		4.	
		5.	
		6.	
		7.	
		8.	
		9.	
		10.	
		11.	
		12.	
		13.	
		14.	
		15.	
		16.	
		17.	
		18.	
		19.	
		20.	
		21.	
		22.	
		23.	
		24.	
		25.	

PENGESAHAN

Saya mengaku bahawa maklumat yang diberikan adalah benar dan betul sepanjang pengetahuan saya.

.....
Tandatangan Pegawai Pelapor

Nama:
Jawatan:
Tarikh:

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References

1. Scheduled Waste Regulation, Environmental Quality Act 2005.
2. Guidelines for Packaging, Labelling and Storage of Scheduled Wastes in Malaysia (2014).
3. UM Portal (PTJ Info -> JPPHB -> Bahagian Pentadbiran)

Revision History

Date	Version	Changes
12 November 2020	1	Initial version
14 January 2021	2	Modified ANNEX 6 into 6-A, 6-B (with accompanying entries in Section 6); added ANNEX 7 (with accompanying entry in Section 7)
9 February 2021	2.1	Added amendment to labelling requirement for SW 421, 429, 430 (added Section 6.1.3, changed ANNEX 5 to 5-A and 5-B)
2 June 2022	2.2	Added amendment to labelling requirement for SW 422 (modified Section 6.1.3)
6 July 2022	2.3	Amended Section 6.1; added Section 6.2.9, 6.4.4; added ANNEX 8 – 10.
23 Mac 2023	2.4	Added Section 6.1.9 (additional information on Form 7A); added Section 6.3.5 (guideline on scheduled waste reporting)

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