## SCHEDULED WASTE MANAGEMENT

HARYANI AZAHARI SCIENCE OFFICER JPPHB

## Hello Saya Haryani Azahari

- B. Eng, (Chemical Engineering), UiTM
- M .Eng (Safety, Health, Environment), UM
- Quality Engineer, Globetronics (M) Sdn. Bhd
- Process Engineer, Freescale Semiconductor.
- Training Engineer, Flextronics (M) Sdn. Bhd.
- Senior Science Officer, Department of Civil Engineering & Deputy Dean Development Office, Faculty of Engineering (9 Years)
- Secretary , Faculty Safety & Health Committee (5years)
- Currently in Schedule Waste Management Unit, JPPHB
- Competent Person in Certified Environmental Professional In Scheduled Waste Management
- Trained in 5S, CHRA and Safety & Health Course
- Trained for 6 Sigma and SPC
- Trained in ISO 17025 & ISO 9001



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# Environmetal Quality Act 1974 Environment Quality (Scheduled Waste) Regulation 2005



### OBJECTIVES OF ENVIRONMENT QUALITY (SCHEDULED WASTE) REGULATION 2005



To prevent pollution of schedule wastes into the environment



To monitor the movement of scheduled wastes and to ensure that scheduled waste are handled at licensed facility

**Regulation 1 : Citation and commencement** 

Regulation 2 : Interpretation

Regulation 3 : Notification of the generation of scheduled wastes

Regulation 4 : Disposal of scheduled wastes

Regulation 5 : Treatment of scheduled wastes

Regulation 6 : Recovery of material or product from scheduled wastes

Regulation 7 : Application for special management of scheduled wastes

Regulation 8 : Responsibility of waste generator

Regulation 16 : COMPOUNDING OF OFFENECES

Regulation 9 : Storage of scheduled wastes

Regulation 10 : Labelling of scheduled wastes

Regulation 11 : Wastes generator shall keep an inventory of scheduled waste

Regulation 12 : Information to be provided by waste generator, contractor and occupier of prescribed premises

Regulation 13 : Scheduled wastes transported outside waste generator's premises to be accompanied by information (wastes card)

Regulation 14 : Spill or accidental discharge

Regulation 15 : Conduct of training

**Regulation 17 : Revocation** 

REGULATION 1 -17 ENVIRONMENTAL QUALITY (SCHEDULED WASTE) 2005

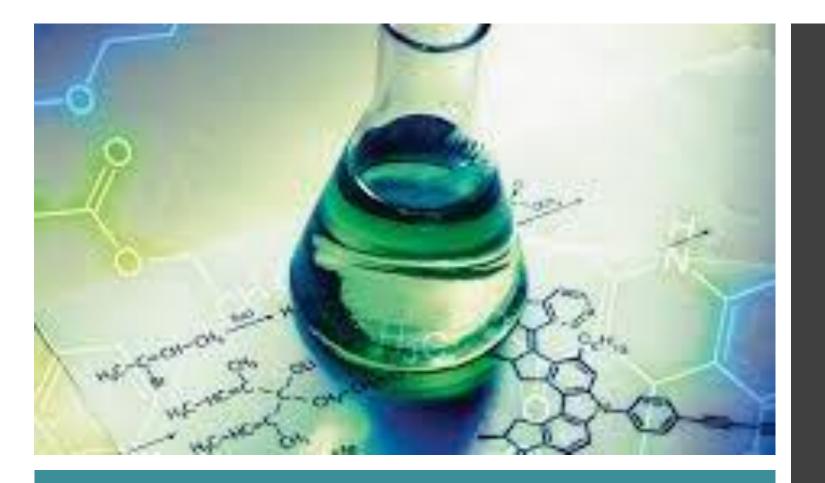


Identification, classification and properties of hazardous waste



# WHAT IS SCHEDULED WASTE

- TOXIC AND HAZARDOUS WASTE
- LISTED IN FIRST SCHEDULE



4 ways of Scheduled Wastes identification

- 1. Sources of waste generated
- 2. Types of process or activities
- Physical and chemical compositios of the waste
- 4. SDS Safety Data Sheet of (the raw material used)

## SCHEDULED WASTE IDENTIFICATION AND CLASSIFICATION

FIRST SCHEDULE

#### FIRST SCHEDULE (REGULATION 2)

CODE	DESCRIPTION
SW 1	Metal and metal-bearing wastes
SW 101	Waste containing arsenic or its compound
SW 102	Waste of lead acid batteries in whole or crushed form
SW 103	Waste of batteries containing cadmium and nickel or mercury or lithium
SW 104	Dust, slag, dross or ash containing arsenic, mercury, lead, cadmium, chromium, nickel, copper, vanadium, beryllium, antimony, tellurium, thallium or selenium excluding slag from iron and steel factory
SW 105	Galvanic sludges
SW 106	Residues from recovery of acid pickling liquor
SW 107	Slags from copper processing for further processing or refining containing arsenic, lead or cadmium
SW 108	Leaching residues from zinc processing in dust and sludges form
SW 109	Waste containing mercury or its compound
SW 110	Waste from electrical and electronic assemblies containing components such as accumulators, mercury-switches, glass from cathode-ray tubes and other activated glass polychlorinated biphenyl-capacitors, or contaminated with cadmium, mercury, lead, nickel, chromium, copper, lithium, silver, manganese or polychlorinated biphenyl





# WASTE GENERATOR

PERSON WHO GENERATES WASTES

## CRADLE TO GRAVE PRINCIPLE



#### WASTE GENERATOR



### WASTE CONTRACTOR (TRANSPORTER)



WASTE TREATMENT AND DISPOSAL FACILITIES (PRESCRIBED PREMISES)

## WASTE GENERATOR

*Reg 8 Responsibility of waste generator* 

### 

Notify generation of wastes – Schedule 2



Reduce or minimize the generation of wastes at source



Re-use or recycle wastes whenever possible



Send wastes for reuse, reutilization, co-processing

Î

Render wastes innocuous before disposal



Dispose wastes only at approved facilities – JPPHB

## WASTE GENERATOR

*Reg 8 Responsibility of waste generator* 



Provide inventory of scheduled wastes generated



Provide information of each category of wastes to be delivered to the contractor



Give the information to contractor upon delivery of waste to him



Complete Part 1 of the Consignment Note for the transportation of wastes out from premise - Eswiss

## WASTE GENERATOR

*Reg 8 Responsibility of waste generator* 

Store

#### Store wastes in appropriate containers

23

Store waste containers in a designated storage area

Mark containers with proper labels

Ensure that all his employess in involved in handling wastes attend training programmes



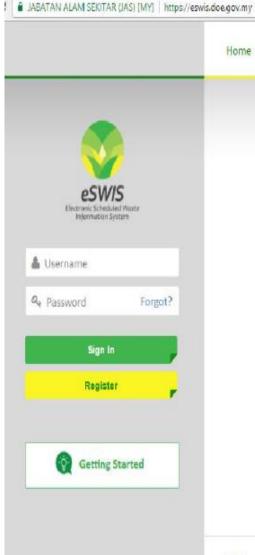
Establish an emergency response procedures in order to contain spillage/accidental discharge



Provide technical expertise and supporting assistance in any clean-up operation

### Eswiss





Home DOE Portal Support List Waste List Facility List FAQ Inquiry



Welcome to Electronic Scheduled Waste Information System



Jabatan Alam Sekitar, Malaysia Kementerian Sumber Adil Dan Alam Sekitar Ares 3, Podium 3, Wisma Sumber Asil, No.25, Persiaran Perdana, Presint 4, 62574 W.P. PUTRAJAWA



## UMPORTAL-PTJ INFO-JPPHB-PENTADBIRAN

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	Dashboard		므 PTj Info			
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Ø	Administrator	•	Pejabat Keselamatan dan Kesihatan (OSH)	CITrA	Pej Naib Canselor	ЈРРНВ
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1	Bahagian Pengurusan Harta		10/10/	2019		
2	Bahagian Pentadbiran		11/09/2	2019		
3	Bahagian Perancangan dan Senibina		29/08/	2019		
4	4 Garis Panduan Bahagian Kejuruteraan Mekanikal					
5	Garis Panduan Bahagian Pembangunan Projek		16/12/	2009		
6	Garis Panduan Hidupan Liar & Haiwan Perosak UM		23/07/	2013		
7	Garis Panduan Pengurusan Kenderaan UM		18/08/	2017		
8	Garis Panduan Unit Bangunan Infrastruktur		16/12/	2009		
9	Polisi Ruang Universiti Malaya		22/12/	2009		
10	Senarai Semak Pembangunan Fizikal Universiti Malaya (UM Development Checklist)		24/05/	2018		
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## Second schedule



#### PENGURUSAN BUANGAN TERJADUAL

Label buangan terjadual (Scheduled wastes label)

1.First Schedule - Scheduled wastes code

#### 2.Scheduled wastes label rev\_2

Pemberitahuan buangan terjadual (Notification of scheduled wastes)

1.Second Schedule rev\_2

2.Second Schedule 2 example rev\_2

Inventori Buangan Terjadual (Inventory of scheduled wastes)

1.Fifth Schedule rev\_2

2.Fifth Schedule 5 example rev\_2

Guidelines

1. Guidelines on the handling and the management of clinical waste in Malaysia

OF MALAYA	JABATAN PEMBANGUNAN DAN PENYELENGGARAAN & HARTA BENDA, UNIVERSITI MALAYA						
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	AKTA KUAL			FEEKTIE: S	TIF: SEPTEMBER 2019		
	ANTA NUAL	ITTALAM SERELILING					
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	w material/Chemical				v (Metric To		
1	Hydrochloric acid	-		2	0.01		
	MEK				0.01		
	Dichloromethane		0.01				
Engine oil			0.03				
. DATA BUANGA	0				0.03		
3. DATA BUANGA Buangan terjadual yan Kod Kategori Buangan Waste Category Code	N/WASTE DATA	bulan**/Scheduled v Nama Buan Name of wa	ngan	ated per month* Komponen B Waste Compon	* uangan <sup>2</sup>	Kuantiti (Tan Metrik/Bulan) <sup>3</sup> Quantity (Metric Tonnes/Month) <sup>3</sup>	
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1/1

Nama/Name	Mr. Alchemist
Jawatan/Designation	Research officer
Tarikh/Date	- 01/09/2019

Note :\*\*\* Pengeluar Sisa/Staf Makmal/ Pensyarah/Penyelidik/Koordinator sisa Waste generator/Lab Staff/ Lecturer/Researcher/ Waste Coordinator

## FIFTH SCHEDULE



#### PENGURUSAN BUANGAN TERJADUAL

Label buangan terjadual (Scheduled wastes label)

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2.Scheduled wastes label rev 2

Pemberitahuan buangan terjadual (Notification of scheduled wastes)

1.Second Schedule rev 2

2.Second Schedule 2 example rev 2

Inventori Buangan Terjadual (Inventory of scheduled wastes)

1.Fifth Schedule rev 2

2.Fifth Schedule 5 example rev 2

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1. Guidelines on the handling and the management of clinical waste in Malaysia

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	: Dr. Alche			SW408	8 SW409 SW4	16 SW421 SW430	OTHERS
Jawatan / Des	signation :	Research offic	er	Jabat	tan / Unit (Dep	ot / Unit):Dept. o	f Chemistry
	ndphone :					.: 03-79671234	
Bilik / Makn	nal (Room / Lat	) : Chemical	Analytical L	aboratory Eme	1 / Email	: alchemist@um	i.edu.my
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#### Nota / Note

\* 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

<sup>c</sup> Tarikh buangan terjadual diangkut dari stor PTj Date of scheduled wastes transported outside PTj's store

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

Dr. Alchemist

20/09/2019

Research officer Jawatan / Designation

Tarikh / Date

1/1

Nama / Name

## Scheduled wastes labelling



PENGURUSAN BUANGAN TERJADUAL

Label buangan terjadual (Scheduled wastes label)

1.First Schedule - Scheduled wastes code

2.Scheduled wastes label rev\_2

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Inventori Buangan Terjadual (Inventory of scheduled wastes)

1.Fifth Schedule rev\_2

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2.Fifth Schedule 5 example rev_2
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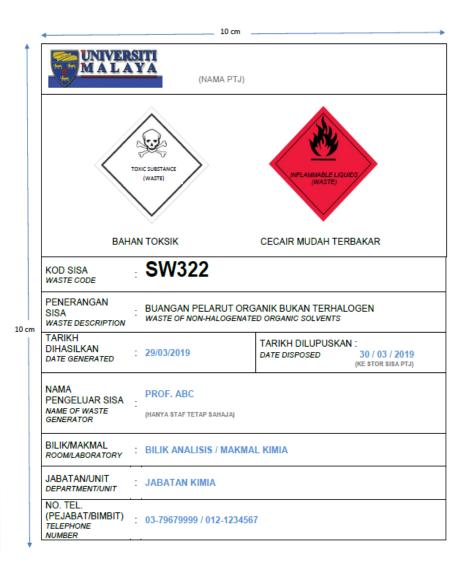
Guidelines

1. Guidelines on the handling and the management of clinical waste in Malaysia

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BAH	IAN T	OKSIK	CECAIR MUDAH TI	ERBAKAR
KOD SISA WASTE CODE	: (	SW322		
PENERANGAN SISA WASTE DESCRIPTION			T ORGANIK BUKAN TERHA GENATED ORGANIC SOLVENTS	
TARIKH DIHASILKAN DATE GENERATED	: 2	9/03/2019	TARIKH DILUPUSK DATE DISPOSED	AN : 30 / 03 / 2019 (KE STOR SISA PTJ)
NAMA PENGELUAR SISA NAME OF WASTE GENERATOR	:	ROF. ABC	(A)	
BILIK/MAKMAL ROOM/LABORATORY	: E	ILIK ANALISIS / M	AKMAL KIMIA	
JABATAN/UNIT	: J	ABATAN KIMIA		
NO. TEL. (PEJABAT/BIMBIT) TELEPHONE NUMBER	: 0	3-79679999 / 012-1	234567	

## LIST OF SCHEDULED WASTE LABEL IN UM

BIL	KOD SW	PENERANGAN			
1	SW322	Buangan pelarut organik bukan terhalogen			
2	SW323	Buangan pelarut organik terhalogen			
3	SW301	Asid organic terpakai dengan ph < 2			
4	SW402	Alkali terpakai dengan ph > 11.5			
5	SW430	Bahan kimia makmal yang usang			
6	SW416	Enap cemar cat			
7	SW421	Campuran Buangan Terjadual			
8	SW409	Bekas, beg atau kelengkapan yang dilupuskan yang	dicemari dengan bahan		
		kimia, racun mahkluk perosak, minyak mineral atau b	uangan terjadual		
9	SW408	Tanah tercemar daripada pembersihan tumpahan ba	han kimia		
10	SW404	Buangan patogenik, buangan klinikal atau bahan yan	ig dikuarantinkan		
11	SW403	Dadah terbuang mengandungi bahan psikotrofik, ber	toksik, berbahaya,		
		karsinogenik, mutagenik atau teratogenik.			
12	SW206	Asid tidak organik terpakai			
13	SW320	Buangan mengandungi formaldehid			
14	SW109	Buangan yang mengandungi raksa atau sebatiannya			
15	SW319	Buangan fenol termasuk klorofenol dalam bentuk cec	cair atau enap cemar		
16	SW305	Minyak pelincir/enjin terpakai			
17	SW307	Emulsi minyak mineral- air terpakai			
18	SW315	Tar atau sisa bertar			
19	SW306	Minyak hidraulik terpakai			
20	SW422	campuran buangan terjadual dan buangan tidak	terjadual		
21	SW410	kain buruk, plastik, kertas dicemari buangan terja	adual		
22	SW102	Ruangan batari asid nlumbum	Drag the cursor around the area you		
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## SCHEDULED WASTE CHARACTERISTIC

## IGNITABLE



CORROSIVE

TOXIC



## **REACTIVE – INFECTIOUS**

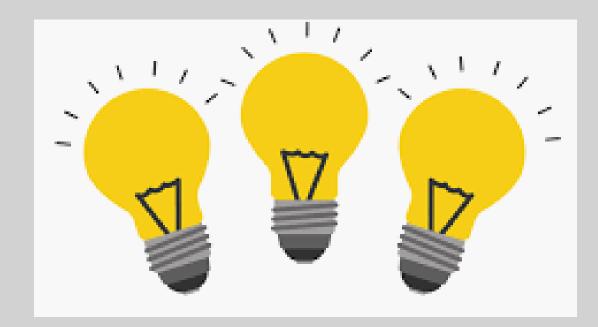


CHARACTERISTIC	DEFINATION	SW CODE
IGNITABILITY	<ul> <li>Liquid with flash point &lt; 60degree celcius or non-liquid with can cause fire through friction, absorption of moisture or spontaneous chemical change</li> <li>An oxidizer</li> </ul>	SW322 SW416 SW417
CORROSIVE	<ul><li> Ph &lt; or equal 2</li><li> &gt; Or equal 11.5</li></ul>	SW206
TOXIC	> Specified concentration of metals and organic compound listed by reference in regulations	ALL SW
REACTIVE	<ul> <li>Readily explode when undergo violent reactions</li> <li>React to release toxic gases or fumes</li> </ul>	SW206
INFECTIOUS	Ability to spread diseases or illnesses through bacteria, virus, fungus or other microorganism	SW404

SCHEDULED WASTE CHARACTERISTIC

## ACTIVITY 1 – CLASSIFICATION OF SW

- 1. Contaminated container HCL, H2SO4, Solvents
- 2. Contaminated rag from cleaning process of laboratory
- 3. Contaminated sand chemical spill, hydraulic oil, halogenated solvent



## STORAGE OF SCHEDULED WASTE

At laboratory



# SCHEDULED WASTE CONTAINERS/STORAGE

- Compatible with scheduled wastes to be stored in term of chemical
- Appropriate containers in term of size and material type
- Durable
- Able to prevent spillage or leakage of the scheduled wastes into the environment









### CONTAINERS TYPE

CONTAINERS	Type of waste	
IBC	liquid / solvent/oil	
Corrugated Box/Carton	dry waste	
Jumbo Bag	dust/slag/e-waste/dry waste	
Jerrycan/carboy	liquid/solvent	
Steel drum	Inorganic/organic liquid waste	
Plastic drum	acid waste/e-waste	
Clinical bin	infectious waste	

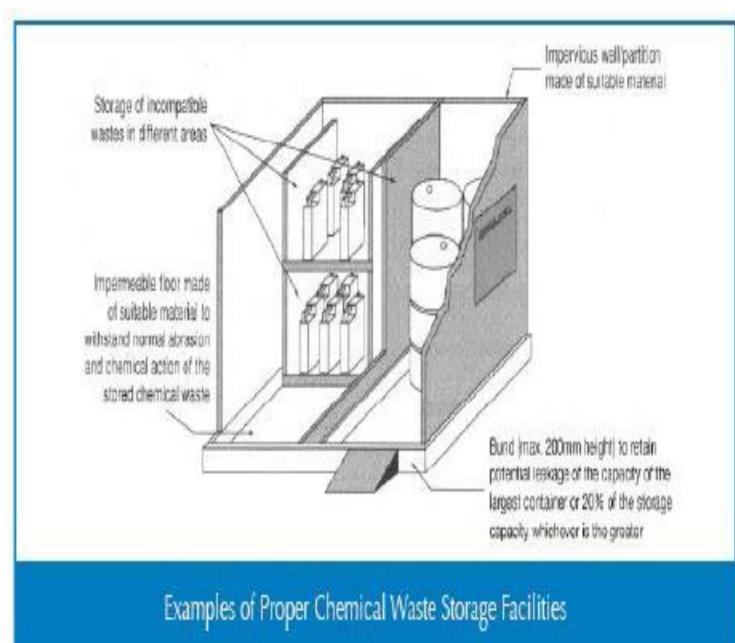
## Corrugated/carton box

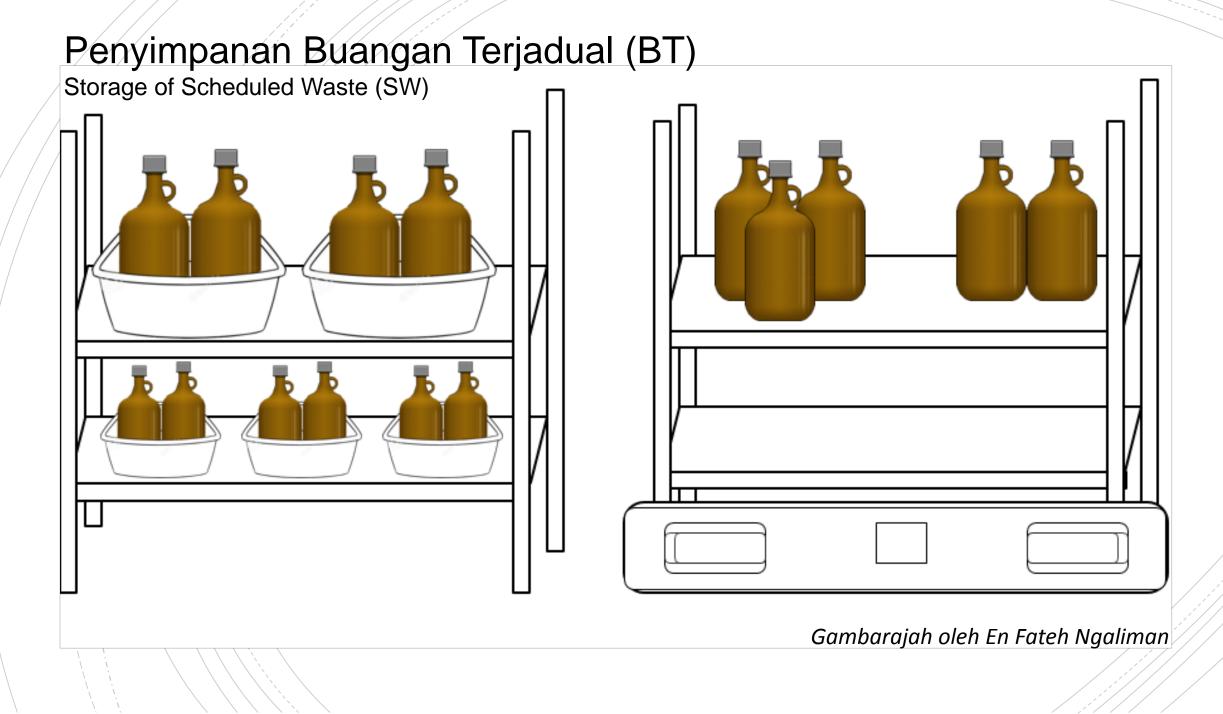
- Dry solids waste with no free-flow liquid generated in small quantity
- E-waste, contaminated rags
- Expired drugs, cosmetic
- No tear or hole

## COMPATIBILITY (FOURTH SCHEDULE)

SW CODE	GROUP	NOT COMPATIBLE
SW206	1-B (SPENT ACID)	1-A, 3-A, 4-A, 5-A, 6-A, 7-A
SW322	2-B (SOLVENTS)	2-A, 7-A
SW323	5-A (HALOGENATED HYDROCARBONS)	5-B, 7-A
SW327	4-A (ALCOHOLS)	4-B, 5-B, 7-A
SW416	2-B (SOLVENTS)	2-A, 7-A
SW417	2-B (SOLVENTS)	2-A, 7-A
SW103	3-A (METALS AND METAL HYDRIDES)	3-B, 4-A, 5-A

## PROPER SEGREGATION OF SCHEDULED WASTE



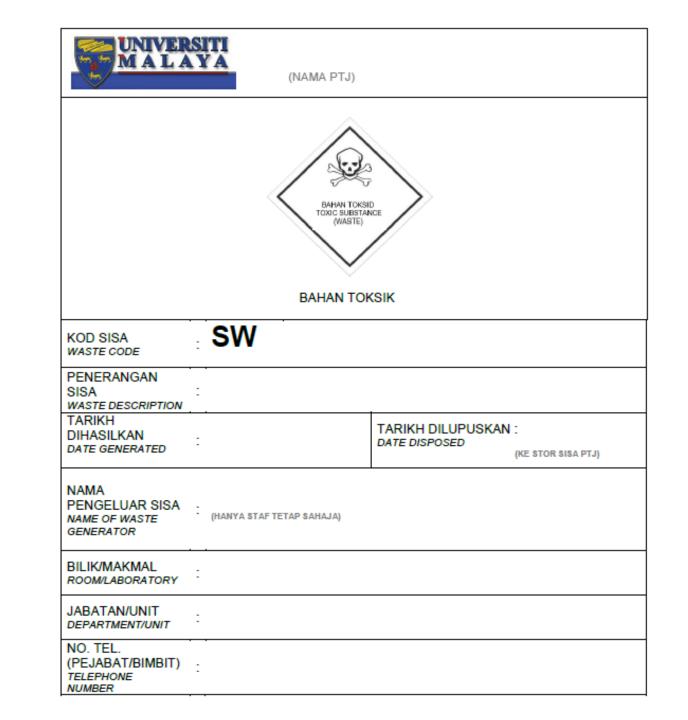




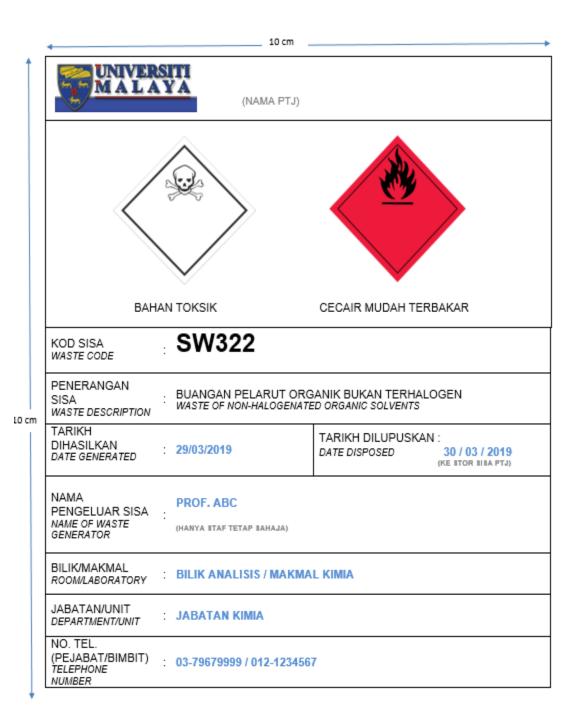


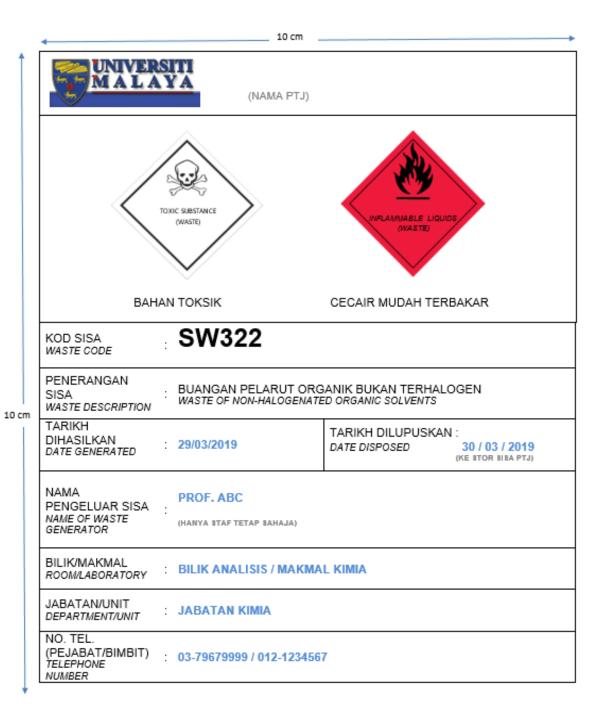
**FAKULTI PERGIGIAN** 

## CONTOH



Activity 2: Labelling of SW





Shall be liable to a fine not exceeding RM10,000.00 OR IMPRISONMENT not exceeding 2 years OR to both



(4) Any person who contravenes this section shall be guilty of an offence and shall be liable to **IMPRISONMENT** for a period not exceeding **5** years **AND** a fine not exceeding **RM500,000.00** 

### EQA, 1974 : Section 34B

# THANK YOU

