Working Safely with Solvents

Dr. Ragauskas group safety meeting

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What is Solvent?

- A solvent is a **liquid** at room temperature used to **dissolve or dilute** other substances and materials without chemical changes.

- A solvent is really dangerous, because many are **flammable**, **poisons**, or **irritants**.

- When we are overexposed via **inhalation**, **absorption**, **ingestion**, or **injection**, it causes....

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If a solvent gets in your **EYES**, you could experience:

- Eye irritation or burning
- Conjunctivitis
- Eye damage
- Blindness

**Skin Exposure** to solvents can result in:

- Rash
- Dry scaly skin
- Skin burns
- Dermatitis

**Inhaling or Swallowing** solvents can be VERY dangerous. With these routes of entry, large amounts of solvents can quickly spread throughout your body.

Even inhaling or swallowing small amounts can lead to symptoms like:

- Nausea
- Headaches
- Fatigue
- Dizziness
- Sore throat
- Dizziness
- Vomiting
- Lack of coordination
- Thrombs
- Blurred vision
- Irregular heartbeat
- Respiratory infection

If large amounts of hazardous solvents get into your body, you run the risk of:

- Permanent organ damage (liver or kidney)
- Unconsciousness
- Death
Protect yourself!

- Prior to use solvents, we have to fully understand a safety rules for solvents.

1. Use Personal Protective Equipment (PPT).
2. Check the classification of the solvent.
3. Store the solvent at proper location.
4. Discard the solvent properly.
1. Use Personal Protective Equipment (PPT)

- Avoid skin contact with solvents by **wearing suitable PPT** (e.g. gloves, lab coat, goggles or face shield, etc).

- Always wear **goggles** inside LAB.

- Use proper **gloves** based on the chemical which you are working.
  
  - The gloves must be resistant to the specific chemical
  
  - For concentrated acids and alkalis or organic solvents, natural rubber, neoprene, or nitrile gloves are recommended.
  
  - Remove gloves when opening doors, typing on computers or using the phone!
2. Check the classification of the solvent

**Health Hazards**
- Very toxic or toxic
- Harmful
- Corrosive
- Irritant
- Cancer causing
- Hazards to reproduction
- Non-heritable birth defects
- Sensitizing

**Fire & Explosion Hazards**
- Explosive
- Oxidizing
- Extremely flammable
- Highly flammable
- Flammable

**Environmental Hazards**
- Toxic to living organisms
- Persistent in the environment
- Bio-accumulative
2. Check the classification of the solvent

- All information can be found in the container labels or MSDS sheets.

- Symbols
  - Harmful (Xn) substances
  - Irritating (Xi) substances
  - Oxidizing Agent (O)
  - Corrosive (C) substances
  - Flammable (F) Extremely Flammable (F+)
  - Explosive (E)
  - Environmentally dangerous (N) substances
3. Store the solvent at proper location

- Solvents must be stored at **proper location**.
  
  1. We have Flammable/Acid/Base/Corrosive/Oxidizer container.
  
  2. All solvents must be at **secondary container**.
4. Disposal of Solvents

- All solvents must be disposed following the "waste solvent" route (GT rule).

1. Categorize
   - Waste flammable solvent (e.g. Ethyl acetate, diethyl ether, xylene, petroleum ethers etc.)
   - Waste chlorinated solvent (e.g. Chloroform, dichloromethane trichlorethylene etc.)
   - Waste oil

2. Store separately in approved safety cans/bottles

   - Solvents containing toxic or carcinogenic substances should also be separated.

3. Label on the cans/bottles and Contact EH&S

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