

2. Chemical storage

If chemicals are not stored properly they can cause:

- health problems and even lead to death
- fires and explosions
- damage to the environment

What are hazardous chemicals?

Hazardous chemicals are classified as:

- explosives
- flammable and non-flammable gas
- poison gas
- flammable liquids
- flammable solids
- oxidisers and oxidising agents
- poisons
- radioactive substances
- corrosive substances



Potential hazardous substances, such as:

- glues
- dyes
- PVC additives
- paint/lacquer
- electroplating chemicals
- cleaning/degreasing agents
- lead solder
- solvents
- dust from grinding/cutting metal or wood

Do you have a full list of all the chemicals used in your workplace?

How can you find out the hazards of the chemicals you store or use?

- Check the relevant **MSDSs (Material Safety Data Sheets)**
- You need to have an **MSDS for every chemical you use**
- **Ask chemical suppliers** to provide MSDS sheets
- **MSDSs should provide full, detailed information** on:
 - the chemical's hazardous ingredients
 - physical and chemical characteristics
 - fire and explosion hazards
 - reactivity
 - health hazards
 - emergency and first-aid procedures in case of an accident
- precautions for safe storage, handling, use, disposal and transportation
- personal protective equipment (PPE)/ventilation recommendations
- Use MSDS to **train workers** and help them to understand the hazards
- **Follow the instructions** on the MSDS for safe storage, handling, use and disposal, including appropriate PPE and ventilation
- Make sure that MSDSs are in a **language understood by workers**



Main Chinese laws regarding chemical storage

- Safety Production Law (November 2002)
- Hazardous Chemical Safety Management Regulations (March 2002)
- General Provision of Common Hazardous Chemical Storage (GB 15603 – 1995)

Main Indian laws regarding chemical storage

- Indian Explosives Act
- Factories Act (art. 41B(7))
- Hazardous Waste Management and Disposal Act
- Atomic Energy Act governs the regulation of nuclear energy and radioactive substances

How can you get more information on safe storage of chemicals?

- Chemical suppliers
- Managers and supervisors
- Local environmental bureau
- Local safety production bureau
- Kingfisher information pack on factory working conditions

How can chemicals be safely stored?

1. Store chemicals in a safe place/building

- The chemical storage room should:
 - be **separate** to the production area and dormitories
 - be equipped with appropriate and adequate **fire fighting equipment** (fire extinguishers, fire hose and sprinkler system)
 - have an accessible first-aid box and eye wash
 - be locked. Senior staff members should maintain control of the key
- Best practice: provide a ventilation system to prevent the accumulation of vapours. Regularly check the ventilation system to ensure it is in good condition
- **Electricity supply should be safe** and well insulated with no exposed wires
 - The area should be **segregated** to contain any spillage
 - Hazardous chemicals should never be stored in a public area or corridor

2. Be prepared for spillage

- Be equipped with appropriate spillage clean-up materials, e.g. sand
- If there is a spillage in the storage area, clean-up immediately by following the instructions on the appropriate MSDS. This may include:
 - removing all flammables and ignition sources
 - absorbing spills with non combustible rags, sand, earth or absorbent granules. Carefully sweep up and remove
 - disposing safely of all contaminated absorbents by using a licensed disposal company



3. Store chemicals in a way that minimises risk

- Chemicals should be stored **according to type of hazard**. Incompatible chemicals should be stored separately
- **Decide a safe stacking level** for chemical containers (height and weight). **Do not exceed** these levels
- Appropriate **temperature and humidity** should be maintained
- Store chemicals **away from ignition sources, direct sunlight** or localised heat
- Maintain an **inventory** of all chemicals in storage
- Regularly **inspect** the chemical storage area
- **No eating or drinking** should be allowed in the chemical storage area since this may lead to chemicals being ingested
- **No smoking** should be allowed in or near the chemical storage area, since this could cause a fire or explosion

4. Chemical storage in production areas

- Only **store enough chemicals for one day's use** in the production areas
- **Cabinets** should be used to store chemicals when not in use. These should be locked except when dispensing or adding chemicals
- Limit number of chemical storage areas in production areas
- Appoint a person dedicated to the safe storage and dispensing of chemicals
- All containers should be covered while stored



5. Display caution information in storage and production areas

- **MSDS in local language** should be displayed for each chemical stored (in both store room and production areas)
- All chemical containers should be properly **labelled** with chemical, volume, and hazard warning signs
- Display danger warnings and **hazard signs**

6. Provide training to raise awareness

- Provide adequate **training** for chemical storage and handling. Personnel should be aware of the hazards associated with all hazardous materials
- Regularly hold practice drills on emergency responses, including fire and spillage

Kingfisher recommend that all factories consider establishing a Health and Safety committee.



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