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UNIVERSITI MALAYSIA PERLIS

"KURSUS PENGURUSAN BUANGAN TERJADUAL – KAEDAH-KAEDAH PENGASINGAN, PEMBUNGKUSAN DAN PERLABELAN BUANGAN TERJADUAL"

SHIELD Safety 1st

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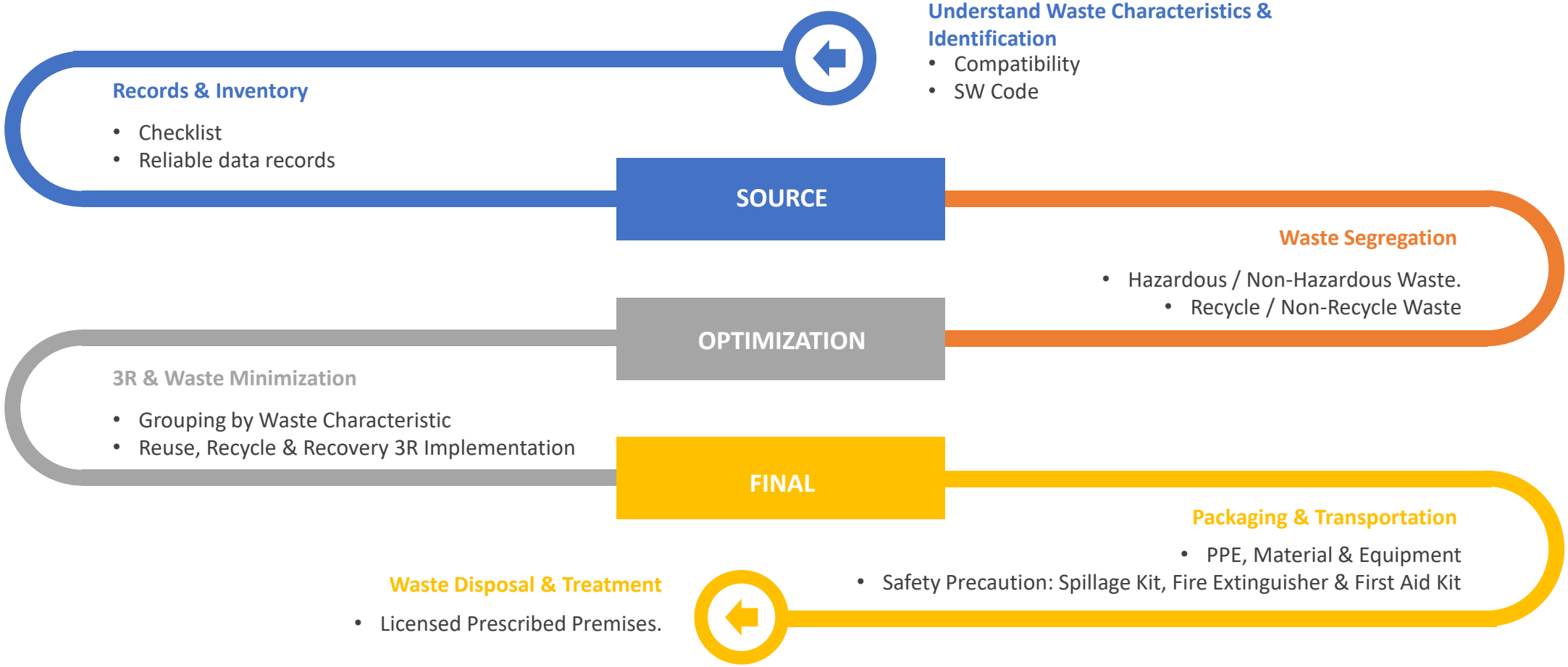
Agenda

1. Regulation & Guidelines
2. PPE Requirement During Packaging Work
3. Risks & Consequences Of Improper Packaging And Segregation
4. Notable Packaging Projects by Technical Sales

Basic Step to Optimize Scheduled Waste Packaging



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REGULATION & GUIDELINES

SHIELD Safety 1st

Regulation & Guidelines

WHAT IS SCHEDULED WASTE?

Scheduled Waste is defined as any waste falling within categories of waste listed in the **First Schedule of the Environmental Quality (Scheduled Wastes) Regulations 2005.**

77 categories listed under First Schedule of the Regulations

Regulation & Guidelines

What is Scheduled Waste?

Ignitable | Corrosive | Toxic | Infectious | Reactive

Regulation & Guidelines

EQ (SCHEDULED WASTE) REGULATIONS: REGULATION 8

RESPONSIBILITY OF WASTE GENERATOR

1. Every waste generator shall ensure that scheduled wastes generated by him are properly stored, treated on-site, recovered on-site for material or product from such scheduled wastes or delivered to and received at prescribed premises for treatment, disposal or recovery of material or product from scheduled wastes.

2. Every waste generator shall ensure that scheduled wastes that are subjected to movement or transfer be packaged, labelled and transported in accordance with the guidelines prescribed by the Director General.

https://www.doe.gov.my/en/environmental-quality-scheduled-waste-regulations-2005-p-u-a-294-2005/

Regulation & Guidelines

EQ (SCHEDULED WASTE) REGULATIONS: REGULATION 9

STORAGE OF SCHEDULED WASTES

1. Scheduled wastes shall be stored in containers which are compatible with the scheduled wastes to be stored, durable and which are able to prevent spillage or leakage of the SW into the environment.

2. Incompatible SW shall be stored in separate containers, and such containers shall be placed in separate secondary containment areas.

3. Containers containing SW shall always be closed during storage except when it is necessary to add or remove the SW.

https://www.doe.gov.my/en/environmental-quality-scheduled-waste-regulations-2005-p-u-a-294-2005/

Regulation & Guidelines

EQ (SCHEDULED WASTE) REGULATIONS: REGULATION 10

LABELLING OF SCHEDULED WASTES

1. The date when the SW are first generated, name, address and telephone number of the WG shall be clearly labelled on the containers that are used to store the scheduled wastes.

2. Containers of SW shall be clearly labelled in accordance with the types applicable to them as specified in the Third Schedule and marked with the SW code as specified in the First Schedule for identification and warning purpose.

3. No person is allowed to alter the markings and labels mentioned in subregulations (1) and (2)

https://www.doe.gov.my/en/environmental-quality-scheduled-waste-regulations-2005-p-u-a-294-2005/

EQ (SCHEDULED WASTE) REGULATIONS: REGULATION 9

STORAGE INFRASTRUCTURE	
Storage Capacity	-Large enough to accommodate normal waste production or irregular waste production -Sufficient enough for segregation
Storage Design	-Area should ideally be roofed and side wall to protect from other elements. -Floor must be covered with concrete -Signboard 'DANGER'(30cm on bright yellow background) should be set up at the entrance. -Container(inc drums) on pallets. Max 4 drums per pallet. Not to be stacked more than 2 drums high -Not to be stacked horizontally -Ample aisle space between groups of containers for: 1. Free movement of forklift 2. Emergency fire fighting purposes 3. Emergency escape route 4. Ease for Inspection

EQ (SCHEDULED WASTE) REGULATIONS: REGULATION 9

Containment and Drainage	-Containment bund of sufficient capacity to contained: 1. 10% of volume of all container or 2. Volume of largest container whichever is greater. -Floor to be: 1. Impervious base 2. Free of cracks or gaps. 3. Property sloped towards collective pit/sump
Storage area for incompatible and high-risk waste	-Area protected from sources of ignition or reaction such as smoking, welding, radiant heat etc. -Area sub-divided to hold incompatible waste, high risk waste etc by impermeable wall. -For explosive or highly flammable wastes, area to be located at least 16m from facilities boundary fence
Ventilation	Good ventilation

EQ (SCHEDULED WASTE) REGULATIONS: REGULATION 9

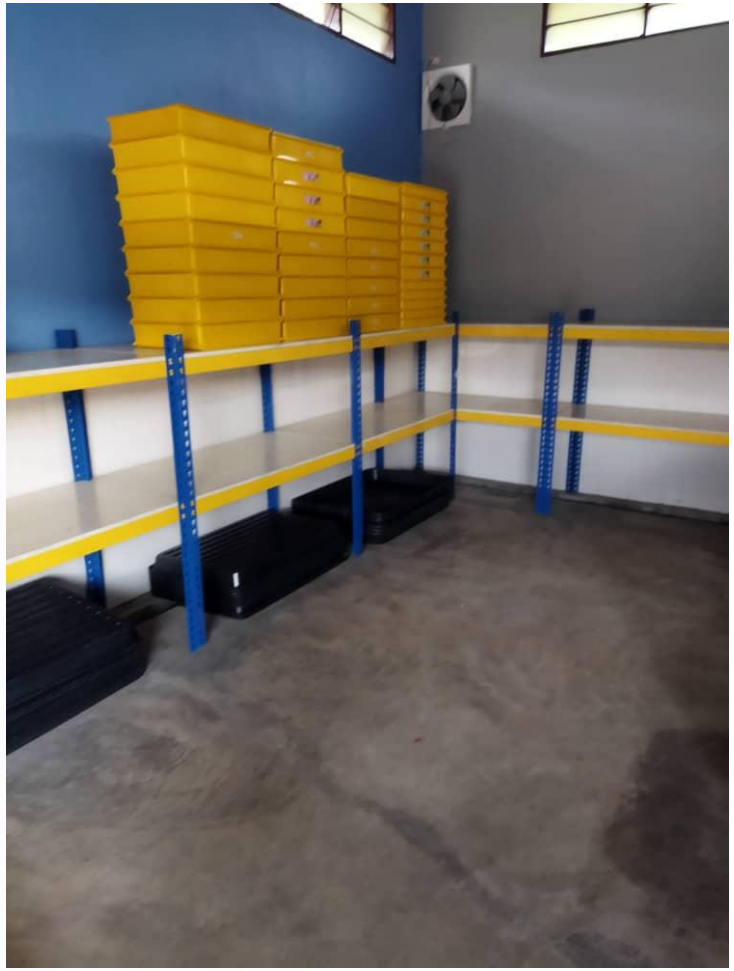
STORAGE OPERATIONS	
Containers management	-Filling by pumping, shoveling or tripping at or near area where waste is generated -Container always closed during storage except when inspected, sampled, emptied or fixed. -Containers must be not handled, opened or stored in manner which may cause them to leak. -On Becoming full, the containers should be date labeled and transferred to more storage area.
Container Sealing	-Container to be tightly sealed and no leakage, bulging, rusting or bad dents. -Gaskets used must not significantly deteriorate in presence of waste.
Safety	-Operatives to wear protective clothing/equipment -Use funnel or tube for filling containers with liquids.

EQ (SCHEDULED WASTE) REGULATIONS: REGULATION 9

Response to Spillage 	-Transfer of waste between containers is not permissible if leak or spill is discover must: 1. Trace reason and sources of leaks or spills 2. Transfer leaky drum into a larger container 3. Clean up the spillage
Unknown Waste	-The waste to be sealed in plastic bags labeled “unknown” and placed in a drum labeled “unknown” -Any unknown waste shall be treated as high risk to be segregated until the identities are known.
Handling Duration	180 days

Best Practice For Waste Storage

Best Practice For Waste Storage



Best Practice For Waste Storage

Regulation & Guidelines

STANDARD PACKAGING MATERIALS

Regulation & Guidelines

STANDARD PACKAGING MATERIALS

Type of containers	Type of scheduled wastes	Packaging Requirement
Bunghole drum (steel/plastic)  	• Inorganic or organic liquid waste • Steel drums should not be used for corrosive wastes such as acids or alkalis • Plastic drums compatible with most solvents. Solvents that are not compatible with plastic such as Diethyl Ether and Chloroform should be stored in steel drums	• No hole, no bulge, and free of dent and corrosion

Regulation & Guidelines

STANDARD PACKAGING MATERIALS

Open top drum with cover and clamp (steel/plastic) 	• Solid waste • Steel drums should not be used for acidic or alkaline waste • Example: sludge, e-waste, pharmaceutical waste, laboratory waste, contaminated gloves etc.	• No hole, no bulge, and free of dent and corrosion

Regulation & Guidelines

STANDARD PACKAGING MATERIALS

Intermediate bulk container 	• Used for a broad range of waste streams such as oils, solvents and acids	• No hole or crack
Jerrican / carboy 	• Inorganic or organic liquid waste such as chemical wastes, solvents, etc	• No hole or crack

Regulation & Guidelines

STANDARD PACKAGING MATERIALS

Corrugated box / carton box 	• Dry solid waste with no free-flow liquid generated in small quantity • Example: e-waste, contaminated rags, expired drugs, cosmetics, etc.	• No tear or hole
Flexible Intermediate Bulk Containers (FIBCs)/ Jumbo Bags 	• Dry solid waste with no free-flow liquid • Example: dust, slag, ash, clinker, e-waste, dry sludge, contaminated rags / garnet, etc.	• Preferably FIBCs made of high density poly ethylene (HDPE) • Must be doubled lining • Bags not to be filled more than 90% for secure packaging

Regulation & Guidelines

Best Packaging Method

- Best practice on quantity of chemical bottles into 1 drum

1. 2.5L bottle – 15 pcs/drum
2. 4L bottle – 10 pcs/drum

- Or to utilize up to 80% of drum space by ensuring the condition of small bottles are safe.
- Only COMPATIBLE CHEMICAL will be packed into a same drum
- Please LABEL ANY HIGH-RISK CHEMICAL on the drum

Regulation & Guidelines

Best Packaging Method

Carboy / Pail on Pallet

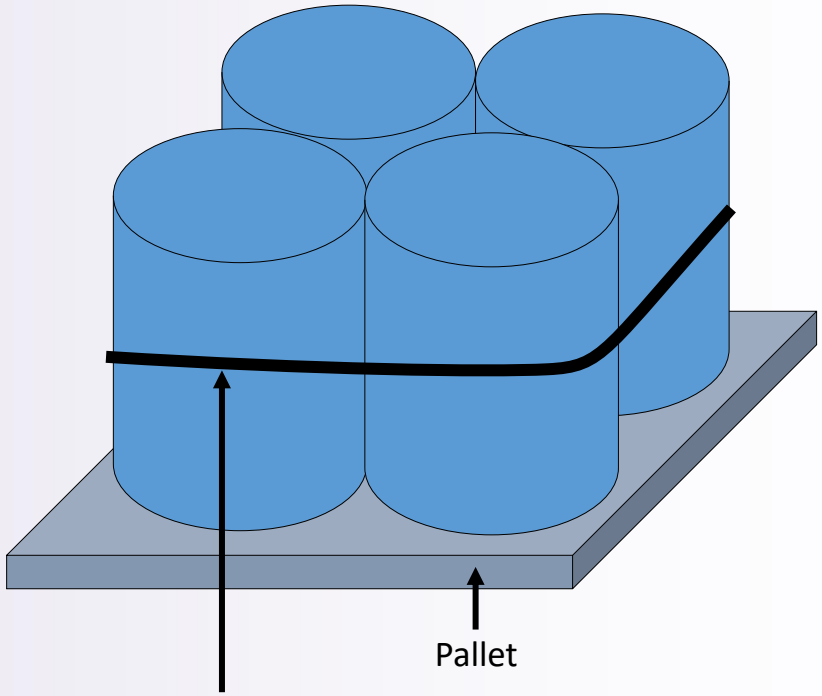
- Only 20L and above container can be put directly on a pallet

- Maximum of 16 carboy 20L per pallet

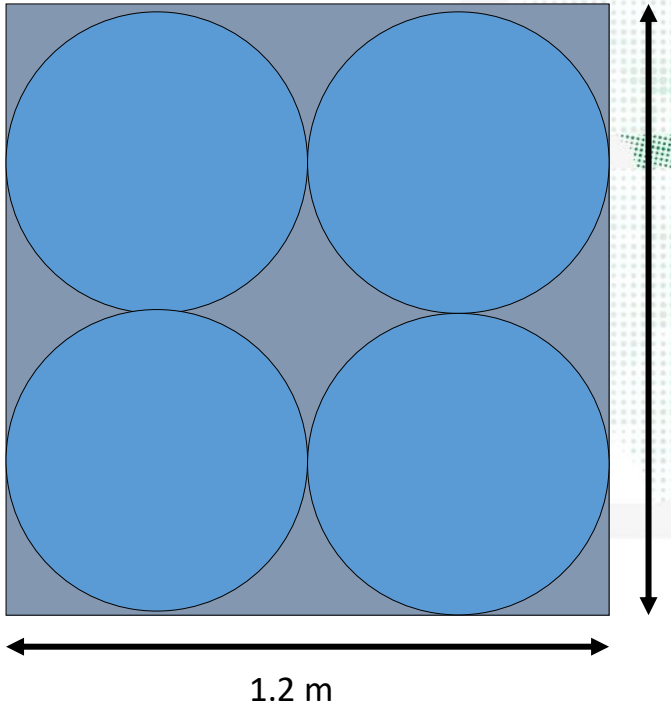
Regulation & Guidelines

Best Packaging Method

Side view of 4 drums on pallet



Top view of 4 drums on pallet



Regulation & Guidelines

Best Packaging Method

Regulation & Guidelines

Best Packaging Method

CHEMICAL WASTE PACKAGING
Group of Chemical

Liquid Chemical:

1. Flammable Liquid (Solvent)
2. Acid (Organic/Inorganic/Strong/Weak)
3. Alkali (Strong/Weak)
4. Oxidizer

Solid Chemical:

1. Miscellaneous
2. Oxidizer
3. Flammable Solid

CHEMICAL WASTE PACKAGING
Group of Chemical

1. Organic Peroxide
2. Chloroform
3. Mercury

These items need to be contained in a different packaging materials than others. The drum **MUST BE LABBELED / TAGGED** accordingly.

CHEMICAL WASTE PACKAGING
Group of Chemical (Pyrophoric)

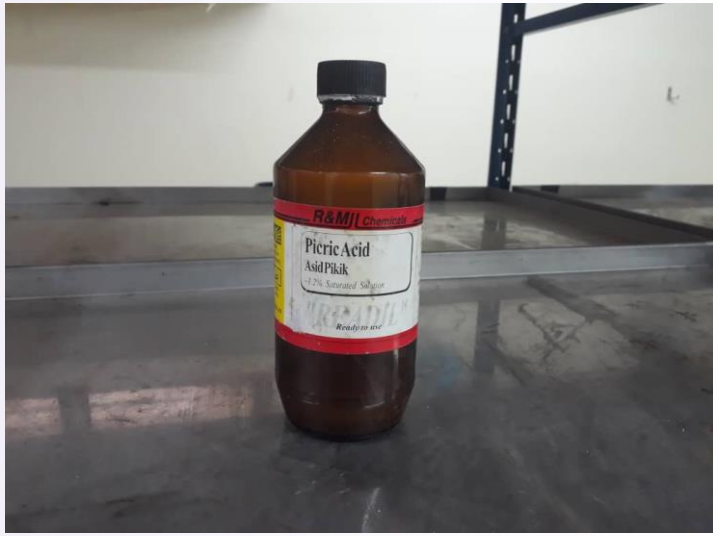
1. Sodium Metal
2. Potassium Metal
3. Lithium Metal
4. Phosphorus Powder

These chemicals need to be immersed in the paraffin oil to ensure no reaction happened during transportation and storage.
If there are no more paraffin oil, **PLEASE DO NOT COLLECT**

CHEMICAL WASTE PACKAGING

List of chemical / items which cannot be collected by Kualiti Alam

1. Picric Acid – Explosive due to motion
2. Radioactive – Radiation
3. Explosive materials – Magazine, grenade or pistol



Picric Acid

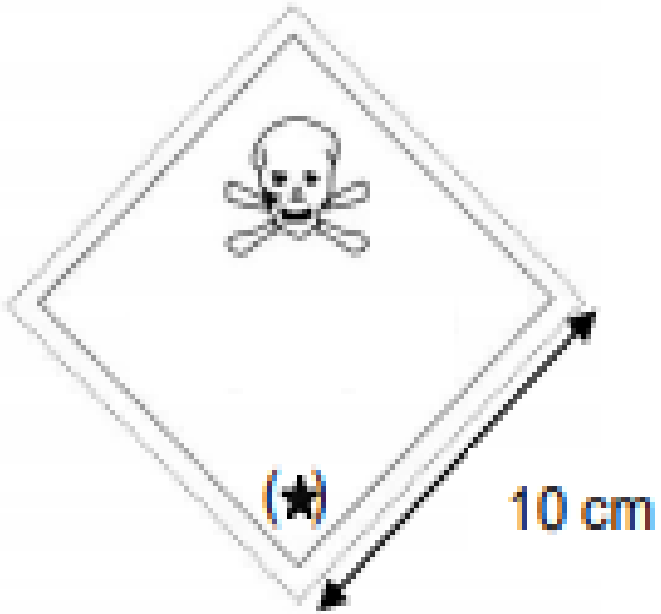
Radioactive

Regulation & Guidelines

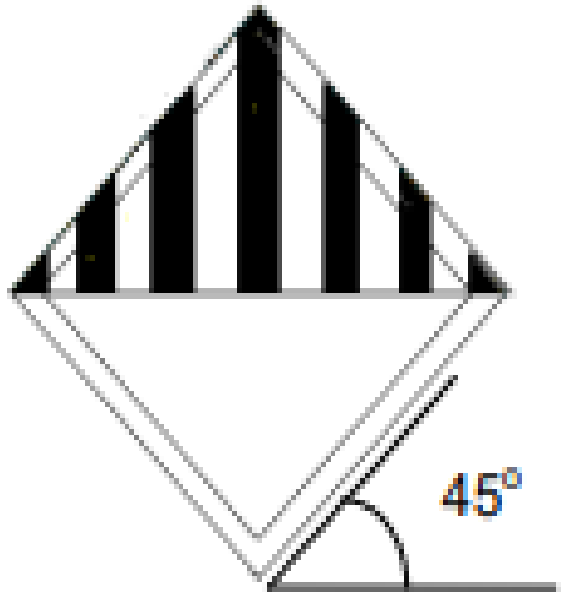
Standard Requirement Label from DOE

MIXTURE OF MISCELLANEOUS DANGEROUS SUBSTANCES
(WASTE)

Waste code	:	
Waste name	:	
Date generated	:	
Name of waste generator	:	
Address and telephone number	:	



TOXIC SUBSTANCES
(WASTE)



MIXTURE OF MISCELLANEOUS DANGEROUS SUBSTANCES
(WASTE)

EQ (SCHEDULED WASTE) REGULATIONS: REGULATION 10

LABELLING OF SCHEDULED WASTES

Label 1

- EXPLOSIVE SUBSTANCES (WASTE)
- Symbol (exploding bomb): black
- Background: light orange

Label 2

- INFLAMMABLE LIQUIDS (WASTE)
- Symbol (flame): black or white
- Background: red

Label 3

- INFLAMMABLE SOLIDS (WASTE)
- Symbol (flame): black;
- Background: white with vertical red stripes

LABELLING OF SCHEDULED WASTES

Label 4

- SOLID: SPONTANEOUSLY COMBUSTIBLE(WASTE)
- Substance liable to spontaneous combustion
- Symbol (flame): black
- Background: upper half white, lower half red

Label 5

- SOLID: DANGEROUS WHEN WET(WASTE)
- Substances which, if in contact with water, emit inflammable gases
- Symbol (flame): black or white; Background: blue

Label 6

- OXIDIZING SUBSTANCES (WASTE)
- Symbol (flame over circle): black
- Background: yellow

LABELLING OF SCHEDULED WASTES

Label 7

- ORGANIC PEROXIDES(WASTE)
- Symbol (flame over circle): black
- Background: yellow

Label 8

- TOXIC SUBSTANCES(WASTE)
- Poisonous (toxic) substances
- Symbol (skull over crossbones): black
- Background: white

EQ (SCHEDULED WASTE) REGULATIONS: REGULATION 10

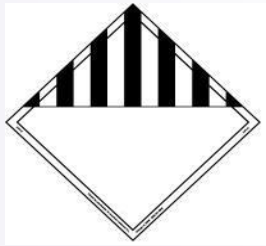
LABELLING OF SCHEDULED WASTES

Label 9

- INFECTIOUS SUBSTANCES(WASTE)
- Symbol (three crescents superimposed on a circle): black
- Background: white

Label 10

- 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

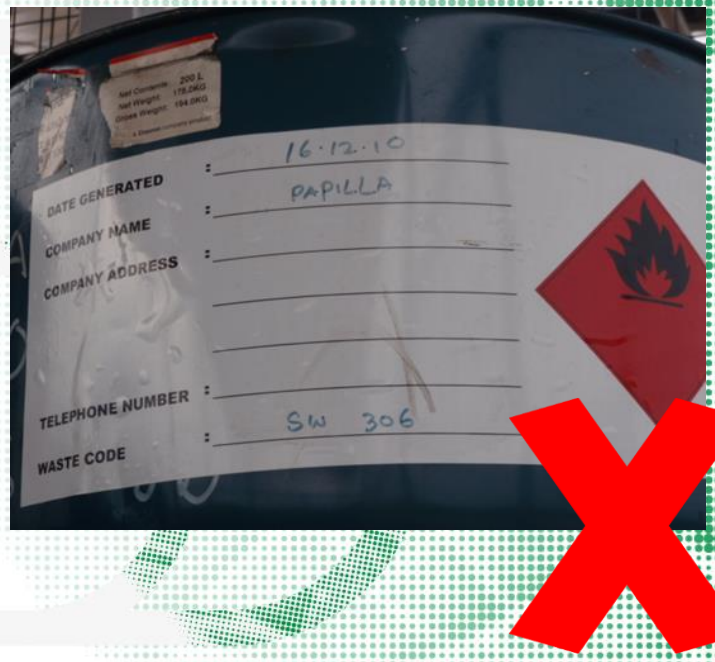


Label 11

- MIXTURE OF MISCELLANEOUS DANGEROUS SUBSTANCES(WASTE)
- Symbol (nil)
- Background: white with upper half vertical black stripes

EQ (SCHEDULED WASTE) REGULATIONS: REGULATION 10

Non-Compliance Labelling



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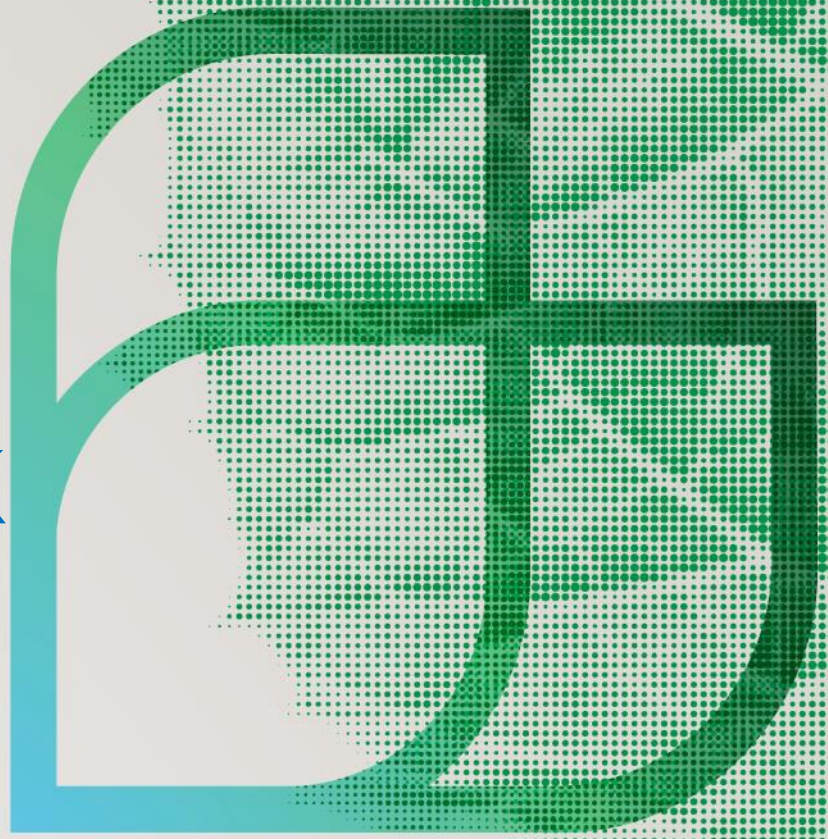
PPE REQUIREMENT DURING PACKAGING WORK



SHIELD Safety 1st

Personal Protective Equipment (PPE)

Standard PPE

List of PPE

1. Safety Helmet
2. Goggle
3. Respirator
4. Nitrile Glove
5. Tyvek / Coverall
6. Safety Shoes

Personal Protective Equipment (PPE)

Standard PPE

Respirator

Color Coding for 3M™ Chemical Cartridges		
6001	Organic Vapor	Black
6002	Acid Gases	White
6003	Organic Vapor/Acid Gases	Yellow
6004	Ammonia/Methylamine	Green
6005	Formaldehyde/Organic Vapor	Olive/Black
6006	Multi-Gas/Vapor	Olive
6009	Mercury Vapor/Chlorine Gas	Orange

Personal Protective Equipment (PPE)

Standard PPE

CHEMICAL GLOVE

FUNCTION
- Reusable glove
- Better chemical protection

SUITABLE FOR
- Routine chemical handling
- Handling concentrated and corrosive chemical

GRIP GLOVE

FUNCTION
- Reusable glove
- Provide extra grip at hand
- Prevent from slip object from hand

SUITABLE FOR
- Lifting and holding materials or equipments

NITRILE GLOVE

FUNCTION
- Disposable glove
- Chemical protection
- Not suitable for concentrated chemical handling

SUITABLE FOR
- Chemical activity

COTTON GLOVE

FUNCTION
- Protect against dirt, splinter and slippery objects
- Abrasion protection

SUITABLE FOR
- Non-chemical activity
- General housekeeping e.g. no liquid exposure, no heavy material and sharp edge handling.

Personal Protective Equipment (PPE)

Purpose of PPE

1. Avoid skin or body contact with hazardous waste
2. Protect eyes and face
3. Avoid breathing corrosive vapors, fume, dust or mist.

Personal Protective Equipment (PPE)

Approved PPE shall be;

1. Fit the employer
2. Suitable to type of work
3. Not adversely affect the health or medical condition
4. Sufficient supply and readily available

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RISKS & CONSEQUENCES FROM IMPROPER PACKAGING AND SEGREGATION

SHIELD Safety 1st

RISKS & CONSEQUENCES FROM IMPROPER PACKAGING AND SEGREGATION

Chemical Reaction

Heat Generation

Polymerize

Violent Reaction

RISKS & CONSEQUENCES FROM IMPROPER PACKAGING AND SEGREGATION

Chemical Reaction

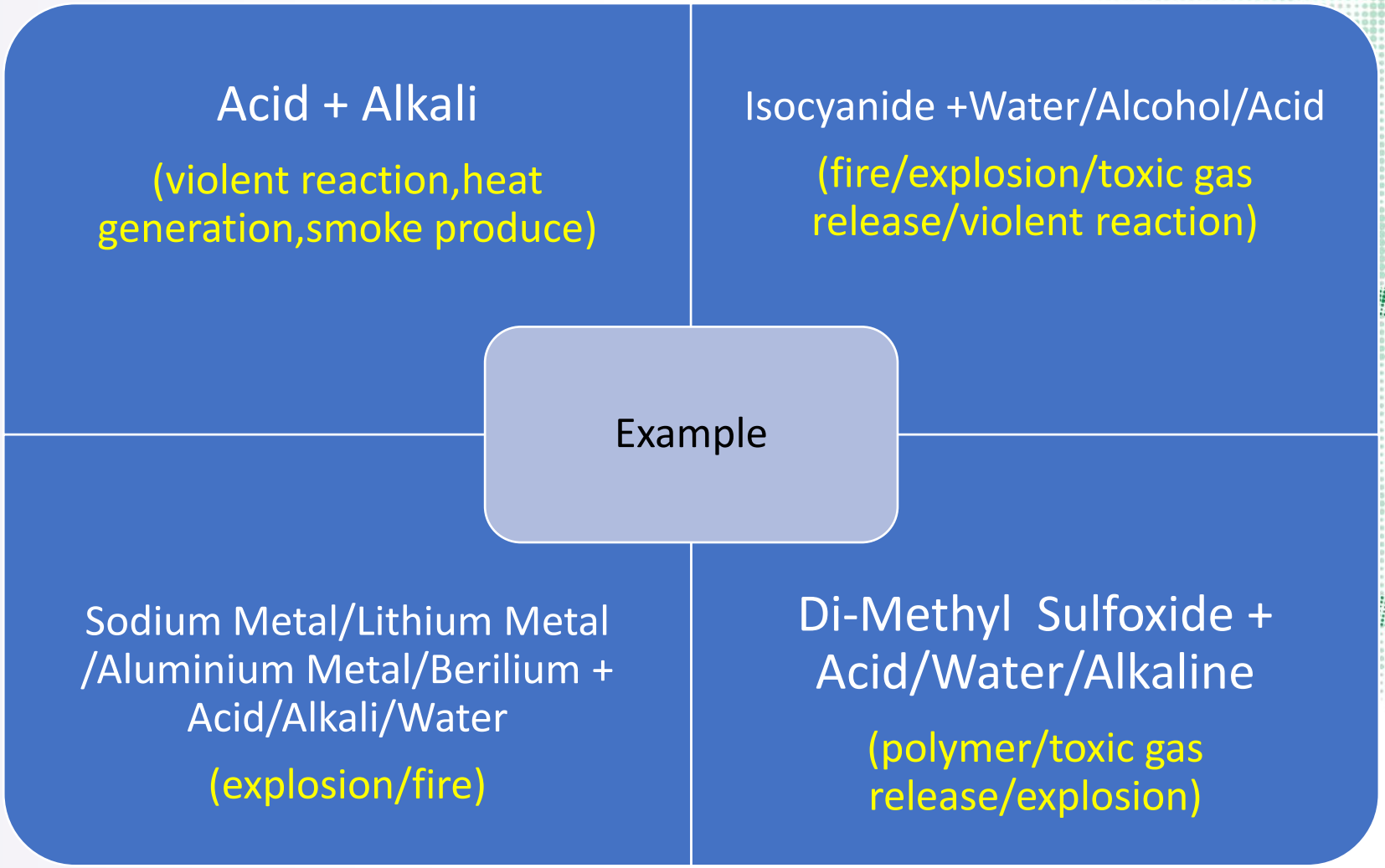
Fire / Explosion

Toxic Gas Release

Flammable Gas Release

RISKS & CONSEQUENCES FROM IMPROPER PACKAGING AND SEGREGATION

Risk Of Incompatibility Of Chemical



RISKS & CONSEQUENCES FROM IMPROPER PACKAGING AND SEGREGATION

Chemical Effect To Human Health

1

Ketoksikan
Toxicity

2

Kerengsaan kulit
Skin irritation

3

Kerosakan mata
Eye damage

4

Kakisan
Corrosion

5

Alergi
Allergic

6

Kanser
Cancer

7

Mutasi
Mutation

8

Sesak nafas
Breathing difficulties

RISKS & CONSEQUENCES FROM IMPROPER PACKAGING AND SEGREGATION

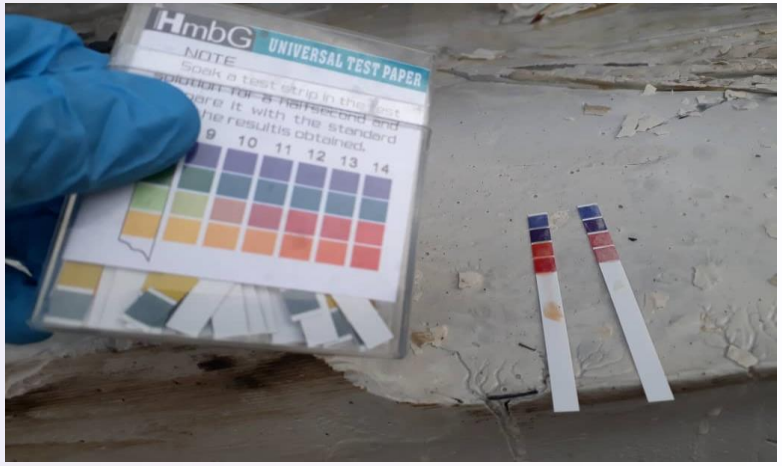
Non – Compliance Packaging

RISKS & CONSEQUENCES FROM IMPROPER PACKAGING AND SEGREGATION

Fire Incident & Gas Release Due To Incompatibility Of Chemical

RISKS & CONSEQUENCES FROM IMPROPER PACKAGING AND SEGREGATION

Spillage due to Improper Packaging



RISKS & CONSEQUENCES FROM IMPROPER PACKAGING AND SEGREGATION

Video : Effect of Non-Comply Packaging

RISKS & CONSEQUENCES FROM IMPROPER PACKAGING AND SEGREGATION

Video : Explosion Incident

Thank You

@cenvirogroup

Cenviro Sdn. Bhd. 199601003359 (375705-V)
13th Floor, Mercu UEM
Jalan Stesen Sentral 5
Kuala Lumpur Sentral
50470 Kuala Lumpur, Malaysia

G +603 27276100 F +603 2727 2100