Purchasing of Chemicals

Purchasing Chemicals

When purchasing new chemicals, it is imperative to:

- **Select the least hazardous chemical suitable for use**
- **Obtain the most updated SDS for each chemical preferably in the local language**
- **Request declaration or certification (such as Oeko-tex, bluesign, Eco passport) to meet the MRSL and RSL when used appropriately. Get approval from the customs office and other relevant government authorities, if needed**
- **Check that labels for all chemical containers (packages) meet the legal requirements**

PURCHASING CHEMICALS

1. Select and purchase chemicals based on their hazards and MRSL / RSL requirements.

2. All chemicals purchased and used in the production meet the facility's chemical purchasing policy.

3. Facility Should have a process or plan for eliminating chemicals that do not meet the facility's chemical purchasing policy.

a) Chemical purchasing procedures and standard operating procedures;
b) Chemical Safety Data Sheet.

Purchasing Chemicals

Documentation needed onsite:

- Globally Harmonized System of Classification and Labelling of Chemicals (GHS)/CLP
- Safety Data Sheet (SDS) preferably in local language
- Label/signage
- Supplier declarations

Safety Data Sheet (SDS) of Chemicals

SAFETY DATA SHEETS (SDS)

= Key document

Containing all information necessary for a good management of chemicals in your company

KNOWING THE CHEMICALS IN USE

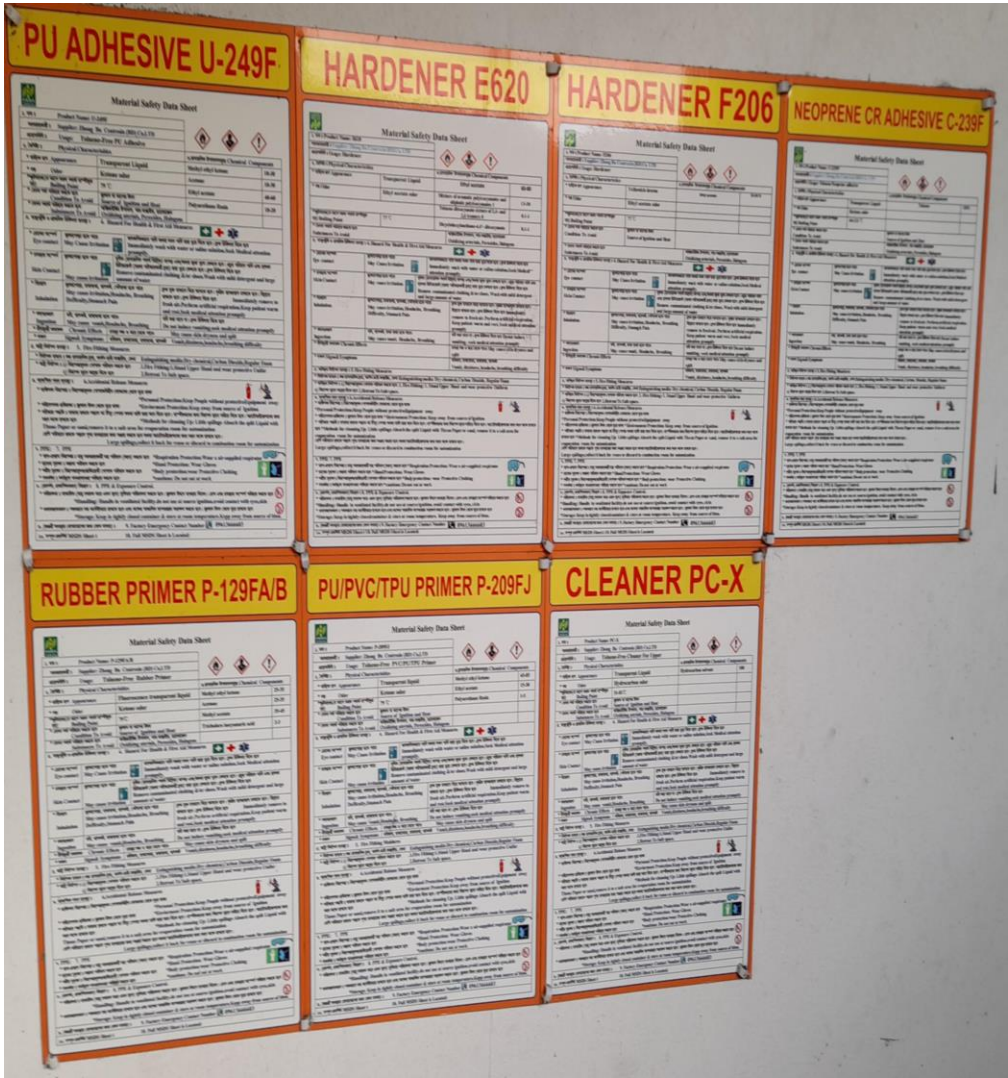
MAKING EFFICIENT USE OF SAFETY DATA SHEETS AND THEIR HAZARDS

Important components of SDS

Section 1

- Identification of product and producer

- ✓ Chemical name (commercial or generic)
- ✓ Other names
- ✓ Name of producer (Address, 24-hour telephone in case of emergencies)



Important components of SDS

Section 2

- Composition and Characteristics
  - Identification of components
  - Identification number (e.g. CAS)- Chemical Abstracts Service (CAS)
  - Percentages of each component
  - Occupational exposure limits
  - Indication of hazardous symbols
  - Risk phrases

Important components of SDS

Section 3

- **HAZARDS AND RISKS**
  - Health hazards
  - Environment Hazards
  - Physical hazards
    - Fire, explosion

Important components of SDS

Section 4

- First aid measures
  - Instructions how to respond in case of ingestion, inhalation, skin and eye contact

Important components of SDS

Section 5

- Fire fighting Measurers
  - Properties (Upper and lower limits, autoignition temperature)
  - **Combustion products**
  - Suitable fire extinguishing agents and procedures
  - Special protective equipment for fire fighters

Important components of SDS

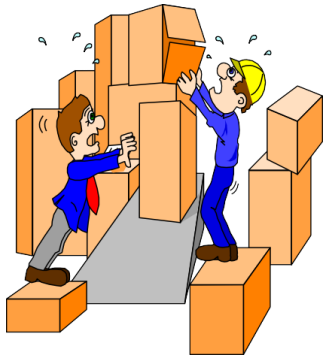
Section 6

- **Accidental release measures**
  - ✓ Health and Safety Precautions
  - ✓ Methods and means for containment and cleaning up (e.g. absorption and neutralising agents)
  - ✓ Means of detection
  - ✓ Environmental precautions and warnings

Important components of SDS

Section 7

- **Handling and storage**
  - ✓ Recommended methods of work and those to be avoided.
  - ✓ Design and location of storage facilities
  - ✓ Storage conditions (Temperature, humidity, sunlight)
  - ✓ Incompatible materials
  - ✓ Avoidance of sources of ignition



Important components of SDS

Section 8

- **Exposure control and personal protection**
  - Engineering control measures
  - Personal protective equipment (e.g. gloves, respirators, clothing,…)
  - Chemical resistance materials
  - Methods of minimizing exposure of workers

Important components of SDS

Section 9

- **Physical and chemical properties**

- State (solid, liquid, gas)
- Colour, odour
- Viscosity
- Freezing point/range
- Boiling point/range
- Melting point/range
- Flashpoint
- Auto-ignition temperature
- Explosive properties
- Oxidising properties
- Vapour pressure
- Molecular weight
- Specific gravity
- pH
- Solubility
- Parameters such vapour density, evaporation rate and conductivity,…

Important components of SDS

Section 10

- **Stability and reactivity**
  - Physical conditions to be avoided (temperature, pressure, light, shock, contact with moisture or air)
  - Incompatibility with other chemicals (acids, bases, oxidising agents or substance causing dangerous reactions)
  - Any hazardous decomposition products

Important components of SDS

Section 11

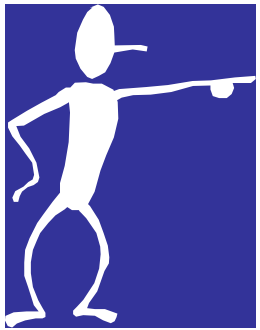
- **Toxicological information**
  - Potential routes of entry of particular concern
  - Acute and chronic effects for both short- and long-term exposure
  - Lethal concentrations LC_{50}, LC_{L0}, (inhalation)
  - Lethal dosis LD_{50}, LD_{L0},(ingestion)
  - Whether Carcinogenic, teratogenic, mutagenic

Important components of SDS

Section 12

- **Ecological information**
  - Potential routes for release
  - Effects on fauna and flora
  - Effects on water bodies, air and soil
  - Biodegradibility, persistence
  - Ecotoxicity (e.g. species)

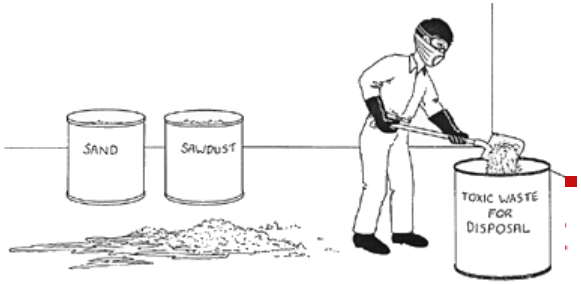
Important components of SDS



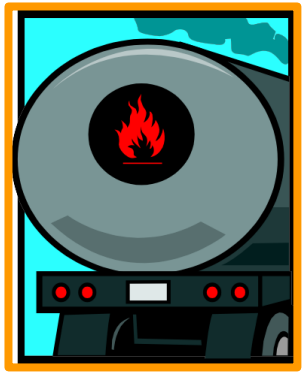
Section 13

Disposal considerations

- Methods and conditions of disposal of chemicals and packaging
- Hazardous residuals
- Reference to local regulations and requirements for safe disposal
- Possible effects of disposal



Important components of SDS



Section 14

- **Transport information**
  - Identification, classification and markings according to UN recommendations on the transport of dangerous goods
  - Segregation of materials, risk classes and UN number
  - Safe transport conditions

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Important components of SDS

Section-15

- Regulatory Information
- Labeling according to regulative information

Important components of SDS

Section-16

- ✓Other Information
- ✓Reasons for Alternative

Chemical labeling as per Globally Harmonized System (GHS)

ELEMENTS OF LABEL (EXAMPLE EU, BEFORE 2009)

2-Naphthol (D)

- Gesundheitsschädlich beim Einatmen und Verschlucken.
- Sehr giftig für Wasserorganismen.
- Staub nicht einatmen.
- Berührung mit den Augen und der Haut vermeiden.
- Bei Berührung mit den Augen sofort gründlich mit Wasser abspülen und Arzt konsultieren.
- Bei der Arbeit geeignete Schutzkleidung, Schutzhandschuhe und Schutzbrille/Gesichtsschutz tragen.

2-naftolo (I)

- Nocivo per inalazione e ingestione.
- Altamente tossico per gli organismi acquatici.
- Non respirare le polveri.
- Evitare il contatto con gli occhi e con la pelle.
- In caso di contatto con gli occhi, lavare immediatamente e abbondantemente con acqua e consultare un medico.
- Usare indumenti protettivi e guanti adatti e proteggersi gli occhi/la faccia.

2-naphthol (GB)

- Harmful by inhalation and if swallowed.
- Very toxic to aquatic organisms.
- Do not breathe dust.
- Avoid contact with eyes and skin.
- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- Wear suitable protective clothing, gloves and eye/face protection.

2-naftol (NL)

- Schadelijk bij inademing en opname door de mond.
- Zeer vergiftig voor in het water levende organismen.
- Stof niet inademen.
- Aanraking met de ogen en de huid vermijden.
- Bij aanraking met de ogen onmiddellijk met overvloedig water afspoelen en deskundig medisch advies inwinnen.
- Draag geschikte beschermende kleding, handschoenen en een beschermingsmiddel voor de ogen / voor het gezicht.

2-naphtol (F)

- Nocif par inhalation et ingestion.
- Très toxique pour les organismes aquatiques.
- Ne pas respirer les poussières.
- Eviter le contact avec la peau et les yeux.
- En cas de contact avec les yeux, laver immédiatement et abondamment avec de l'eau et consulter un spécialiste.
- Porter un vêtement de protection approprié, des gants et un appareil de protection des yeux/du visage.

2-naftol (E)

- Nocivo por inhalación y por ingestión.
- Muy tóxico para los organismos acuáticos.
- No respirar el polvo.
- Evítese el contacto con los ojos y la piel.
- En caso de contacto con los ojos, lávense inmediata y abundantemente con agua y acúdase a un médico.
- Úsense indumentaria y guantes adecuados y protección para los ojos/ la cara.

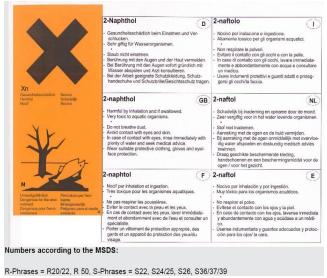
Numbers according to the MSDS:

R-Phrases = R20/22, R 50, S-Phrases = S22, S24/25, S26, S36/37/39

Hazard labels used in the EU until 2009

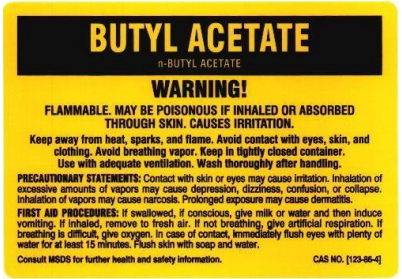
Challenge

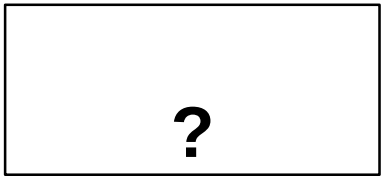
No uniform or standardised system



Europe

USA





Hazard symbols as per GHS

Hazard symbols in EU

(until 2009)

E

Explosive

O

Combustible

F

Flammable

F+

Extremely flammable

T

Tóxic

T+

Very Tóxic

C

Corrosive

Xn

Harmful (less than toxic)

Xi

Irritant (less than corrosive

N

Dangerous to environment

Hazard symbols as GHS (since January 2009)

GHS 01
Explosive

GHS
Flammable

GHS 03
Combustible

GHS
Gas under pressure

GHS 05
Corrosive

GHS 06
Toxic

GHS 07
Irritant

GHS 08
Carcinogenic

GHS 09
Eco-toxic

What changes with GHS?

A new pictogram for health hazards, particularly used for substances with CRM properties:
C…Carcinogenic
R…toxic to reproduction.
M…Mutagenic

EU earlier

Characterists: Orange square with black pictogram.

A new pictograma "gas cylinder" to identify all gases under pressure

GHS

Characteristics: Diamond with red rim and black pictogram.

New! New! New!

A new pictogram "exclamation mark to identify different properties of chemicals hazardous to health"

- **Irritant to eyes.**
- **Irritant to skin**
- **Sensitizing when in contact with skin**

Directly relating old symbols to new ones is not always possible

The Basic Parts of A GHS-Compliant Label

1. **Product Identifier** - Should match the product identifier on the Safety Data Sheet.
2. **Signal Word** - Either use "Danger" (severe) or "Warning" (less severe)
3. **Hazard Statements** - A phrase assigned to a hazard class that describes the nature of the product's hazards
4. **Precautionary Statements** - Describes recommended measures to minimize or prevent adverse effects resulting from exposure.
5. **Supplier Identification** - The name, address and telephone number of the manufacturer or supplier.
6. **Pictograms** - Graphical symbols intended to convey specific hazard information visually.

UNITAR

Sample label courtesy of Weber Packaging Solutions • www.weberpackaging.com

COMPATIBILITY OF CHEMICALS

			C	Xi, Xn	T, T+	F, F+	O	E
								
								
C			✓	✓	o	✘	✘	✘
Xi Xn			✓	✓	✓	✓	o	✘
T, T+			o	✓	✓	o	✘	✘
F, F+			✘	✓	o	✓	✘	✘
O			✘	o	✘	✘	✓	✘
E			✘	✘	✘	✘	✘	✓

C	corrosive
Xi	irritant
Xn	harmful
T, T+	toxic, highly toxic
F, F+	flammable, highly flammable
O	oxidizing
E	explosive

✓	Are allowed to be stored together
o	Are allowed to be stored together, subject to special precautions
✘	Are not allowed to be stored together

LABEL REQUIREMENTS

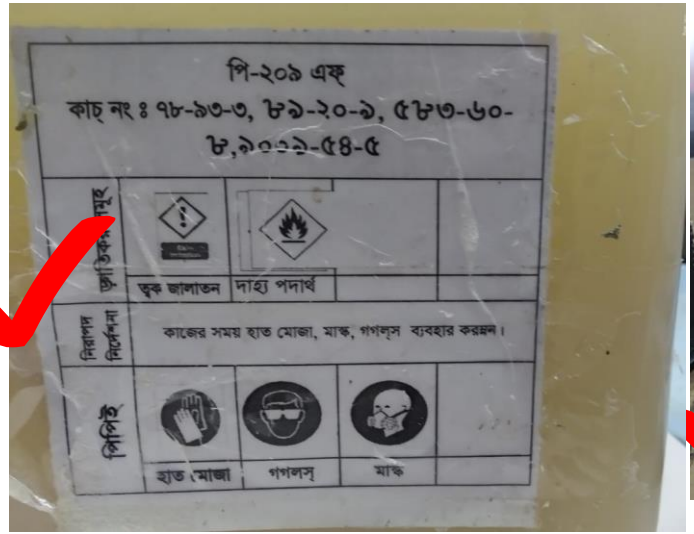
STORAGE AREA:

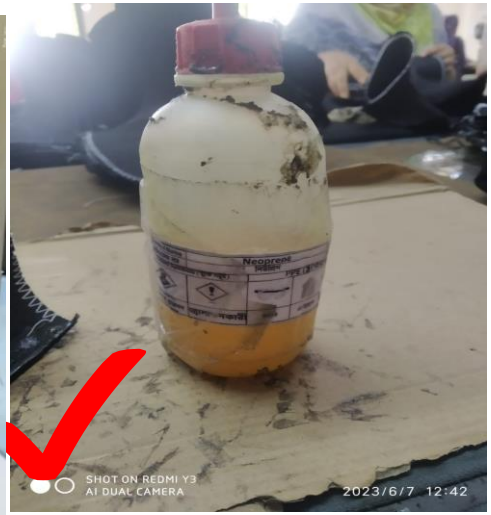
- Name of the chemical
- Hazard symbol (if hazardous)
- Identity of the chemical
- Nature of the risks associated with the use of the chemical
- Safety precautions

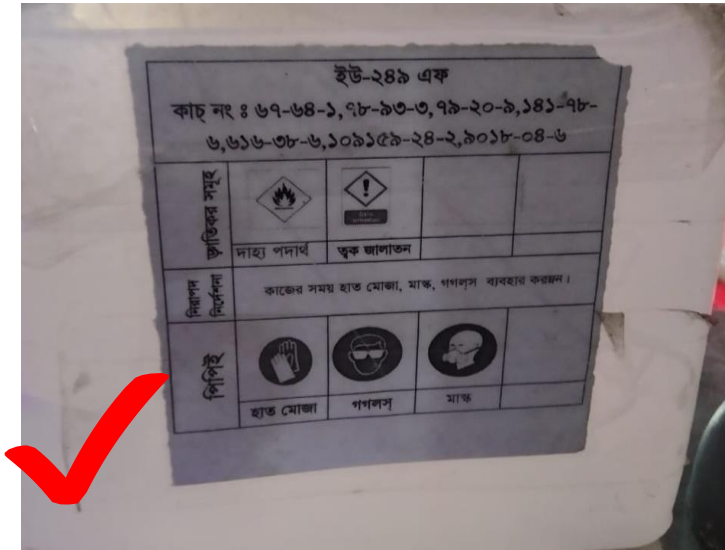
WORK PLACE:

- Name of the chemical
- Hazard symbol (if hazardous)

Dos and Don’ts of Chemical Labelling







Dos and Don’ts of Chemical Labelling

Read label before use

Wash hands thoroughly after chemical usage

Do not smoke near chemical containers

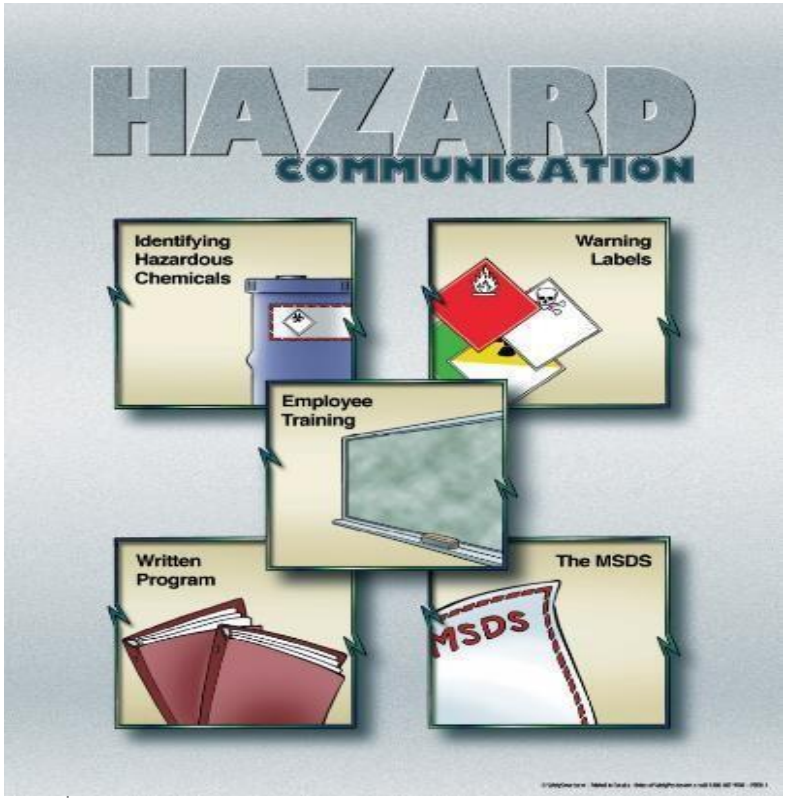
Do not mix chemicals without knowing the contents

Do not do welding activity near flammable chemicals

Do not roll or push drums

Figure 27: DOs and DON’Ts for chemical handling

How to communicate



- Training
- Chemical labels
- Onsite SDS and Chemical Inventory
- Hazard signage
- Written program
- Written procedures

SAFE STORAGE OF CHEMICALS

Storage Area Requirements

- Storage areas must be secured and covered;
- Containers must be stored on impervious surfaces;
- Incompatible/ Flammable /combustible material must be segregated/ separated following compatibility chart;
- Storage areas must have adequate ventilation and accessible emergency eyewash or shower stations;
- Safety signs: Eating, smoking and drinking are not permitted in these areas;
- Containers must not be over stacked;

Type Of Storage

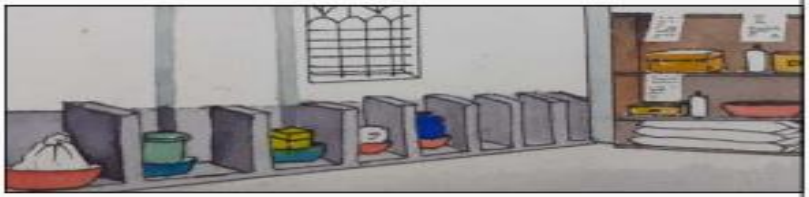
Type of Storage facility	Example of Storage facility
Temporary storage area Area assigned to store chemical products temporarily as quarantine area pending internal Quality Assurance team approval, before moving to Main Storage area	
Main storage area Area assigned for storage of chemical product stock after Quality Approval and before subsequent delivery to sub-storage area as per demand	
Sub-storage area Area assigned for storage and weighing of chemical products during their use in production processes	

Figure 28: Different chemical storage areas in a manufacturing facility

STORAGE AREA FEATURES

- ✓ BUILDING
- ✓ EXPLOSION-PROOF BUILDING
- ✓ SECONDARY CONTAINMENT
- ✓ VENTILATION
- ✓ GROUND LEACHING CONTROL
- ✓ SDS
- ✓ SECURE DOOR
- ✓ FIRE SUPPURATION EQUIPMENT
- ✓ SAFE ELECTRICAL SWITCH
- ✓ WARNING SYSTEM
- ✓ EYE/BODY WASH

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Bad Practices

Chemical Handling & Storage

Chemical Stored at Excessive Height

Haphazard Storage of Empty Chemical Drums

Good practices
Safe Storage of Chemicals

Keep Sludge at least 6 months before dispose

EMPTY DRUM

Keep separate (Designated Place)

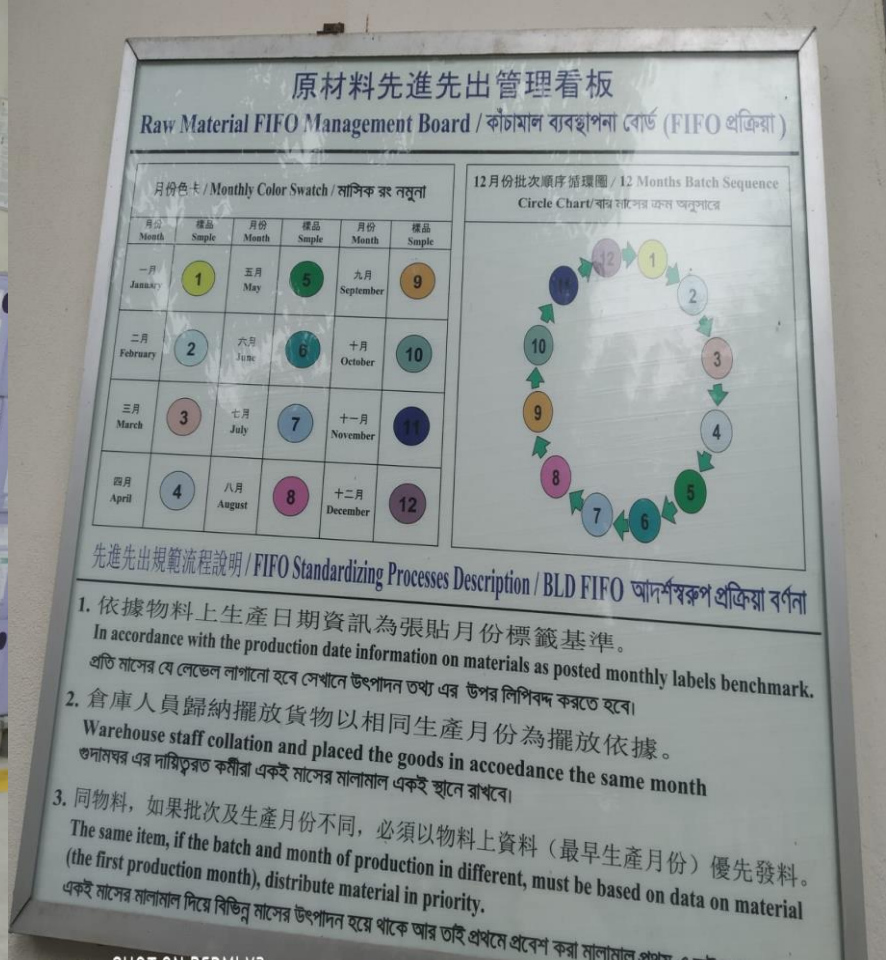
Consider

- ❑ Direct Sunlight
- ❑ Rain
- ❑ Fire

CHEMICAL REST : Remove label, Wash and dispose through ETP

WASTE OIL: Sent back to supplier or secondary market


ZHONG BU


原材料先進先出管理看板
Raw Material FIFO Management Board / কাঁচামাল ব্যবস্থাপনা বোর্ড (FIFO প্রক্রিয়া)
月份色卡 / Monthly Color Swatch / মাসিক রং নমুনা
12月份批次順序循環圈 / 12 Months Batch Sequence
Circle Chart/বার মাসের ক্রম অনুসারে
一月 January
二月 February
三月 March
四月 April
五月 May
六月 June
七月 July
八月 August
九月 September
十月 October
十一月 November
十二月 December
先進先出規範流程說明 / FIFO Standardizing Processes Description / BLD FIFO আদর্শস্বরূপ প্রক্রিয়া বর্ণনা
1. 依據物料上生產日期資訊為張貼月份標籤基準。
In accordance with the production date information on materials as posted monthly labels benchmark.
প্রতি মাসের যে লেভেল লাগানো হবে সেখানে উৎপাদন তথ্য এর উপর লিপিবদ্ধ করতে হবে।
2. 倉庫人員歸納擺放貨物以相同生產月份為擺放依據。
Warehouse staff collation and placed the goods in accoedance the same month
গুদামঘর এর দায়িত্বরত কর্মীরা একই মাসের মালামাল একই স্থানে রাখবে।
3. 同物料，如果批次及生產月份不同，必須以物料上資料（最早生產月份）優先發料。
The same item, if the batch and month of production in different, must be based on data on material
(the first production month), distribute material in priority.
একই মাসের মালামাল দিয়ে বিভিন্ন মাসের উৎপাদন হয়ে থাকে আর তাই প্রথমে প্রবেশ করা


SHOT ON REDMI Y3


PUSH
EASY SAFE


EMERGENCY
EYE WASH


EMERGENCY
SAFETY
SHOWER

EYE WASH

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Improper Storage of Chemicals

Improper Storage of Chemicals

giz CHS Convention Project Chemical Safety

SAFE STORAGE OF CHEMICALS

CHEMICAL INVENTORY LIST (CIL)

- Names Of Chemical Products And Vendors
- Quantity Delivered Or In Stock
- Consumption Or Usage
- The Price Of The Chemical Product
- Use/Function Of The Chemical Product
- Lot/Batch Numbers
- Storage Location

CHEMICAL INVENTORY LIST (CIL)

The CIL for chemical management should expand this information to include data on:

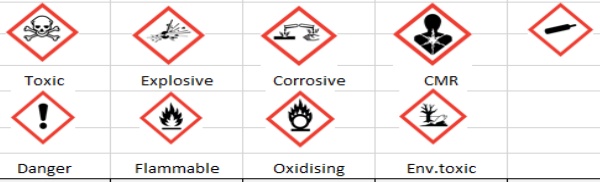
- ZDHC MRSL Conformance Levels,
- Identification numbers (CAS nos.) of hazardous substances
- Hazard information from Safety Data Sheets (SDS)
- Planning of precautions for safe storage, handling and disposal of chemicals based on the identified hazards

Chemical Inventory- Template

Chemical Inventory Sheet

PPE Symbols

Hazard symbols



Sl.No	Chemical Name	MSDS - original	MSDS translated	Original labels	Name of supplier	Name of Manufacturer	Active ingredients	CAS No	Type of chemical	RSL compliance permit	APEO/NPE free
1	xxxx	Yes/No	Yes/No	Yes/No	ccc	cccc			Dye	yes/no	Yes/no
	Adhesive										
	Latex	Yes/No	Yes/No	Yes							

Compressed gas

Hazard identified	Hazard Band physical	Hazard band - Health Inhale	Hazard band - Health Skin	Hazard band - Environment	PPE recommended	Storage conditions	Fire fighting recommended	Spill control	Function of chemical	Area of use	Amount used per month	Location of storage	checked by	Checked when	Remarks/Action required
Irritant	A	B	B	n.a.	Latex gloves	cool	CO2	Sand	Colouring agen	Dyehouse	150 kg	Dyestore			Update MSDS

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Exemples of Hazardous Chemicals Storage

POOR STORAGE PRACTICES

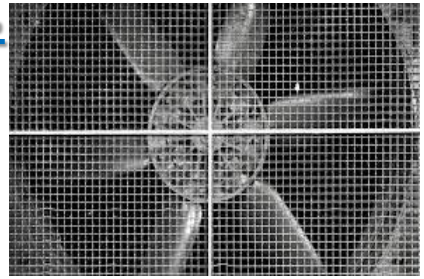
POOR STORAGE PRACTICES

POOR STORAGE PRACTICES

POOR STORAGE PRACTICES

CHEMICAL STORES ARE EQUIPPED WITH.

- ✓Good ventilation
- ✓Flat and impermeable floor
- ✓Sufficient lighting
- ✓Emergency drains connected to an effluent treatment plant
- ✓Appropriate extinguishers (also outside the side)
- ✓Shelves, cabinets and storage containers



FIND THE RIGHT STORAGE SPACE FOR CHEMICALS

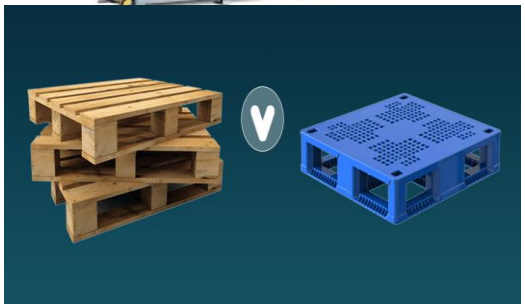
Basic rules and principles

- Group and store different chemicals according to their type and compatibility. For easier stock keeping, provide boards indicating name, maximum, minimum and current stock for each group.
- For maintaining better storage discipline, allot the specific storage areas for each group and mark the designated areas with yellow floor markings.
- While doing so, sufficient width for movement of persons and material should be ensured (about 0.8 meters for persons, more than 1 meter for handling of chemicals, more than 2 meters for movement of pallet or fork lift trucks). The passageways should be marked on the floor.
- The humidity from the ground can quickly spoil the quality of powdered chemicals.

Find the right storage space for chemicals

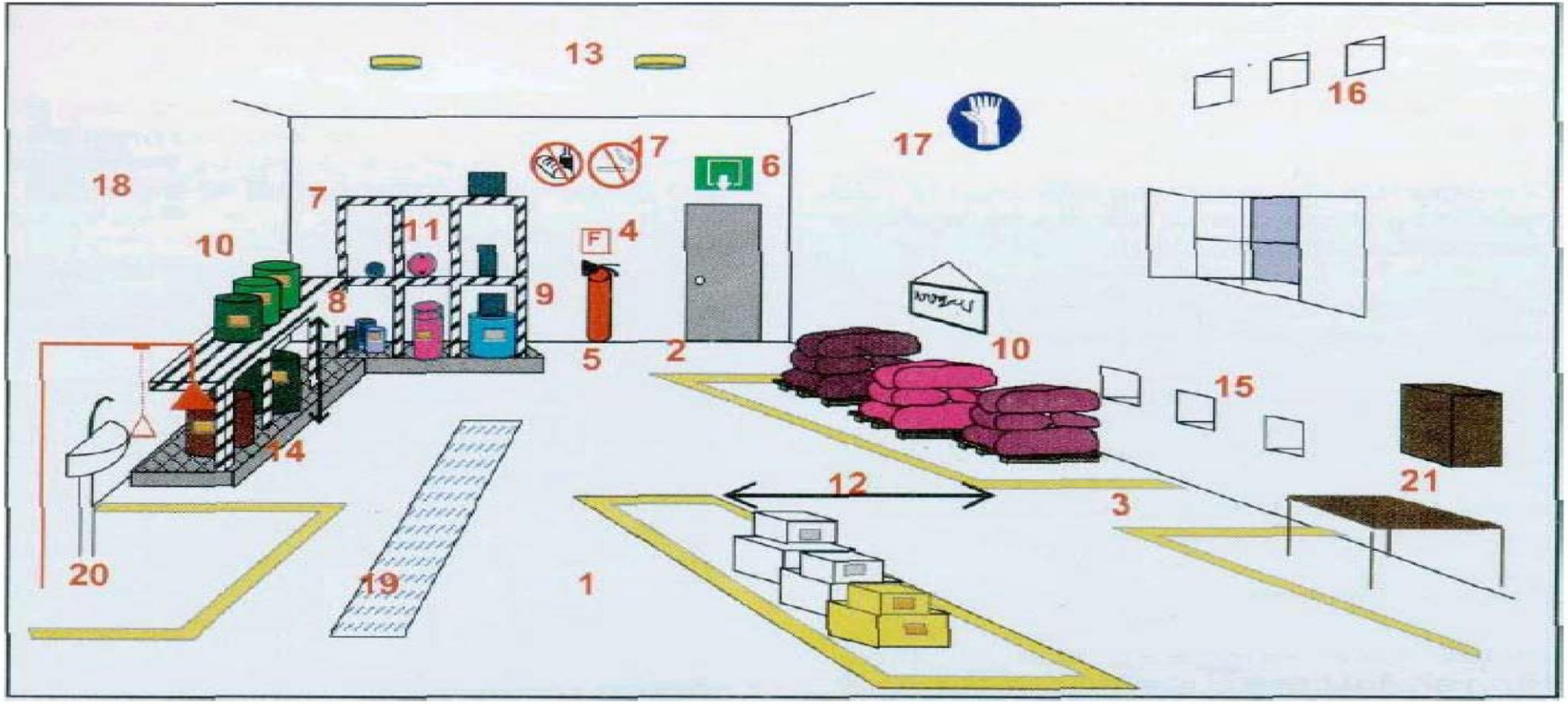
Racks and shelves increase the available storage space. Smaller chemical containers (e.g. samples of dyes, fatliquours) can be stored on these.

Heavier chemical containers -particularly those containing liquid chemicals (e.g. acids) - should be stored on wooden or plastic pallets at the floor level. Lighter chemical containers and powdered chemicals can be stored on upper shelves.

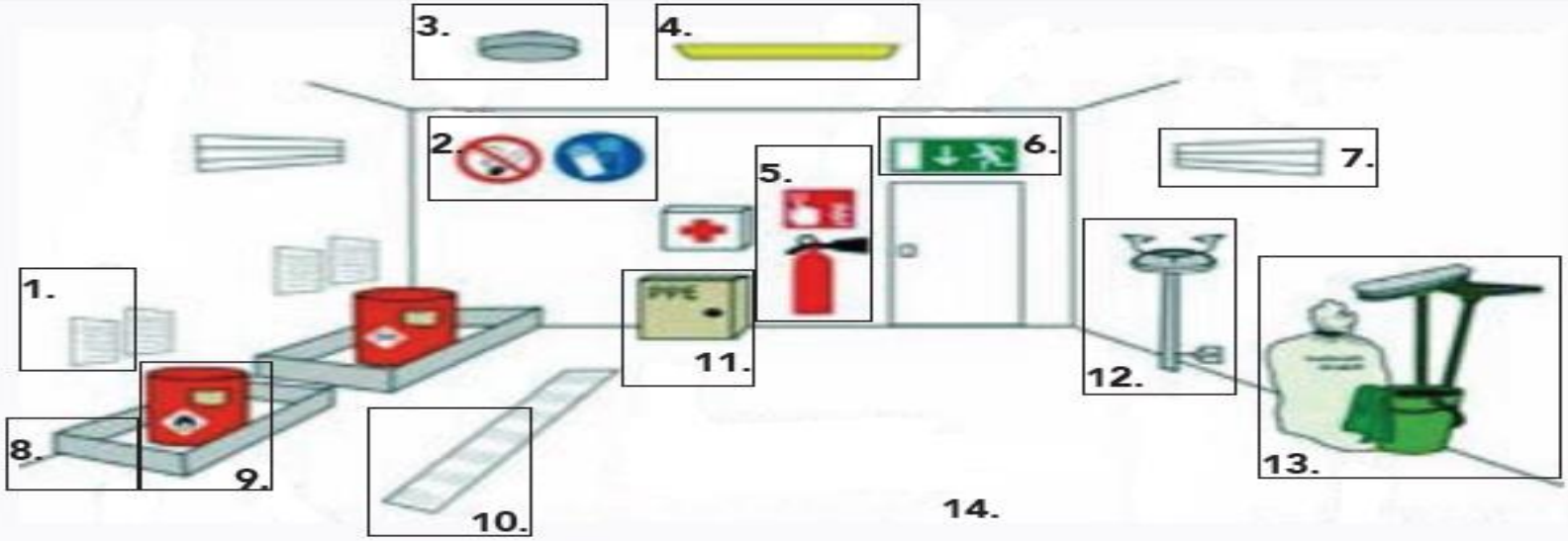


Barrels containing liquid hazardous chemicals have to be stored on catch-pit.

Model Layout of a Chemical Store



Model Layout of a Chemical Store



1. MSDS
2. Safety signs
3. Smoke detectors
4. Explosion-proof lighting
5. Fire extinguisher
6. Emergency exits
7. Ventilations system
8. Secondary containment with capacity to hold 110% of largest volume
9. Proper containers
   - Closed
   - Labeled with name and hazard symbols
10. Emergency drains
11. First-Aid and PPE box
12. Eye wash station
13. Spill kit
14. Clean and non-permeable floor

SPILLAGES AND LEAKING CONTAINERS

Ensure good and careful handling practices

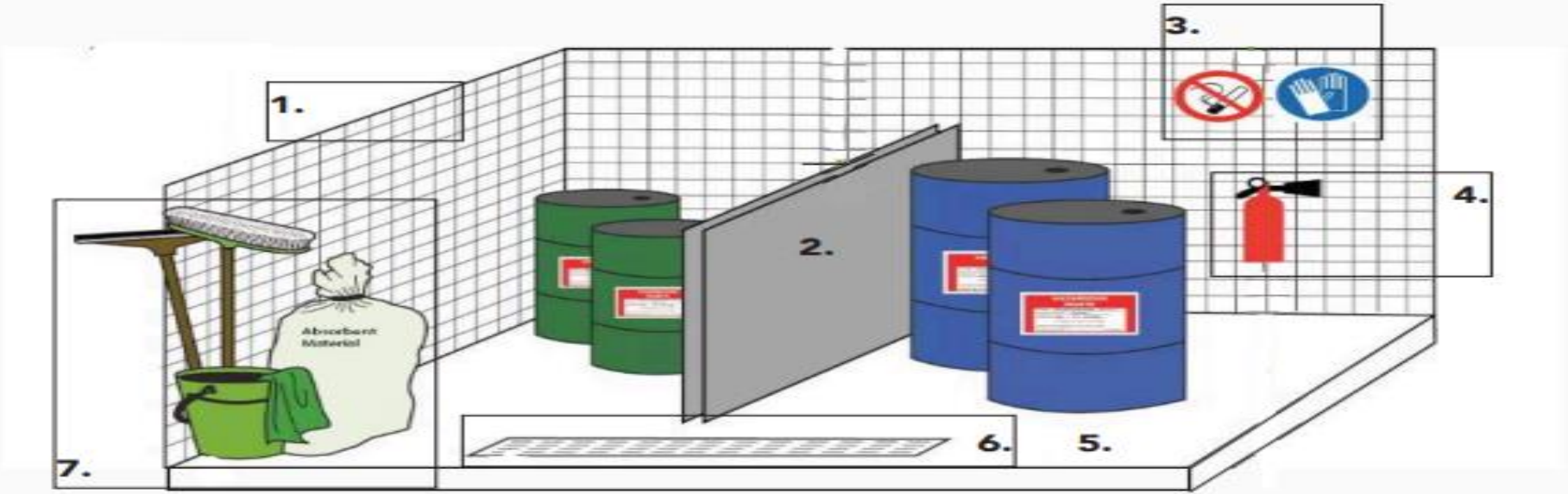
Use good quality containers
Bad handling and long storage under bad conditions => risk of spills and leaks

In case of spillages and leakages consult Material Safety Data Sheet and manufacturer's instructions for **corrective action.**

STORAGE CONDITIONS FOR HAZARDOUS WASTE

In case of hazardous solid waste storage, consider the following

- Keep the store locked with no access by unauthorized staff
- Provide adequate ventilation where volatile waste is stored
- Construct secondary containment systems with materials appropriate for the waste being contained and adequate to prevent loss to the environment
- Ensure impermeable surface in storage area
- Use proper signage
- Label hazardous waste containers to identify them
- Maintain spill clean-up equipment and proper PPE at the waste yard
- Do not burn hazardous waste within or outside the facility, as the burning process may result in release of toxic by-products.



1. **Latticework** instead of concrete walls surround the area
2. Containers with **incompatible wastes are separated** by a dike, berm or wall
3. **Warning signs** and emergency information are displayed
4. **Fire extinguisher** is kept ready at easily accessible location
5. **Floor** is made of impermeable material or plastic sheets or lined with sheets
6. Floor house provisions for **containment** and dyking
7. **Spill kit**/Clean-up material is available

BEST PRACTICES FOR CHEMICAL STORAGE


Thank You!