✅ **SS1 Chemistry Lesson Note**

🧪 **Week 2: Introduction to Chemistry II**

⚠️ 1. Adverse Effects of Chemicals

Chemicals are useful, but if misused or mishandled, they can cause **serious harm** to people, animals, and the environment.

a. Drug Abuse

- **Definition:** The misuse or overuse of drugs without a doctor's prescription or supervision.
- **Examples:** Codeine, tramadol, marijuana, cocaine.
- **Effects:**
    - Addiction
    - Mental illness
    - Organ damage (liver, kidney, brain)
    - Death

🎓 *Chemistry helps identify harmful drug combinations and monitor dosages.*

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b. Poisoning

- Occurs when harmful chemicals enter the body by swallowing, inhaling, or through the skin.
- **Examples of poisons:**
    - Household cleaners (e.g., bleach)
    - Insecticides (e.g., Sniper)
    - Industrial waste
- **Symptoms:** Vomiting, difficulty breathing, unconsciousness.

☣️ **Laboratory chemicals must be clearly labeled and stored securely.**

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c. Corrosion

- Corrosion is the gradual destruction of materials (usually metals) by chemical reactions.
- **Examples:**
    - Rusting of iron
    - Acid rain damage to buildings
    - Corrosion of pipelines
- **Causes:** Acidic chemicals, water, oxygen.

🧪 *Chemical coatings and galvanization are solutions provided by chemistry to reduce corrosion.*

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d. Pollution

- **Definition:** Introduction of harmful substances (pollutants) into the environment.
- **Types:**
    - **Air Pollution:** Smoke from factories, vehicles (CO_2, SO_2, etc.)
    - **Water Pollution:** Chemical waste in rivers, oil spills
    - **Soil Pollution:** Pesticide and fertilizer runoff
- **Consequences:**
    - Health issues
    - Climate change
    - Death of aquatic life
    - Poor agricultural productivity

🌍 *Environmental chemistry studies how to reduce these effects.*

🔬 **2. Scientific Method**

The **scientific method** is the step-by-step procedure scientists use to **investigate problems** and find answers logically.

✅ Steps in the Scientific Method

Step	Description	Example
1. **Observation**	Noticing a problem or phenomenon	"My tap water has a bad smell."
2. **Question**	Asking a question about it	"Why does the water smell?"
3. **Hypothesis**	A possible explanation or guess	"It might contain decaying matter."
4. **Experiment**	Testing the hypothesis	Collect samples and test for bacteria
5. **Result**	Recording what happened	Bacteria was present in water sample
6. **Conclusion**	Final judgment from result	Water is contaminated – needs treatment

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🔍 Application of Scientific Method in Daily Life

- Checking if fertilizers improve plant growth
- Investigating cause of food spoilage
- Creating new cleaning agents
- Testing new medicines and vaccines

🧪 Chemistry relies heavily on the scientific method to ensure **accuracy, safety, and reliability**.

💡 Chemist's Responsibilities

Chemists must:

- Avoid misuse of chemicals.
- Follow safety guidelines in labs.
- Label and store chemicals properly.
- Dispose of chemical waste responsibly.
- Use the scientific method to solve problems ethically.

🧠 Evaluation Questions