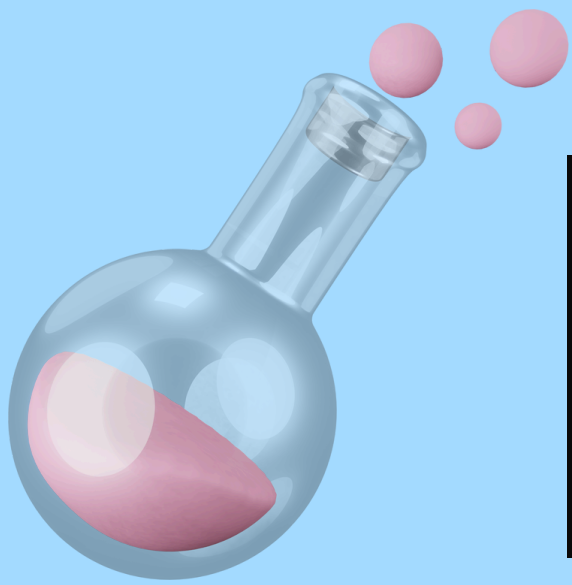





Chemicals?



"Chemical" means chemical elements, or compounds or mixtures thereof, whether natural or synthetic, but does not include micro-organism.



Chemical Hazardous to Health

Any chemical or preparation which :

- (a) Is listed in Schedule I and II USECHH Regulation 2000.
- (b) possesses any of the properties categorised in Part B of Schedule I of the CLASS Regulation 2013.
- (c) comes within the definition of " pesticide " under the Pesticides Act 1974; or
- (d) is listed in the First Schedule of the Environmental Quality (Schedule Wastes) Regulations 1989.

Reference : Occupational Safety & Health (Use & Standards of Exposure of Chemicals Hazardous to Health) Regulation 2000.

Proper Chemical Safety Tips

CREATE A RESPONSE PLAN

Think about what could go wrong and pay close attention to what you're doing while you work. Learn about emergency procedures and equipment

USE PROTECTIVE GEAR

Use the necessary PPE. Inspect it carefully before each use to make sure it's safe to use. Replace worn out or damage PPE.

REGULAR INSPECTION

Make sure all containers and equipment used to handle chemicals are in good working condition. Check glassware for signs of cracking and make sure any contaminated items are disposed properly

ALWAYS READ LABELS & SDS

Read labels and the safety data sheet (SDS) before using any material to make sure you understand hazards and precautions related to the chemical used. Communicate hazards to everyone in the facility

SAFETY EQUIPMENT

Ensure that you know the location of eyewash stations, drench showers, fire extinguishers, and first aid kits, and regularly check that they are properly maintained. so that users who are exposed to chemicals can quickly access these tools in an emergency to lessen the effects of their exposure.

KEEP AIR FLOWING

Ensure good ventilation in laboratories and other areas where chemicals are used. Make sure proper airflow and filtration systems are in place to minimize chemical exposure.

GET ORGANIZED

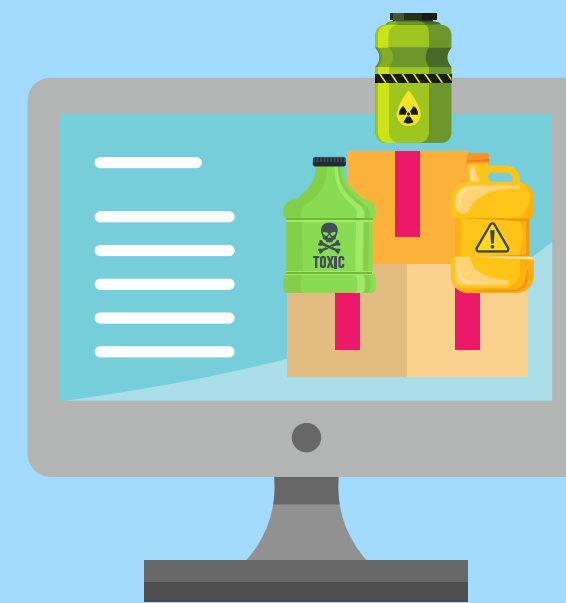
Store all materials properly. Separates chemicals based on the incompatibility group. Make sure the store is well ventilated and free from water or any ignition sources. Practice regular house keeping and self hygiene to reduce the contamination risk

FOCUS ON TRAINING

Engage in continuous education to stay informed and prepared. Ensure that every member who is at risk of chemical exposure fully understands the associated risks and hazards, as well as how they could be personally impacted



Procurement of Chemical



RISK CONTROL

Purchasing based on resource needs for teaching, research, consulting, and service activities or general activities.

Elimination and Substitution:

- Safer alternatives:
 - Investigate other chemicals, method & procedure that is safer. Consider waste disposal production
- Substitution: Choose the less hazardous chemicals for example hexane instead of heptane. N-heptane will not form toxic metabolites
- Reduce the size: Always purchase minimal volumes for the rate of use that is required
- Reduced the concentration: Always purchase the lowest concentration of chemicals as far as practicable for the activity.

Engineering and isolation:

- Storage capacity available at the storage location
- Consider incompatibility, space and stability of chemical

Consult Laboratory Manager or PIC Chemical Store of each research laboratories for :

- List of chemicals available
- Current stock level
- Quantities of chemicals and their use at the facility

ORDERING CHEMICAL

Use USM e-procurement method to place orders.

- Ensure the Safety Data Sheet (SDS) and/or certificate of analysis (CoA) specified in the e-procurement specification, are provided in both Malay and English versions

REGULATION REQUIREMENT

Labeling & Relabeling

- Labeling on each packaging must comply to CLASS Regulation 2013

Safety Data Sheet (SDS)

- Supplier must be able to supply chemical together with the SDS that comply to ICOP 2014.

First Aid, Emergency Response & PPE

- Refer SDS.

Training & Safe Work Procedure

- Training is conducted.
- Safe work procedure is prepared.



Procurement of Chemical



 USM UNIVERSITI SAINS MALAYSIA	 APEX™	RESEARCH LABORATORY SCHOOL OF DENTAL SCIENCES		Document No.:	PPSG/GPI/RL/02/R01
				Effective Date:	01.09.2024
				Page No:	1 / 2
CHEMICAL APPLICATION & DECLARATION FOR RESEARCH					

Applicant must fill in item no. 1,2 & 3 before reviewed by TDR and Science Officer R&I at no 4.



1. APPLICANT'S PERSONAL PARTICULARS							
Requester must be <i>USM Staff – academician (project leader, head of laboratory, supervisor) or research officer/assistant for a laboratory or facility where the hazardous or regulated chemicals will be stored or used.</i>							
Name of Staff							
Staff ID No.		Department / Unit					
e-Mail		Grant No.					
Hand Phone No.							
Purpose of chemical purchased		Consultation	<input type="checkbox"/>	Services	<input type="checkbox"/>	Teaching	<input type="checkbox"/>
		Research & Development	<input type="checkbox"/>	Others (Please state): _____			
2. CHEMICAL DETAILS							
Please review the list of hazardous or regulated chemicals. Attached the quotation and form related with the purchase.							
No.	Name of Chemical	CAS & product number	Hazard Sign	Current stock in store	Purchase Quantity	Legislation related ("if any")	
3. HAZARDOUS OR REGULATED CHEMICALS PURCHASING CHECKLIST (Fill in before procurement process).							
ITEM						ACTION	
						YES	NO
Existing chemical stock in the laboratory has been checked (refer list of chemical available)							
Study method/ guideline/ procedure/ manual is available as reference.							
The size and quantity of item purchased has been considered in accordance with the rate of material consumption.							
Proper Personal Protective Equipment (PPE) is provided for the use of hazardous chemicals.							
Appropriate location and facility are available for storage of chemical. Please state the location for chemical storage: _____							
Safe location for the use and handling of chemical has been identified. Please state the location for chemical handling: _____							
Ensure the chosen supplier is able to supply chemical with SDS in bilingual (Malay and English Version)							
4. REVIEWED BY SCIENCE OFFICER R&I (*Before procurement process)							
<i>Procurement process is not allowed without approval from the TDR and Science Officer of R&I.</i>							
"I hereby declare that the above information has been reviewed and applicant is allowed to proceed with the chemical purchase."							
Laboratory Manager signature & stamp Date: _____		Science Officer R&I signature & stamp Date: _____		TDR signature & stamp Date: _____			

 USM UNIVERSITI SAINS MALAYSIA	 APEX	RESEARCH LABORATORY SCHOOL OF DENTAL SCIENCES		Document No.:	PSPG/GP/R L/02/R01
				Effective Date:	01.09.2024
				Page No:	2 / 2
CHEMICAL APPLICATION & DECLARATION FOR RESEARCH					

5. CHECKLIST ON RECEIVING CHEMICALS FROM SUPPLIER		
Payment process is not allowed without approval from the Laboratory Manager of each lab and Science Officer R&I		
NO.	ITEM	ACTION
		YES
1.	Clear labeling and packaging, compliant with CLASS Regulation 2013, have been ensured	
2.	Packaging has been confirmed to be free from contamination	
3.	Delivered chemicals have been verified to match the description as per the order.	
4.	The latest bilingual Safety Data Sheet (SDS) (Malay/English), with a preparation or revision date within the last five (5) years, should be obtained either: a) As a hard copy from the supplier. b) As a soft copy through the Science Officer (R&I) via the USM e-procurement system.	
5.	For chemicals without an expiration date: a) They should be used and stored for up to five (5) years from the manufacturing date. b) Upon receiving the product, an expiry date should be assigned, set to five (5) years from the opening date (which must occur within one year of the delivery order date), and recorded in the chemical registration.	
6.	The Chemical Register has been completely updated for all chemicals ordered.	
7.	The SDS and Chemical Register have been successfully submitted to each laboratory, respectively	
8.	The QR code for the Chemical Inventory should be scanned and updated at the entrance of the chemical store.	
10.	The invoice and delivery order have been provided by the supplier and uploaded into the USM e-procurement system	
11.	The date of receipt and the owner's name should be written on the chemical container.	
	Chemicals must be stored correctly and safely.	
6. CHEMICAL RECEPTION DECLARATION ("Before payment process")		
<i>"I hereby declare that the above information is true and I will be fully responsible in managing chemical health and safety requirement for the chemical listed."</i>		
<div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div> <p>.....</p> <p>Applicant's signature & stamp</p> <p>Date:</p> </div> <div> <p>.....</p> <p>Laboratory Manager signature & stamp</p> <p>Date:</p> </div> <div> <p>.....</p> <p>Science Officer R&I signature & stamp</p> <p>Date:</p> </div> </div>		

Instruction to User:

1. This form is created to control the purchase of chemicals by all authorized personnel
2. Ensure that all purchased chemicals are properly registered and recorded.
3. Retain this form until all tasks (1-6) are completed.
4. Once all tasks are completed, submit the form to the Science Officer in the Research & Innovation (R&I) department.
5. The original completed form will be kept by the Science Officer for record-keeping purposes.

 	<p align="center">RESEARCH LABORATORIES</p> <p align="center">SCHOOL OF DENTAL SCIENCES</p>	<p>Page :</p>
	<p align="center">REGISTER OF CHEMICALS HAZARDOUS TO HEALTH</p>	<p>Revision :</p> <p>Date :</p>

Section A: COMPANY INFORMATION

Name	:																				
Address	:																				
City	:											Postcode	:								
State	:																				
Telephone no	:																				
Email	:																				

DOSH Registration No	:																				
(Refer to Appendix 4 for Code of Sector & Appendix 5 for Class of Industry)																					
Code of Sector	:																				
Class of Industry	:																				
Company Activity (Please enter (/) in the appropriate box)																					
Manufacturer	:																				
Distributor	:																				
Formulator	:																				
Importer	:																				
End-user	:																				

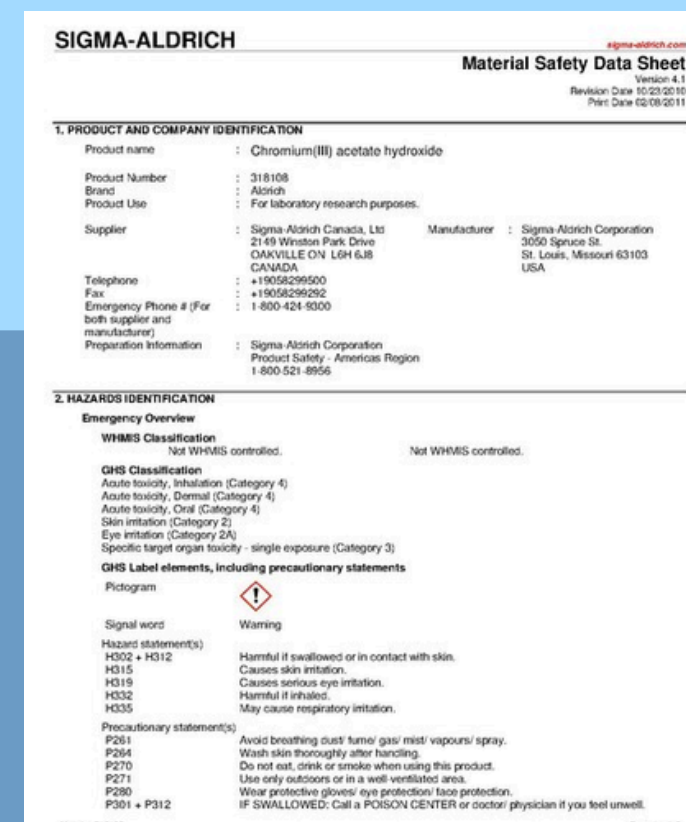


Safety Data Sheets (SDS)

**Compulsory in
Malay & English
Version**

DEFINITION

SDS is an **up-to date hand-out** or **information sheet** containing relevant **information pertaining to the hazardous chemicals** which is **vital for establishing arrangements in the safe use of the chemicals at work.**



LEGAL REQUIREMENT



CLASS REGULATION 2013 Part V – Safety Data Sheet
Duty to furnish Safety Data Sheet (Regulation No. 13)

1. A supplier shall furnish a Safety Data Sheet to a chemical recipient for:
 - Each hazardous chemical supplied; and
 - Any chemical mixture if hazardous substance concentration exceeding the cut-off value [even though the mixture itself may not be classified as hazardous substance].

OBJECTIVES OF SDS

1

To make users of hazardous chemicals **understand safety recommendations and the rationale.**

2

To **create awareness** of the consequences of failure to comply.

3

To encourage the users to provide inputs in **establishing strategies and recommendations for the safe use of the hazardous chemicals.**

4

To ensure that users of hazardous chemicals **recognize the symptoms of overexposure.**

WHEN TO REVISE SDS



A supplier shall revise a SDS if:

1. **New information** on a particular hazardous chemical becomes available
2. **More than five years have elapsed** since the last date of preparation or revision of the Safety Data Sheet or
3. So **directed by an officer.**

SDS FORMAT

Section 1: Identification of the hazardous chemical and of the supplier;
Section 2: Hazard identification;
Section 3: Composition and information of the ingredients of the hazardous chemical;
Section 4: First-aid measures;
Section 5: Fire-fighting measures;
Section 6: Accidental release measures;
Section 7: Handling and storage;

Section 8: Exposure controls and personal protection;
Section 9: Physical and chemical properties;
Section 10: Stability and reactivity;
Section 11: Toxicological information;
Section 12: Ecological information;
Section 13: Disposal information;
Section 14: Transportation information;
Section 15: Regulatory information; and
Section 16: Other information.



Receiving of Chemical



Upon arrival of chemical, we must inspect each item ordered.

CHECKLIST ON RECEIPT OF CHEMICAL

- ☐ The special requirements of the chemicals are met. e.g: refrigeration and receipt only to an authorized person
- ☐ Delivered chemicals match the description as per the order.
- ☐ Packaging is free from contamination.
- ☐ Delivered chemicals has clear labelling comply with CLASS 2013 Regulations such as:
 1. The product identifier
 2. The supplier identification
 3. Name of active ingredient
 4. Physical form of chemical
 5. The hazard statement
 6. The hazard pictogram
 7. The precautionary statement
- ☐ Invoice and delivery order (DO) is provided for finance purposes.

CHECKLIST WHEN CHEMICAL ARRIVED TO THE LABORATORY

- ☐ Ensure the current SDS and/or Certificate of Analysis (CoA) is provided / accessible
- ☐ Store SDS in a dedicated folder on a secure shared drive (soft copy) and accesible for all users
- ☐ Contact the user for the process of claiming the chemical materials
- ☐ Update the Chemical Inventory and Chemical Register.
- ☐ Write date of receipt, owner name on chemical container.
- ☐ Chemical with **NO expiration date**: Store until 5 years from opening date (within 1 year from DO date) and record expiry date in chemical registration
- ☐ Store the chemicals correctly and safely.

CHEMICAL INVENTORY BY USER

AT THE ENTRANCE OF CHEMICAL STORE



Scan this QR code
BEFORE STORING
chemical

"If you DO NOT properly record stored items, they may be at risk of being disposed of or lost"



Scan this QR code
BEFORE TAKING
OUT chemical

Applies **ONLY to stock** taken out and NOT RETURNED

CHEMICAL REGISTRATION BY USERS

- ☐ Section A: Register of Chemicals Hazardous to Health (Company information)
- ☐ Section B: List of Chemicals Hazardous to Health (Chemical information)
- ☐ Section C: Name of Person Who Prepared or Reviewed

CHEMICAL STORAGE

Display warning signs/stickers noting that the area is a storage area for hazardous chemicals at the entrance of chemical store to notify all authorize personnel (coloured print on white paper)



AMARAN / WARNING !

**KAWASAN PENYIMPANAN BAHAN
KIMIA BERBAHAYA KEPADA
KESIHATAN**

**CHEMICALS HAZARDOUS TO
HEALTH STORAGE AREA**

Separate and segregate chemical based on chemical properties or hazard classification and compatibility with other chemical

Do's

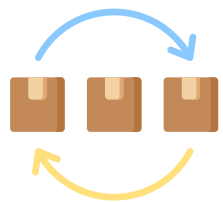
- ☒ Use Appropriate Storage as specified in the Safety Data Sheets (SDS).
- ☒ Fix shelves to the wall and install rim guards on the edges to prevent falls.
- ☒ Place heavier or larger bottles on lower shelves.
- ☒ Ensure chemical containers and lids are in good, secure condition.
- ☒ Label storage cabinets, lockers, and refrigerators with the type of chemicals they contain.
- ☒ Wear appropriate personal protective equipment (PPE) when handling hazardous chemicals, ensuring that PPE is undamaged

Don'ts

- ☒ Do not store food or beverages in refrigerators used for chemical storage. Label these areas with: "No Food – Chemical Storage Only."
- ☒ Do not store chemicals on shelves higher than 1.5 meters or above shoulder level.
- ☒ Do not store liquid chemicals above eye level, in aisle ways, on laboratory counters, or in locations where they can be easily knocked over.
- ☒ Do not expose chemicals to heat or direct sunlight.
- ☒ Eating, drinking, and smoking are strictly prohibited in chemical storage areas.

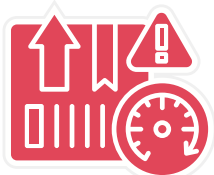


Handling of Chemical



First-in, First-out (FIFO)

Prioritize the use of older chemicals first.



First Expired, First Out (FEFO)

Prioritize chemicals with the nearest expiration dates for use before newer ones.



Chemical Identification

Identify all chemicals involved in the work process before beginning any tasks.



Read Labels

Always read chemical labels before use.



Safety Data Sheet (SDS)

Understand the relevant SDS before handling any chemicals. Regularly review and update the SDS for new information



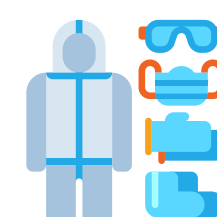
Standard Operating Procedures (SOPs).

Strictly observe and comply SOPs



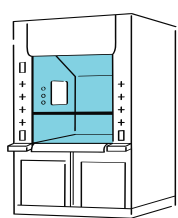
Understand Hazards

Familiar with the potential hazards and know the appropriate actions to take such as spills



Personal Protective Equipment (PPE)

Wear suitable PPE, confirming that it is undamaged



Ventilation

Ensure the fume hood is operational and use it to control exposure during experiments.



Limit Quantities

Only keep small working quantities of chemicals in laboratories; excess chemicals should be stored in a designated chemical storage area.



Track Usage

Keep track of when each chemical was first opened. Write open date



Avoid Mixing Unknowns

Never mix unknown compounds.



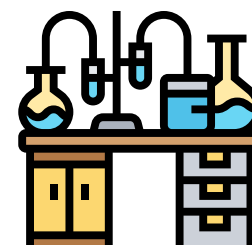
Avoid Contamination

Never return excess reagents or chemicals to their original stock bottles.



Disposal Preparedness

Have disposal containers ready before starting work.



Work Surface Cleanliness

Maintain a clean work surface both before and after completing tasks.



Proper Storage

Store chemicals in their original and designated locations



The owner of the chemical will hold responsibility for any incidents caused by improper chemical usage, handling and storage



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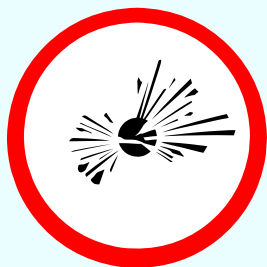
Labelling & Relabelling of Chemical

CLASS REGULATIONS 2013

CHEMICAL PICTOGRAM



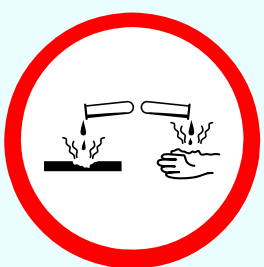
FLAMMABLE



EXPLOSIVE



TOXIC



CORROSIVE



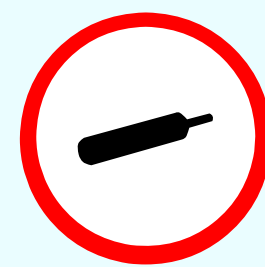
OXIDIZING



HEALTH HAZARD



HARMFUL IRRITANT



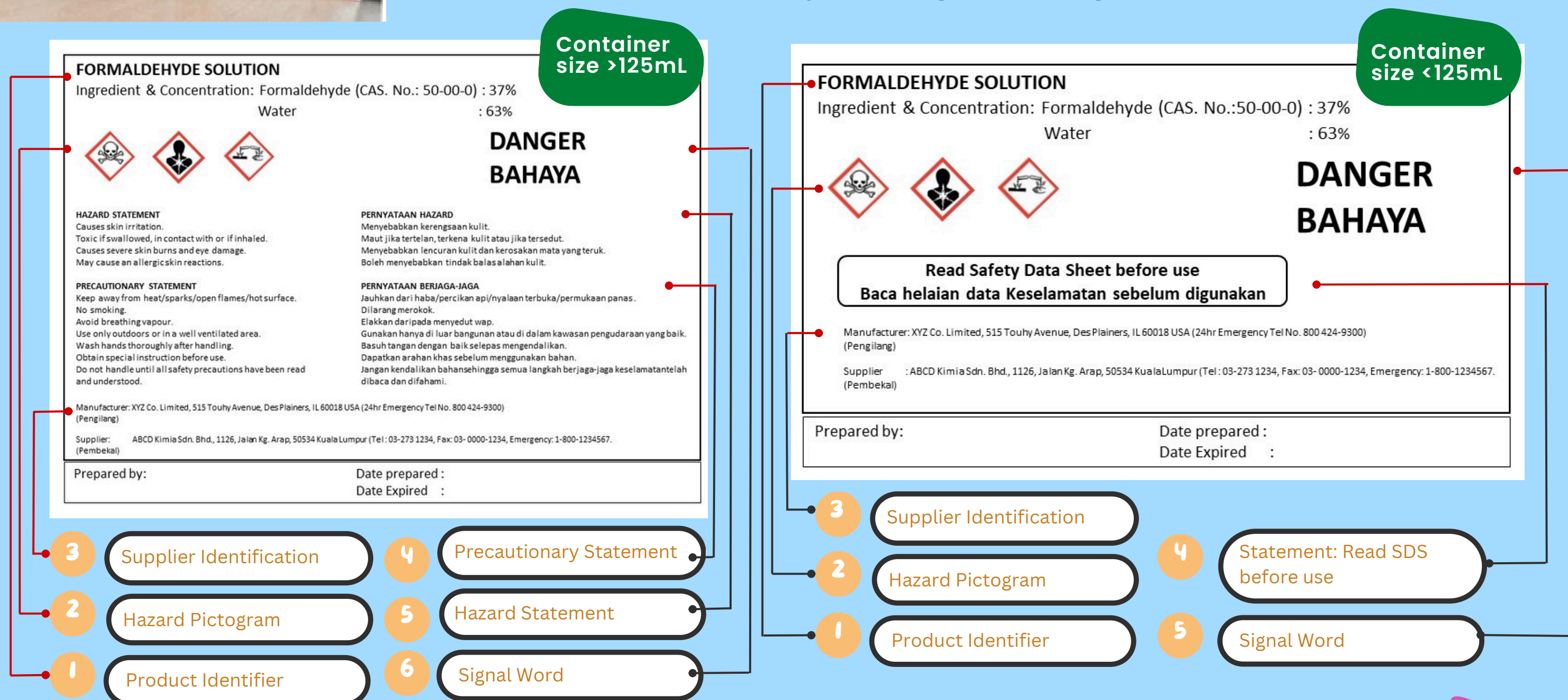
GAS CYLINDER



DANGEROUS TO AQUATIC
ENVIRONMENT

LABELLING

Please make sure all the chemical purchased for teaching & research purposes adhere to CLASS Regulations 2013, which require a supplier to label every packaging of hazardous chemical legibly and indelibly containing the following information :



RE-LABELLING

Chemical hazardous to health is **USE IMMEDIATELY: Chemical DO NOT NEED to RE-LABEL**

CHEMICAL LABELLING INFORMATION FOR NON HAZARDOUS	
DISTILLED WATER	
Prepared by: _____	Date prepared: _____ Date Expired: _____

Re-label with the chemical name or the trade name as written on the original label

1. Chemicals that is used within a **normal work shift**
2. Chemical that is **NOT hazardous to health**

When a chemical hazardous to health is transferred to another container, other than that in which it was originally supplied, the container shall be re-label.

Re-label as according to CLASS Regulation 2013 format

Chemicals that is not being used within a normal work shift.

1

Chemical that is hazardous to health

2

Chemicals used in a chemical testing laboratory

3



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Safe Transporting of Chemical



1

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Wear the proper PPE

2

READ SAFETY DATA SHEET (SDS) AND DO PLAN

Read SDS before handling. Determine the proper shipping / transportation & understand the hazard presented. Plan routes and destinations to minimize travel time and distance

3

BE RESPONSIBLE

Never leave chemicals unattended or stored in a vehicle. Avoid leaving or storing hazardous chemicals in corridors, departmental offices, or any other non-laboratory locations.

4

INCOMPATIBILITY

Do not place incompatible chemicals together in the same container during movement.

5

SECOND CONTAINER

Use sturdy carts as secondary containers when transporting heavy containers or over long distances to prevent spillage

6

MECHANICAL AID

Use bottle carriers or trolleys as secondary containers to contain spills in case of breakage.

7

AMOUNT

Transport only the minimum amount of material in the lowest concentration necessary for the demonstration or educational activities.

8

UPDATE CHEMICAL INVENTORY

Immediately update chemical inventories to reflect the relocation of chemicals.



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Waste Disposal of Chemical



1

CHEMICAL ELIGIBLE FOR DISPOSAL

- Chemicals **with an Expiration Date** on the Original Bottle: Discard immediately after the expiry date.
- Chemicals with **No Expiration Date**: Store more than 5 years or chemical showed any physical changes
- If they meet any of the following criteria:
 - Unlabeled or Improperly Labeled**
 - In Poor Condition**
 - Expired**
 - No Longer Required**

2

WASTE STORAGE CONTAINER

- Use Compatible Containers:** Compatible with the chemical waste, durable, and capable of preventing spillage or leakage.
- Sort Chemical Waste :** Sort chemical waste into appropriate waste bottles or containers.
- Avoid Incompatibility:** Never pour chemical waste that is incompatible with previously stored chemicals into an active container, even if the bottle has been washed.
- Separate Aqueous and Organic Waste:** Keep harmful aqueous waste separate from organic solvent waste.
 - Only non-hazardous inorganic aqueous waste without biological constituents permitted to be poured down the sink.
- Collect Solid Waste Safely:** Collect chemically contaminated solid waste and broken glass in a sharps bin.
- Keep Containers Closed:** Keep the waste container closed at all times, opening only for adding or removing waste.
- Avoid Common Areas:** Never place chemical waste in common areas such as corridors or near floor drainage points.
- Do Not Overfill Containers:** Do not fill containers to full capacity. Transfer waste to a temporary storage area when the container is approximately 85% full.

3

TEMPORARY STORAGE WASTE AREA

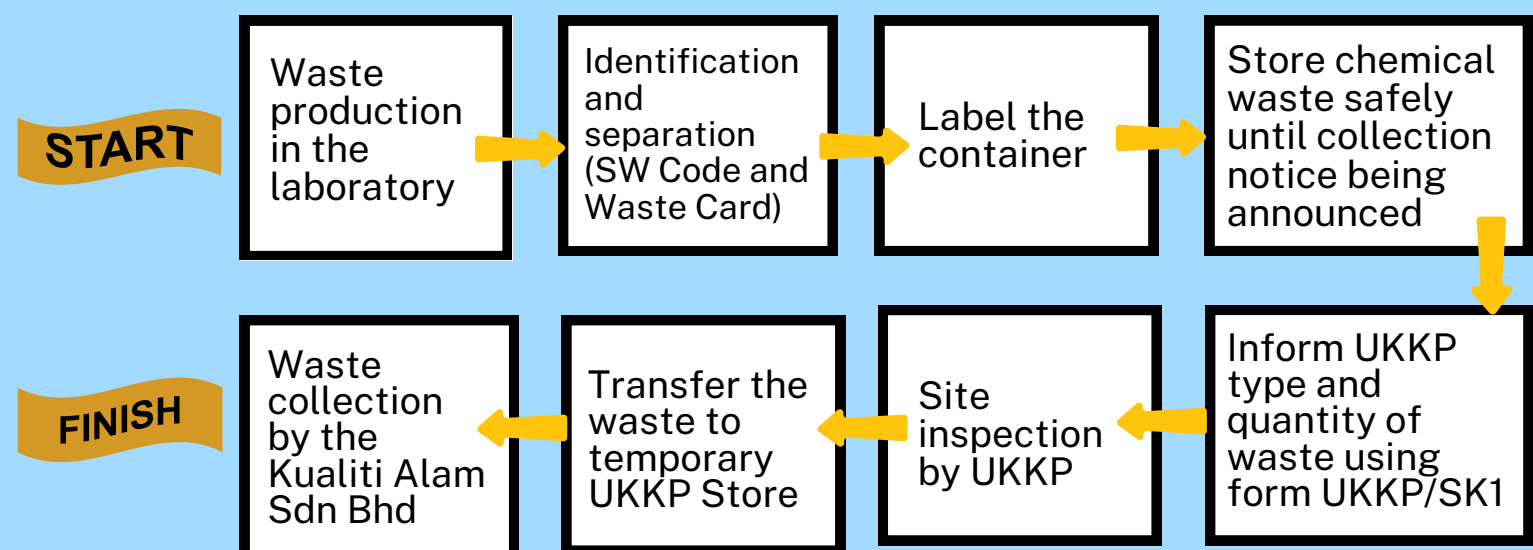
- Store waste at a designated place safely and properly**
- Label the waste area
- Inspect waste periodically from time to time for any spills or leak

DANGER

TEMPORARY
SCHEDULED WASTES
STORAGE AREA

4

SCHEDULED WASTE COLLECTION



SW: Schedule Waste

UKKP: Unit Keselamatan dan Kesihatan Pekerjaan USM

5

DISPOSAL OF USED OR UNUSED CHEMICAL STOCK.

If there are no requests and the unused chemicals exceed 50% of their original container/content, they are eligible for disposal.

Labelling and Marking

Announce and offer surplus chemicals to departments or other parties in need (by email / WhatsApp).

No takers, fill up KEW.PS-19 UKKP

Sent the completed form together with an official memo/email indicating/proving that the stock of these chemicals has been distributed/offered to Sekreteriat Jawatankuasa Pelupusan Aset dan Barang Universiti, Jabatan Bendahari for approval

Store chemical until collection notice being announced

Site inspection by Jawatankuasa Pelupusan Aset dan Barang Universiti, Jabatan Bendahari

Sent approval to UKKP. Collection done by Syarikat Kualiti Alam