CHEMICAL
&
SCHEDULED WASTE MANAGEMENT

Chemical elements, or compounds or mixtures thereof, whether natural or synthetic, but does not include microorganisms
(USECHH Regulations 2000)

- Chemicals are part of modern life, and we are likely to encounter them everyday - from the chemicals used at work, to products in the home such as paint, and detergents and pesticides used in the garden.
- Chemicals are widely used throughout society, with both positive and negative effects on health, well-being, socio-economic aspects and the environment

Chemicals have become part of our life…

BUT

if not properly managed, may endanger human health & affect the environment

4% of cancer cases is due to occupational exposure to cancer-causing chemicals

13,000 death/yr due to occupational lung disease & cancer

1.3 million people who worked in 2015/16 were suffering from an illness they believed was caused or made worse by work

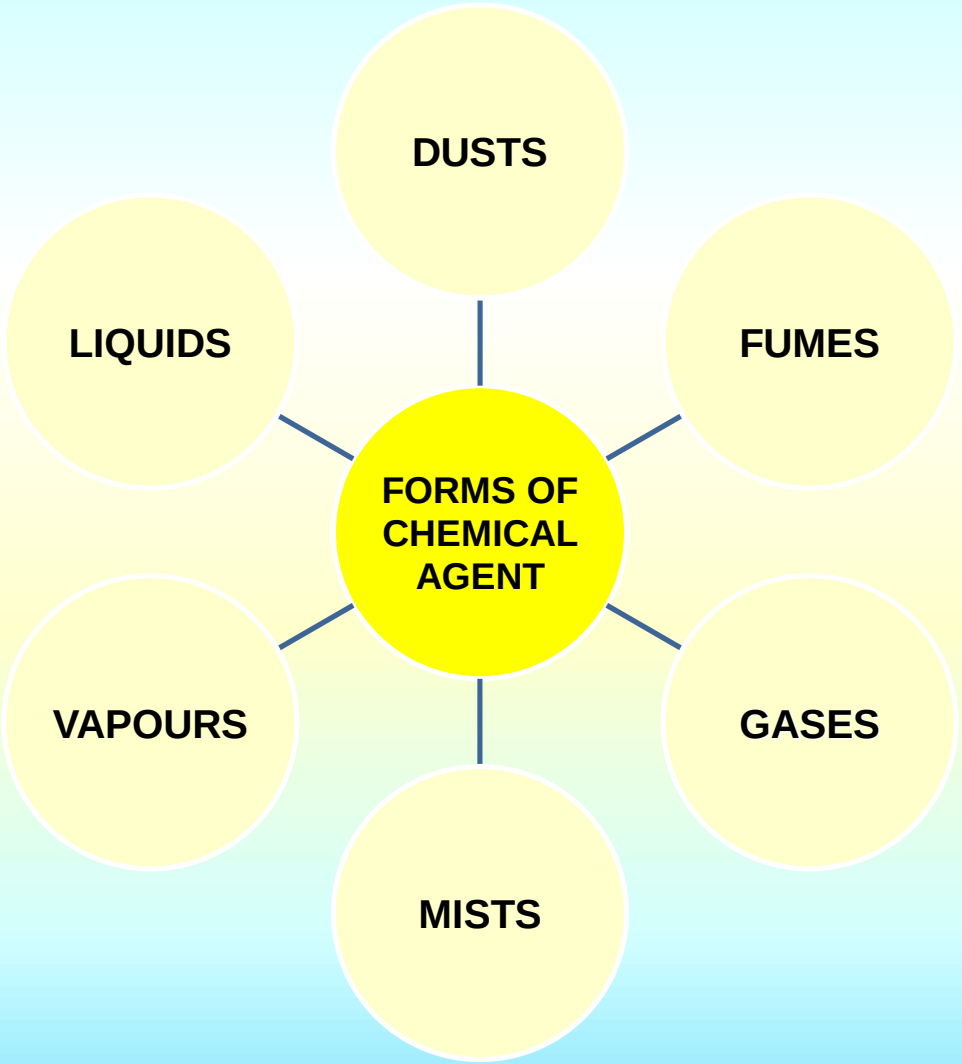
NATURAL & SYNTHETIC CHEMICALS

- NATURAL CHEMICALS:
  - Chemical element that occur naturally in the environment

- SYNTHETIC CHEMICALS:
  - Chemical element that are synthesized through the application of chemical process

Chemical is a toxic substance, regardless whether it is natural or synthetic

FORMS OF CHEMICAL AGENTS



COMMON TYPES OF CHEMICALS

1. ACID
   - pH less than 7
   - Main characteristic: Corrosive
   - Example: Hydrochloric Acid, Sulphuric Acid, Nitric Acid
2. ALKALINE
   - pH more than 7
   - Main characteristic: Corrosive
   - Example: Sodium Hydroxide, Sodium Chloride, Kalium Hydroxide
3. ALCOHOL
   - Commonly used as solvent
   - Main characteristic: Highly vaporizing
   - Example: Ethanol, Isopropanol, Methanol

CHEMICAL LABEL

CHEMICAL CLASSIFICATION

- Classification of hazardous chemicals:
  1. Physical hazard
  2. Health hazard
  3. Environmental hazard

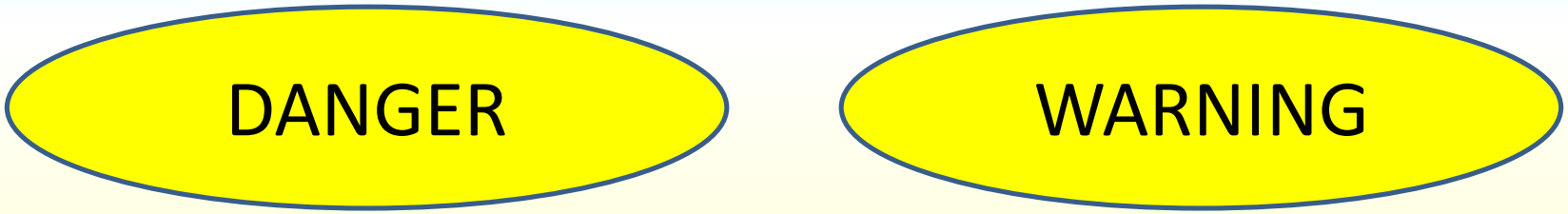
CHEMICAL LABELLING

- *Information on label:*

1. Product Identifier
2. Supplier Identification
3. Signal Word
4. Hazard Statement
5. Hazard Pictogram
6. Precautionary Statement

- *National Language & English*

SIGNAL WORD



- DANGER: More severe hazard categories

HAZARD STATEMENT

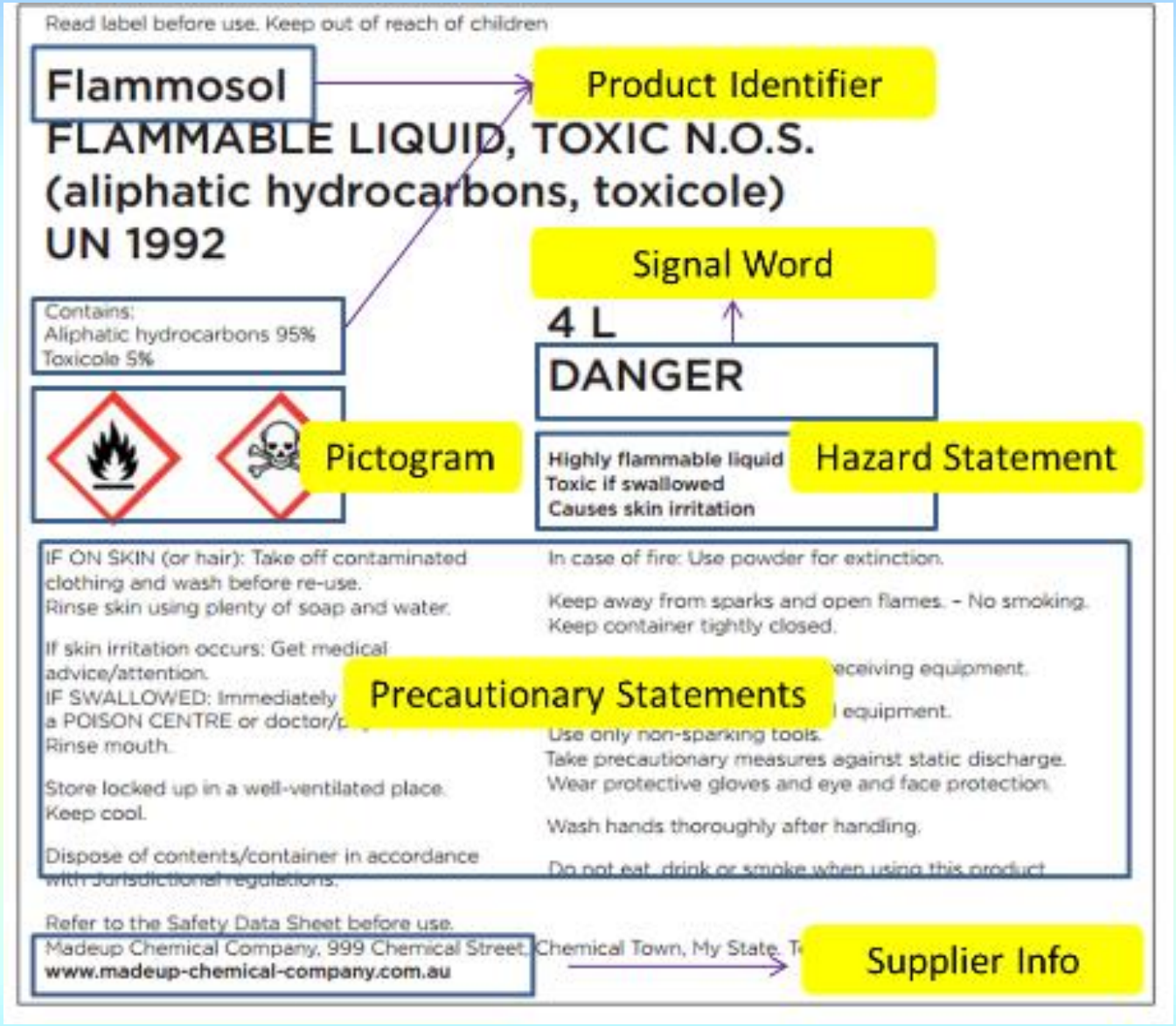
Code	Hazard statement
H300	Fatal if swallowed
H301	Toxic if swallowed
H302	Harmful if swallowed
H304	May be fatal if swallowed and enters airways
H310	Fatal if in contact with skin
H311	Toxic if in contact with skin
H312	Harmful if in contact with skin
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H317	May cause allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H330	Fatal if inhaled
H331	Toxic if inhaled

HAZARD PICTOGRAM

Physical Hazard		Health Hazard		Environmental Hazard	
Description of symbol	Hazard pictogram	Description of symbol	Hazard pictogram	Description of symbol	Hazard pictogram
Flame		Skull and crossbones		Environment	
Flame over circle		Exclamation mark		Exclamation mark	
Exploding bomb		Health hazard			
Corrosion		Corrosion			
Gas cylinder					

PRECAUTIONARY STATEMENTS (PREVENTION) – SAMPLE

Code	General precautionary statements	Hazard class	Hazard category	Conditions for use
P201	**Obtain special instructions before use.**	Explosives	Unstable explosive	
		Germ cell mutagenicity	1A, 1B, 2	
		Carcinogenicity	1A, 1B, 2	
		Reproductive toxicity	1A, 1B, 2	
		Reproductive toxicity	Effects on or via lactation	
P202	**Do not handle until all safety precautions have been read and understood.**	Explosives	Unstable explosive	
		Germ cell mutagenicity	1A, 1B, 2	
		Carcinogenicity	1A, 1B, 2	
		Reproductive toxicity	1A, 1B, 2	
P210	**Keep away from heat/sparks/open flames/hot surfaces – No smoking.**	Explosives	Divisions 1.1, 1.2, 1.3, 1.4, 1.5	… Manufacturer/supplier to specify applicable ignition source(s).
		Flammable gases	1, 2	
		Flammable aerosols	1, 2	
		Flammable liquids	1, 2, 3	
		Flammable solids	1, 2	
		Self-reactive chemicals	Types A, B, C, D, E, F	
		Pyrophoric liquids	1	



SAFETY DATA SHEET (SDS)

- ✓Provided by Supplier, latest version
- ✓ Content shall be as per CLASS Regs.
- ✓ Language: English & Malay
- ✓Revision:
  - New information available
  - > 5 years

CHEMICAL EXPOSURE HEALTH EFFECT

ACUTE EFFECT

Effect that occurs immediately or shortly after a single exposure to hazardous substance

CHRONIC EFFECT

Effect that occurs after repeated or prolonged exposure to hazardous substance

DERMATITIS

IRRITANT CONTACT DERMATITIS

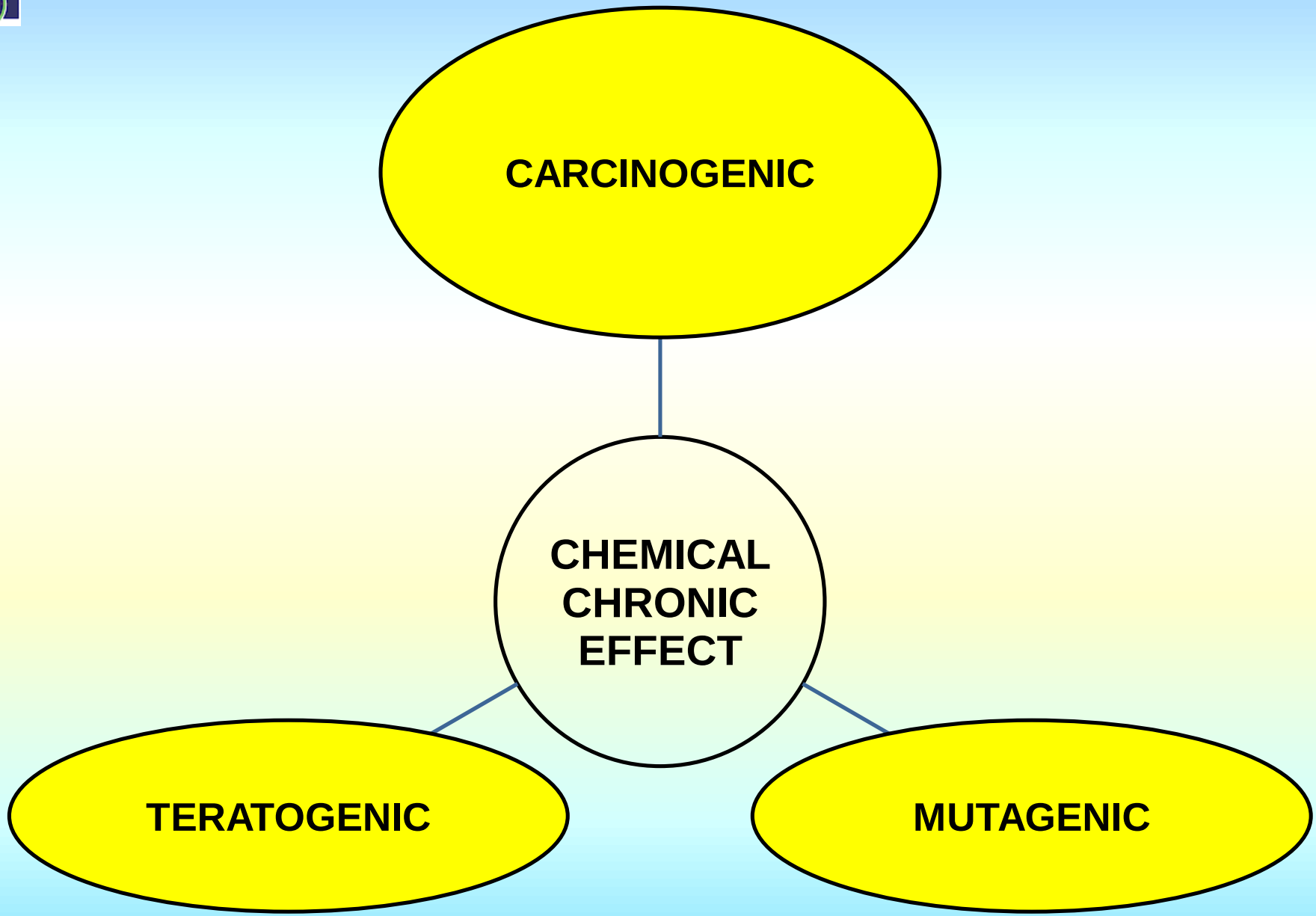
ALLERGIC CONTACT DERMATITIS

RESPIRATORY SENSTISATION

- Caused by respiratory sensitizer (enter through inhalation)
- Symptoms:

ASTHMA

CONJUNCTIVITIS



Cancer	Substances or Processes
Lung	Arsenic, asbestos, cadmium, coke oven fumes, chromium compounds, coal gasification, nickel refining, foundry substances, radon, soot, tars, oils, silica
Bladder	Aluminum production, rubber industry, leather industry, 4-aminobiphenyl, benzidine
Nasal cavity and sinuses	Formaldehyde, isopropyl alcohol manufacture, mustard gas, nickel refining, leather dust, wood dust
Larynx	Asbestos, isopropyl alcohol, mustard gas
Pharynx	Formaldehyde, mustard gas
Mesothelioma	Asbestos
Lymphatic and hematopoietic	Benzene, ethylene oxide, herbicides, x-radiation system
Skin	Arsenic, coal tars, mineral oils, sunlight
Soft-tissue sarcoma	Chlorophenols, chlorophenoxyl herbicides
Liver	Arsenic, vinyl chloride
Lip	Sunlight

Source: American Cancer Society

CHEMICAL SAFETY MANAGEMENT

CHEMICAL HANDLING – DO'S

1. Read label & SDS before handling chemicals
2. Store and handle chemicals based on instruction on label, SDS & SOP
3. Ensure adequate protection (e.g: ventilation, PPE, etc.) are in place before handling chemicals
4. Segregate chemicals based on compatibility
5. Avoid storage at an elevated temperature or direct exposure to sunlight

CHEMICAL HANDLING – DO'S

6. Keep food away from chemical storage or handling area
7. Ensure chemical containers are tightly closed all the time when chemicals not in use
8. Prevent source of ignition (e.g: smoking or electrostatic charge)
9. Prevent direct contact with chemicals at all times
10. Handle chemical waste based on legal requirements

CHEMICAL HANDLING – DON'TS

1. Don't touch, taste or smell chemicals
2. Don't mix chemicals, including chemical waste
3. Prevent horseplay during chemical handling
4. Don't wear any jewelry during handling chemicals
5. Don't use chemical container for storage of food

CHEMICAL HANDLING – DON'TS

6. Don't keep excessive amount of chemicals (more that the allowable amount)
7. Don't eat, drink and apply cosmetic at chemical area
8. Don't bring contaminated clothing (including PPE) to other uncontaminated area (e.g: office, canteen)
9. Don't block any emergency response equipment (e.g: eye wash, emergency shower, first aid box) with chemical container
10. Do not empty chemical container into drains, sink or toilet

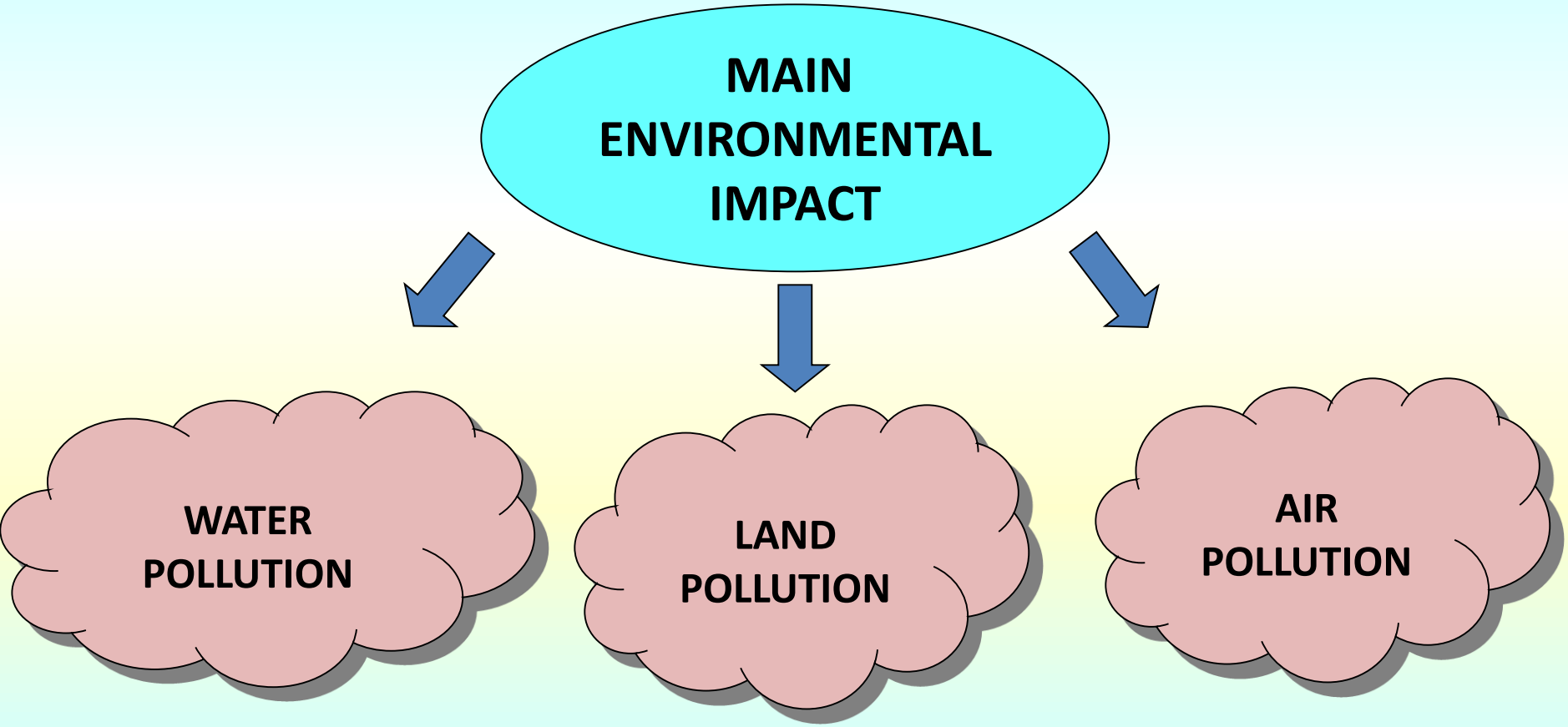
SCHEDULED WASTE MANAGEMENT

SCHEDULED WASTE

HAZARDOUS WASTE: Waste with properties that make it dangerous or potentially harmful to human health or environment

SCHEDULED WASTE: Any waste falling within the categories of waste listed in the First Schedule

ENVIRONMENTAL IMPACT



EXAMPLE OF SCHEDULED WASTE

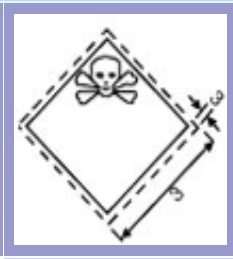
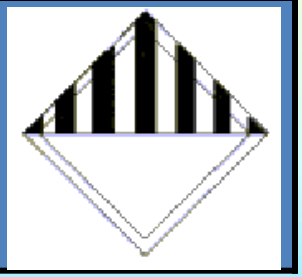
SW 110	Waste from electrical and electronic assemblies containing components such as accumulators, Mercury switches, glass from cathode ray tubes and other activated glass or PCB capacitors, Or contaminated with cadmium, mercury, lead, nickel, chromium, copper, lithium, silver, Manganese, or PCB
SW 305	Spent lubricating oil
SW 306	Spent hydraulic oil
SW 410	Rags, plastics, papers or filters contaminated with scheduled waste
SW 421	A mixture of scheduled waste

SCHEDULED WASTE LABELING

Scheduled waste label shall include:

- Date when scheduled wastes are first generated
- Name, address and telephone number of waste generator
- Scheduled waste code
- Symbol

Labelling Requirement for Scheduled Wastes 3rd SCHEDULE	WARNING LABELS
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**	
Label 4: **SOLID: SPONTANEOUS COMBUSTIBLE (WASTE)** **Symbol(Flame): Black;** **Background: Upper half white; lower half red**	
Label 5: **SOLID DANGEROUS WHEN WET (WASTE)** **Substances, which in contact with water, emit in flammable gases** **Symbol(Flame):Black or white;** **Background: Blue**	
Label 6: **OXIDIZING SUBSTANCES (WASTE)** **Symbol(Flame over Circle):Black;** **Background: Yellow**	

Label 7: **ORGANIC PEROXIDES** **(WASTE)** **Symbol(Flame Over the Circle): Black;** **Background: Yellow**	
Label 8: **TOXIC SUBSTANCES** **(WASTE)** **Poisonous(toxic) substances** **Symbol(Skull and crossbones):Black;** **Background:White**	
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 bar):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	

DISPOSAL, TREATMET & RECOVERY OF SCHEDULED WASTE

- By licensed contractor only
- Licensed by DOE
- 2 types of license:
  1. Transporter license
  2. Prescribed premise license
- Validity of license: 1 year

SCHEDULED WASTE MANAGEMENT

1. Identification of scheduled waste by waste generator
2. Notification of scheduled waste generated to DOE
3. Inventory record shall be kept by waste generator
4. Scheduled waste shall be properly labeled – as per legal requirements
5. Scheduled waste handler shall take necessary safety precautions when handling scheduled waste

SCHEDULED WASTE MANAGEMENT

6. Scheduled waste shall be packed in suitable container
7. Incompatible scheduled waste shall not be mixed
8. Scheduled waste shall not be stored more than 20MT or 180 days
9. Scheduled waste shall be stored at proper storage area that meets all EHS requirements

SCHEDULED WASTE MANAGEMENT

10. Scheduled waste shall be disposed, treated or recovered at prescribed premise only
11. Only licensed contractor is allowed to transport and treat or dispose scheduled waste
12. Transportation of scheduled waste requires consignment note and 7th Schedule (prepared by waste generator)
13. Spill or accidental discharge of scheduled waste shall be handled properly by contractor (with technical support from waste generator)