

Class 8 | Science

Chapter:
Pollution
of Air and
Water



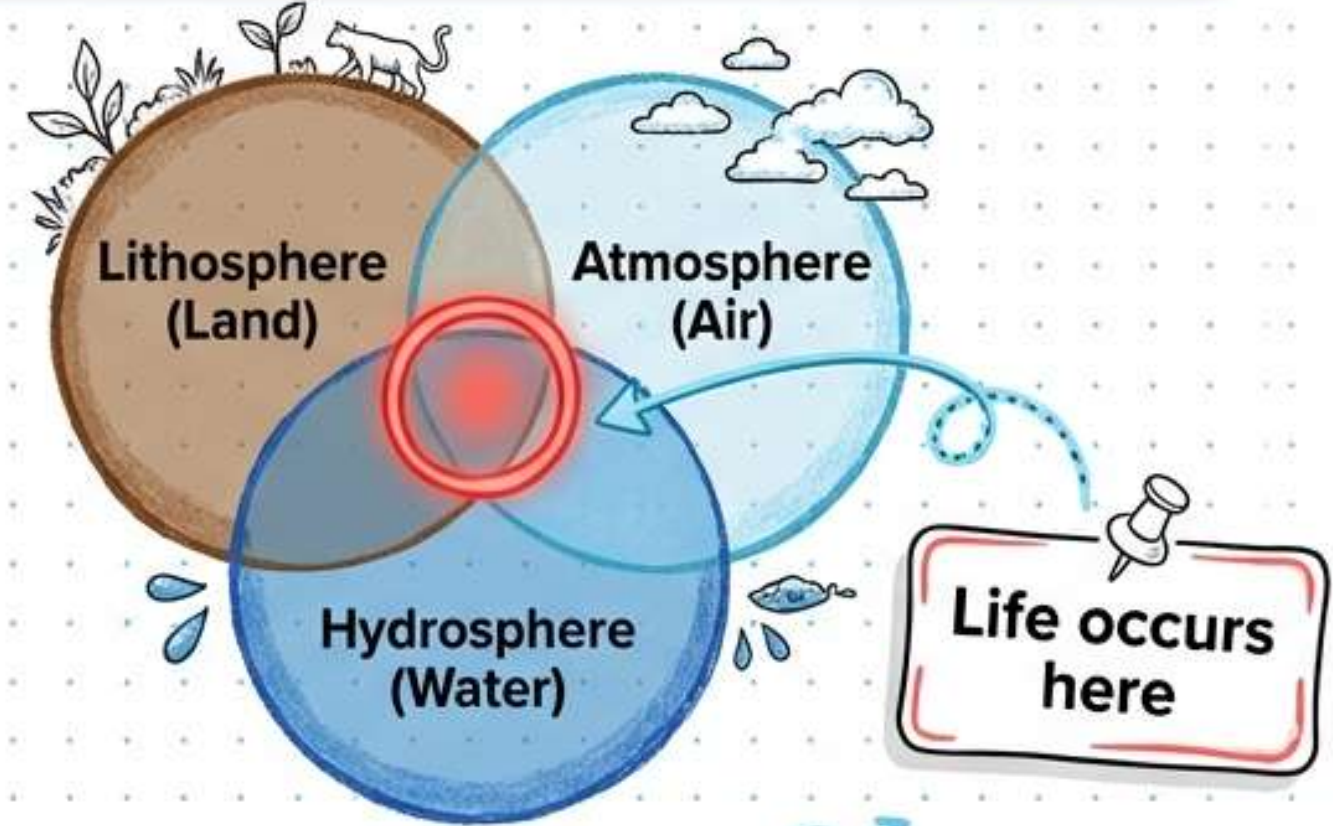
Chapter Snapshot: The Imbalance of Earth



Pollution: Unusually high concentration of harmful/poisonous substances in the environment.

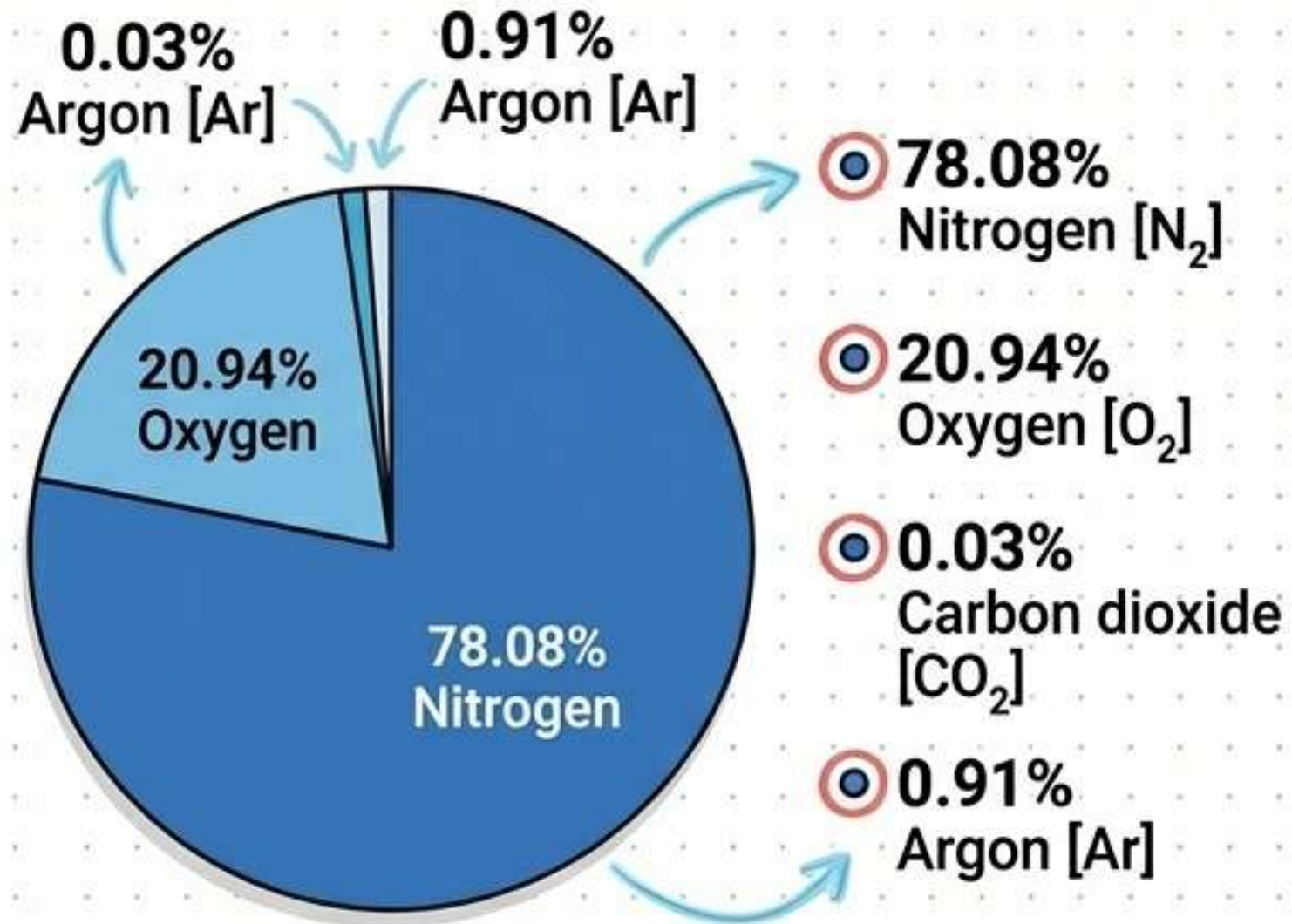
Pollutant: The unwanted substance causing the contamination.

Key Term! Memorize









Core Concept: Air & Its Invaders


The Baseline



The Invaders

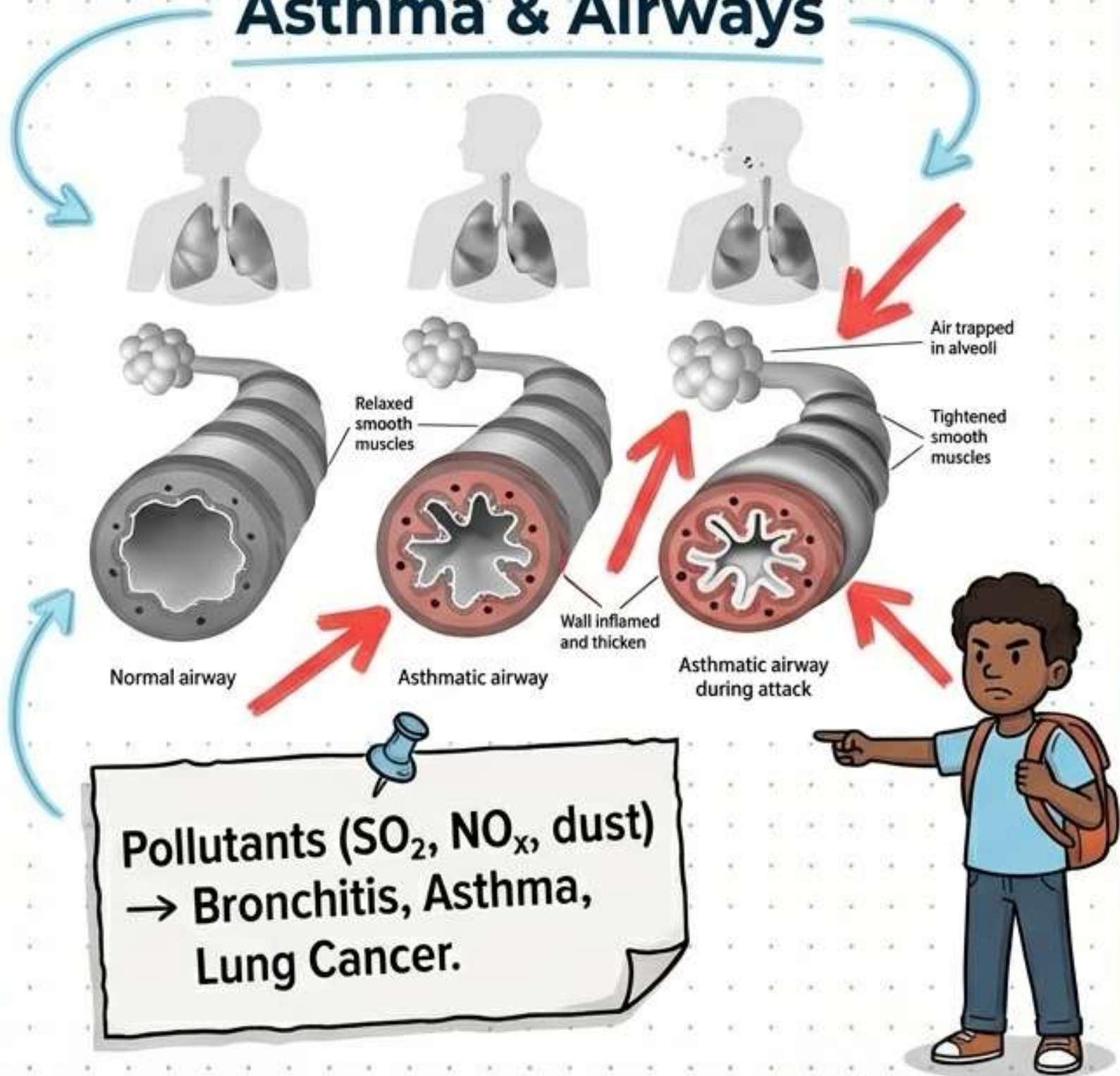
Natural Sources	Man-Made Sources
	
	
	

Vs.



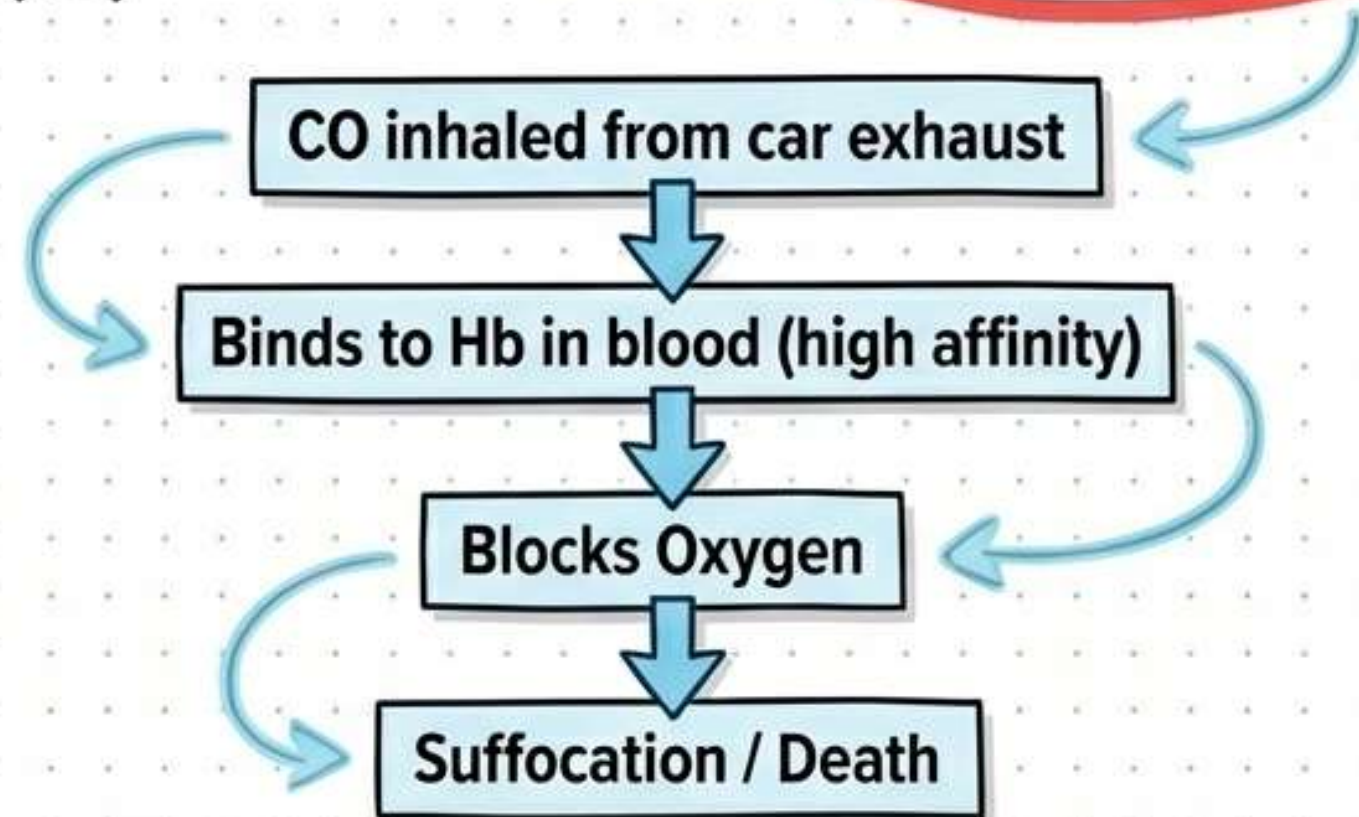
The Deadly Effects: Human Impact

Asthma & Airways



The Silent Killer - CO Poisoning

Visual Equation

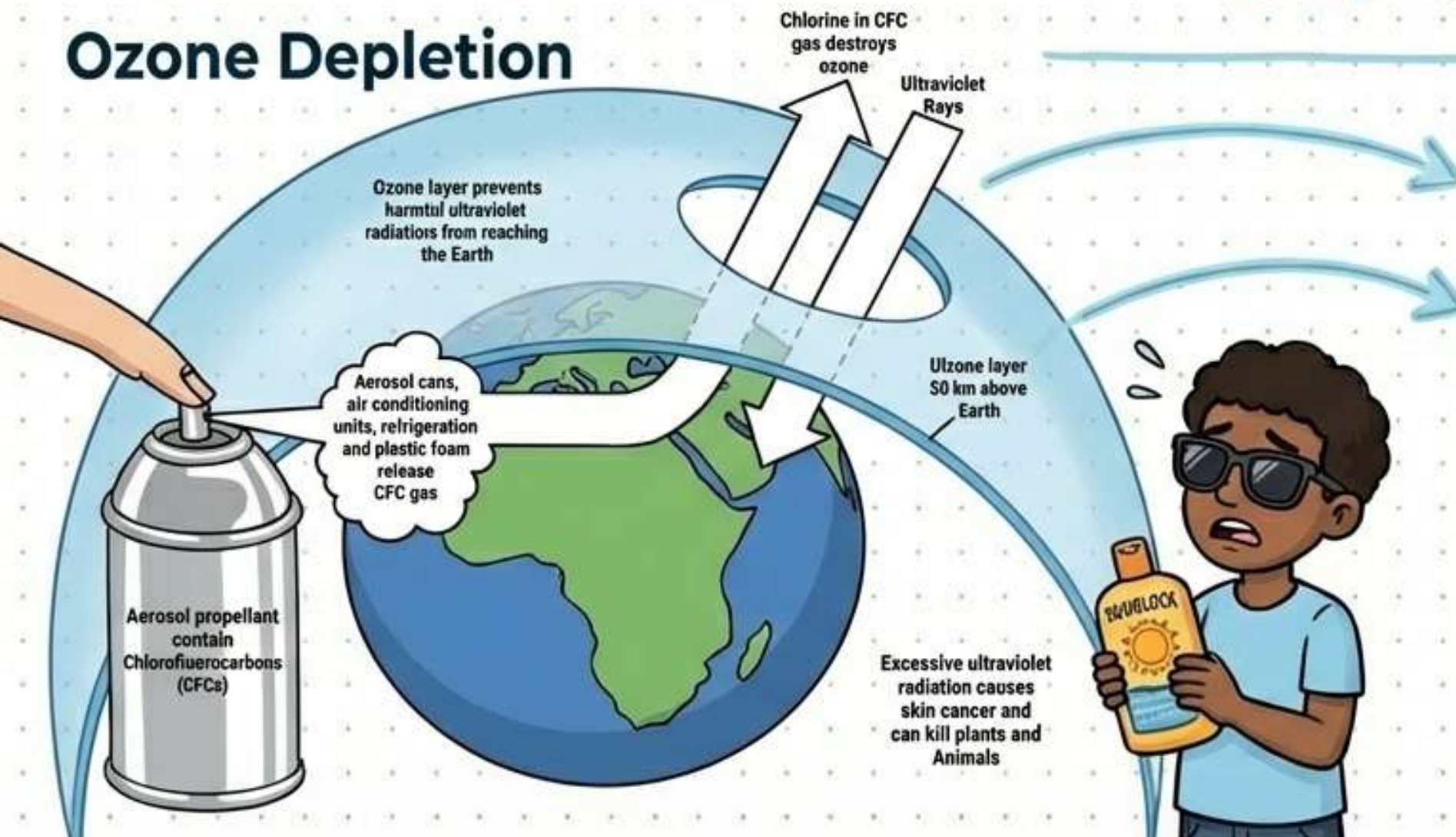


The Deadly Effects: Global Impact

Smog **Visual Equation**
Smoke + Fog = SMOG

Condensation of water vapor + toxic dust → Reduces visibility (accidents) + Causes wheezing/asthma.

Ozone Depletion



1. CFCs released (ACs, fridges).
2. CFCs destroy O_3 molecules, turning them into O_2 .
3. UV radiation strikes Earth.
4. Result: Skin cancer, immune damage, plant mutations.

Core Concept: Water Contamination

The Pollutants Matrix

Physical Pollutants



Heat, Oil Spills.

Chemical Pollutants



Organic wastes, Detergents, Pesticides (DDT, BHC), Inorganic chemicals (Arsenic, Lead, Mercury).

The Chain Reaction

Fertilizers/Pesticides



Wash into lakes



Toxic to aquatic life



Human Impact List:

- Contaminated water → Typhoid, Diarrhea, Dysentery, Jaundice.

The Flashcard Wall: Keywords & Formulas

Pollutant:

Unwanted, harmful substance contaminating the environment.

Smog:

Dark fog formed by smoke + fog + gaseous pollutants.

Potable Water:

Water that is clear, transparent, odorless, and safe for drinking.

Sulphuric Acid:

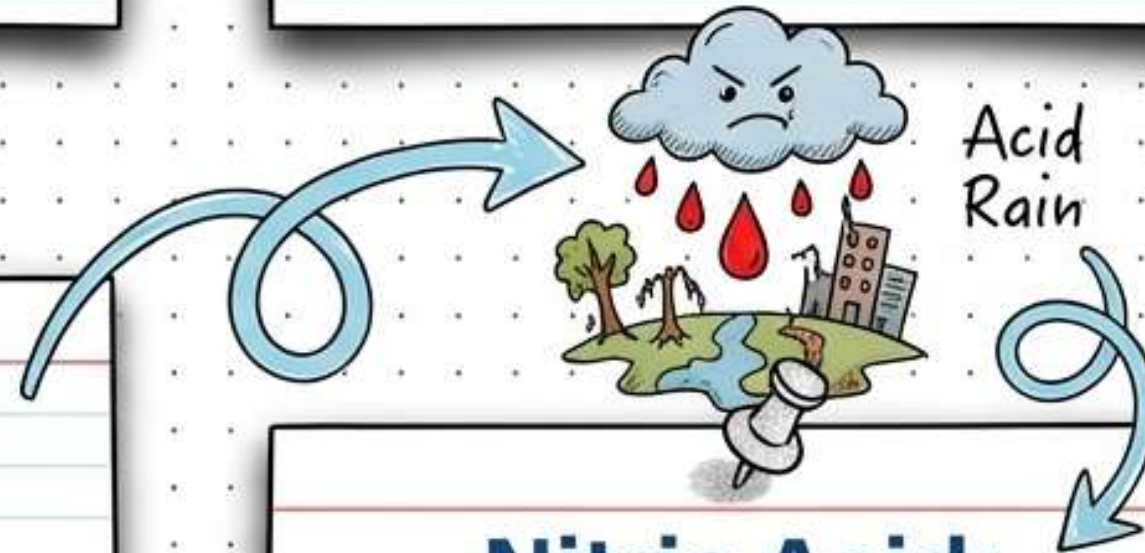


Nitric Acid:



Ozone / CFCs:

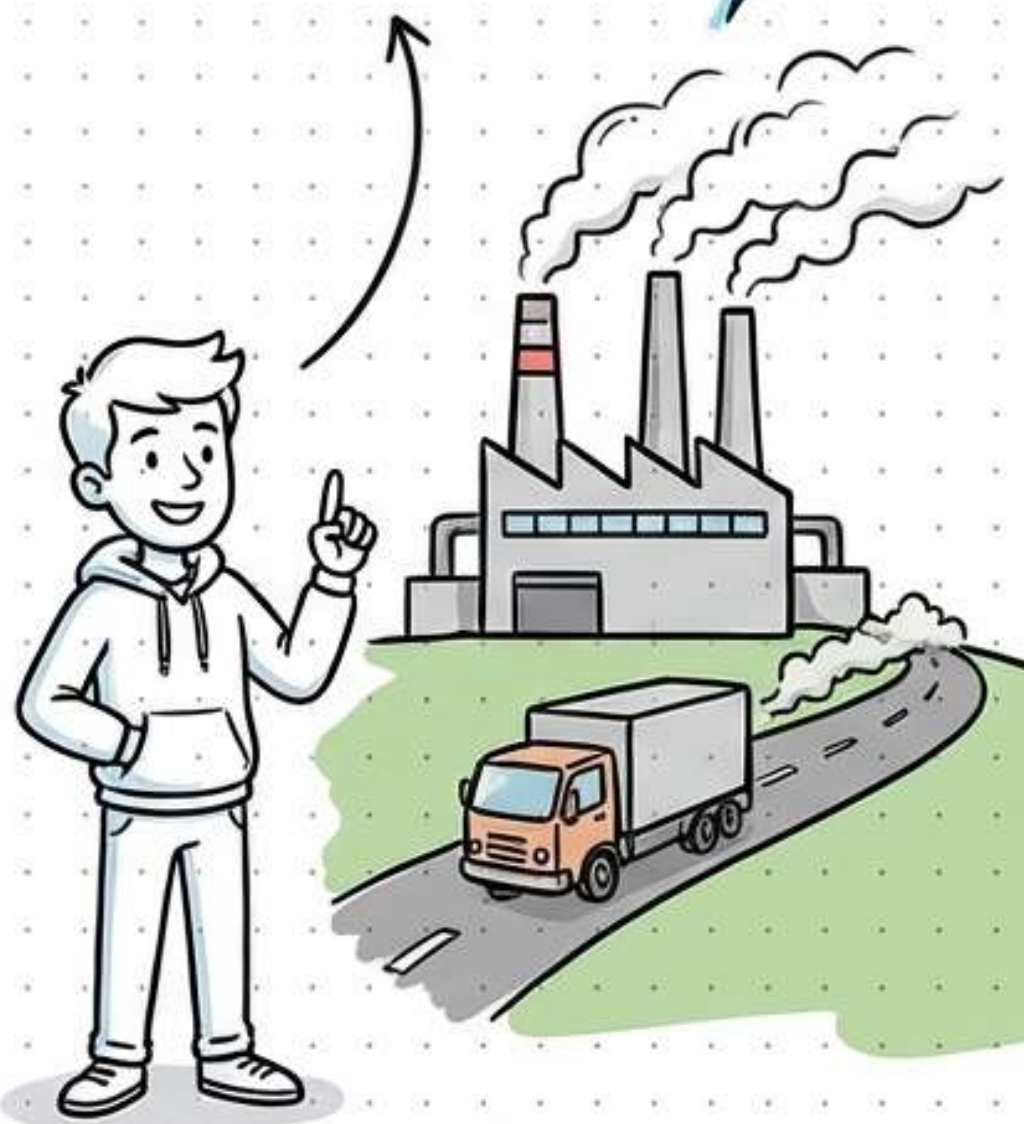
O₃ (Ozone)
CFCs (Chlorofluoro carbons - Coolants)



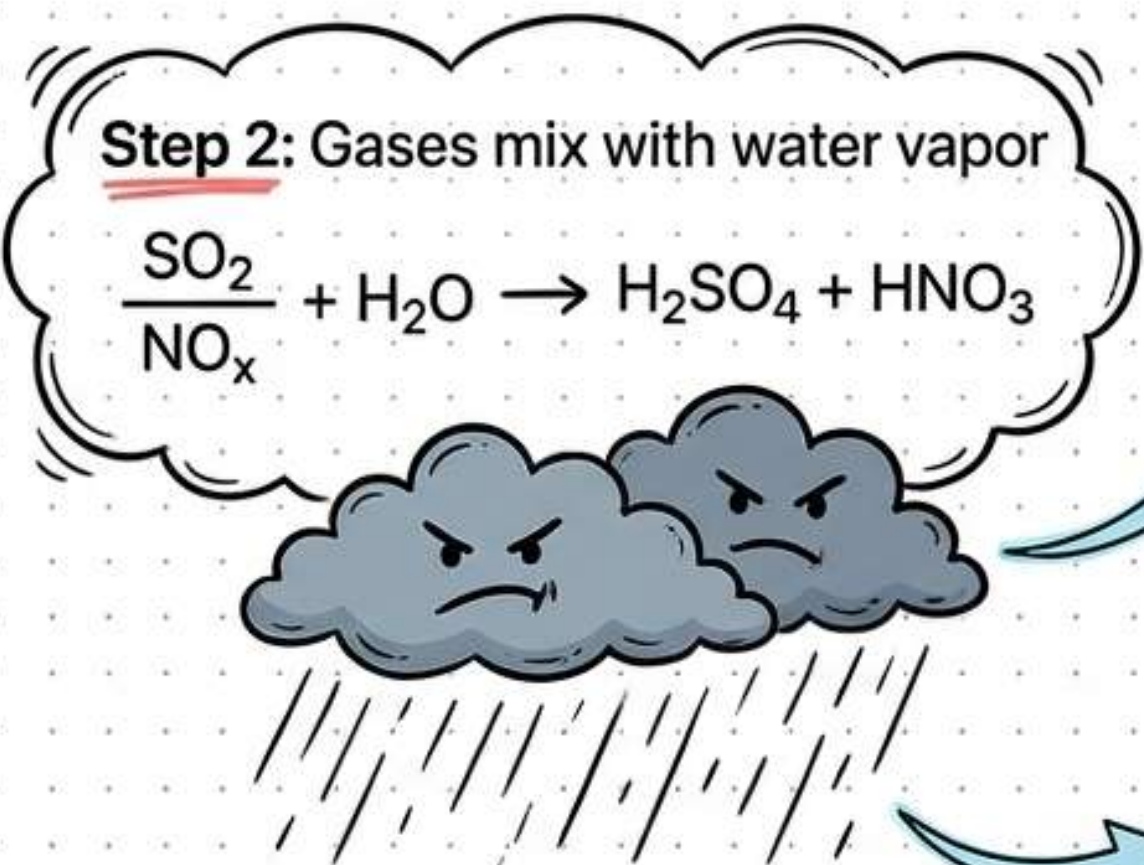
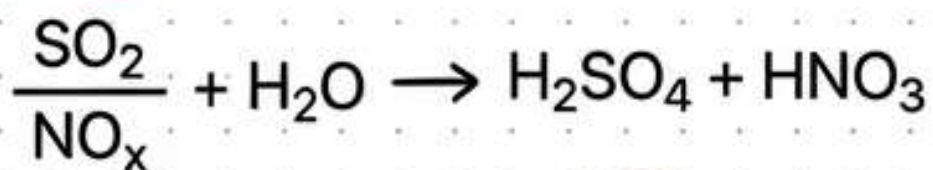
Mechanism of Destruction: The Acid Rain Cycle

Step 1: Emissions

(SO₂, NO_x)



Step 2: Gases mix with water vapor



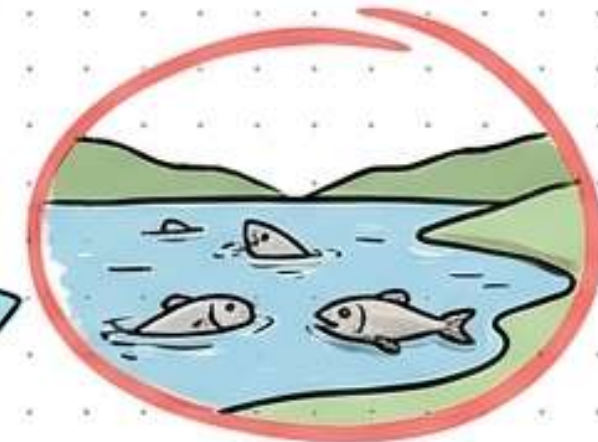
Step 3: Acid Rain drops



Forests:

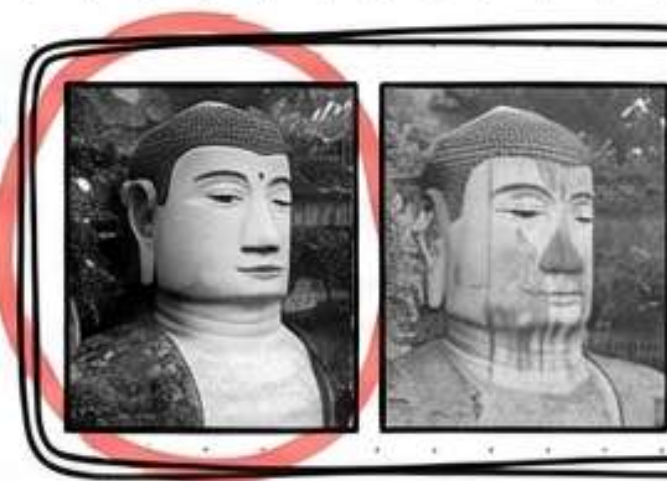
Leaves turn yellow and fall.

Chemical (CaCO₃)



Water Bodies:

Lakes become acidic, killing fish.



Monuments:

Marble corrosion (Calcium Carbonate reacts with acid).

CaCO₃

The Exam Hacker: Most Asked Board Questions

Q1: Why is CO dangerous to inhale?

- Binds with haemoglobin → forms **Carboxyhaemoglobin** → cuts oxygen supply → suffocation.

Q2: What is smog and its effects?

- Formed by **Smoke + Fog**. Causes asthma, wheezing, and reduces visibility.

Q3: How does acid rain affect monuments?

- Acids ($\text{H}_2\text{SO}_4/\text{HNO}_3$) react with **marble (calcium carbonate)** causing corrosion (e.g., Taj Mahal).

Q4: What causes ozone depletion?

- **Chlorofluorocarbons (CFCs)** from ACs/refrigerators convert O_3 to O_2 , allowing harmful **UV radiations**.

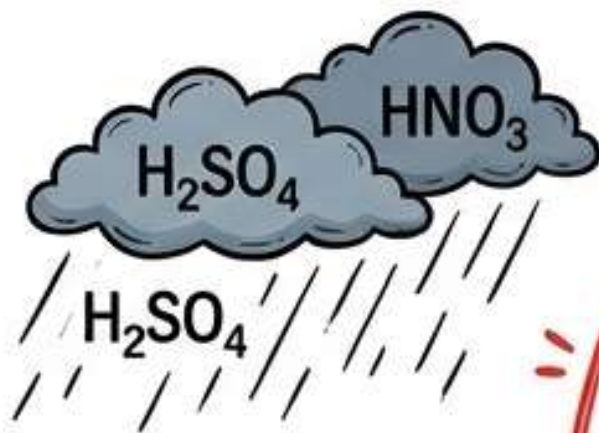
The Shield: Exam Traps & Common Mistakes

Trap 1: The Acid Rain Mix-up

Mistake: Writing "Hydrochloric Acid" (HCl). ❌



Fact: Acid rain is strictly Sulphuric Acid (H_2SO_4) and Nitric Acid (HNO_3). ✓✓

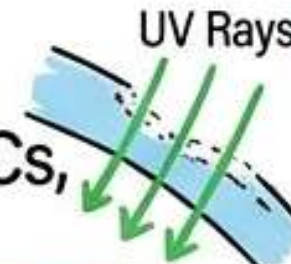


Trap 2: The Ozone Hole Myth

Mistake: Thinking there is a literal physical hole in the sky. ❌



Fact: It is a thinning of the ozone layer caused by CFCs, allowing UV rays to pass.

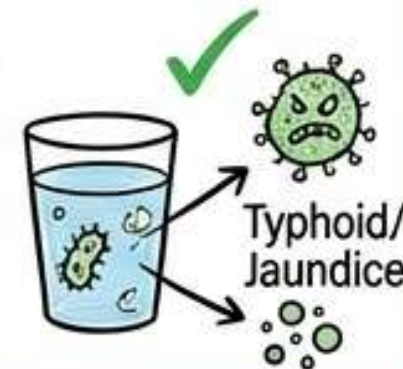


Trap 3: "Clear Water is Safe"

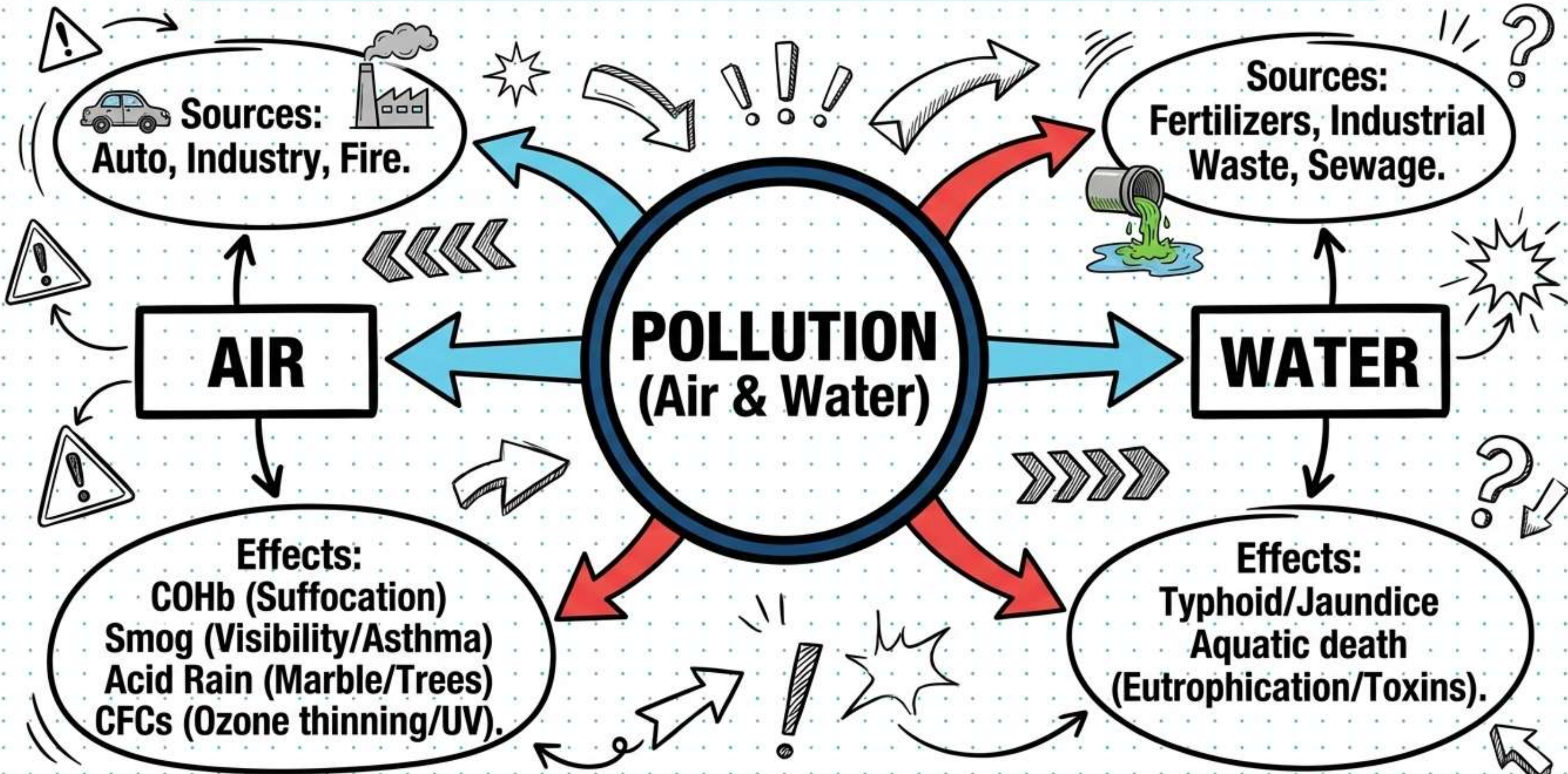
Mistake: Assuming transparent water is potable. ❌



Fact: Clear water may still contain invisible disease-causing microorganisms (typhoid, jaundice) or dissolved toxic impurities. ✓



Rapid Revision: The 5-Minute Refresher



Answer Blueprint: Nailing the 5-Mark Question

Describe **Acid Rain**, its formation, and its harmful effects. (5 Marks)

★
Part 1:
Definition
(1 Mark)

Start with clear definition
(Mixture of H_2SO_4 and HNO_3 in rain).

★
Part 2:
The Chemistry
(1.5 Marks)

Always include the gases!
(SO_2 and NO_x react with water vapor).

Part 3:
Bulleted Effects
(2 Marks)

Use exactly 3 clear bullet points.
1. Trees (leaves yellow).
2. Aquatic life (lakes acidic).
3. Monuments (marble cancer/corrosion).

★
Part 4:
Conclusion
(0.5 Marks)

One sentence summarizing the need to
burn fewer fossil fuels.

Doodle tip:
Write the
formula,
don't just
use words.



The Cheat Codes: Memory Tricks

mc²⁴

Air Composition
Elements

Never **O**rder
Cold **A**pples

Nitrogen (78%),
Oxygen (21%), Carbon
Dioxide (0.03%),
Argon (0.91%).



The Acid Rain Gases

SO NO
to Acid!

SO₂ (Sulphur dioxide)
and NO_x (Nitrogen
oxides).



Water Diseases

Toxic Water
Causes **T**errible
Digestion &
Jaundice

Typhoid,
Dysentery/Diarrhea,
Jaundice.



Final Exam Checklist: Ready for the Board!

I know the difference between natural and man-made pollutants.

I can write the exact spelling of Carboxyhaemoglobin and Chlorofluorocarbons.

I can draw and explain the Acid Rain cycle.

I know the 3 main diseases caused by water pollution.

I understand why clear water isn't always safe to drink.



You've got this! Close the notebook and go crush your exam.