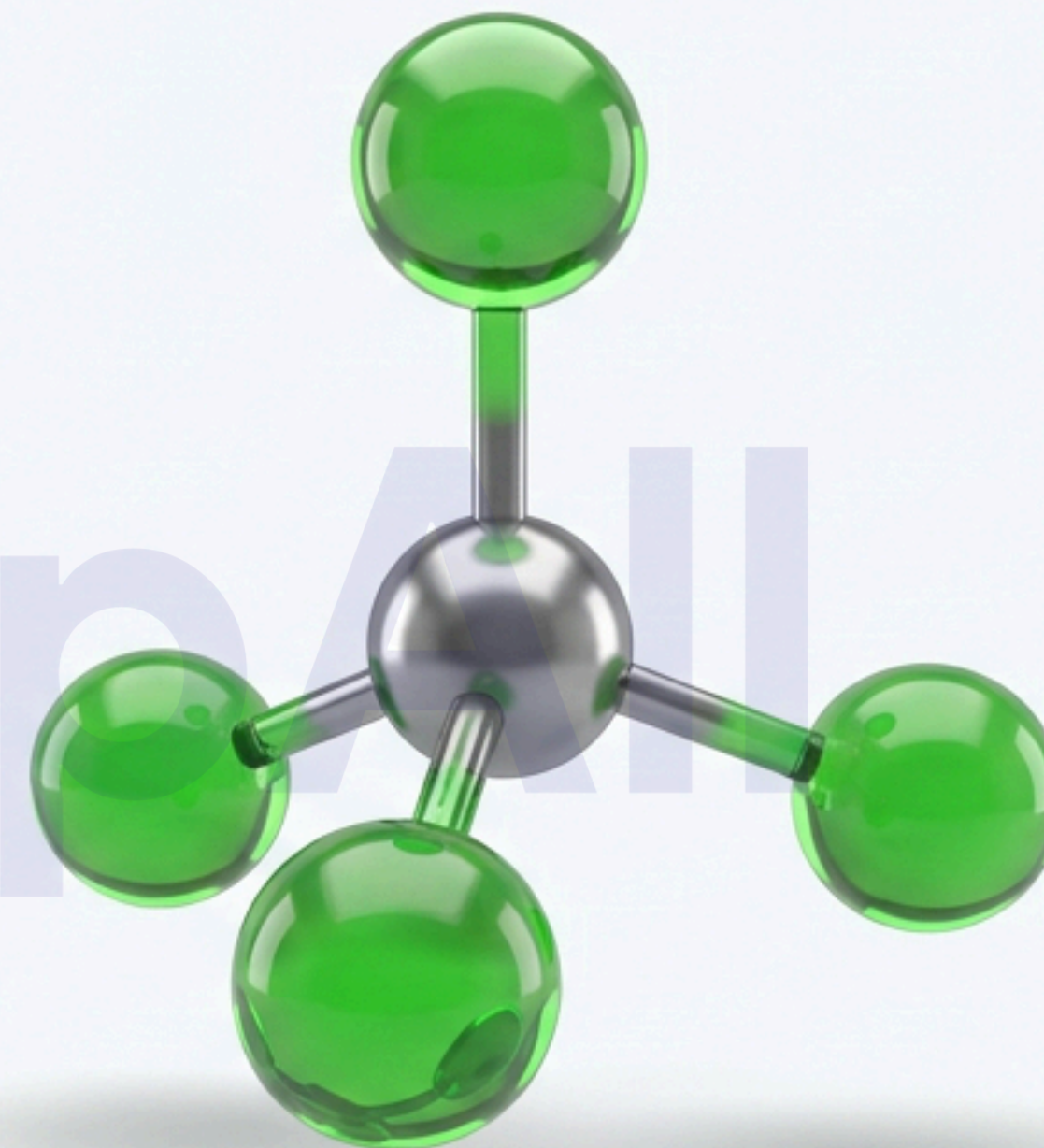


Carbon Tetrachloride: The complete chemical and hazard profile.

A comprehensive analysis of tetrachloromethane—from industrial utility to severe biological and environmental toxicity.

● **Classification:** Polyhalogen Compound



Identity & Molecular Structure



Formula:

CCl_4

IUPAC Name:

Tetrachloromethane

Common Name:

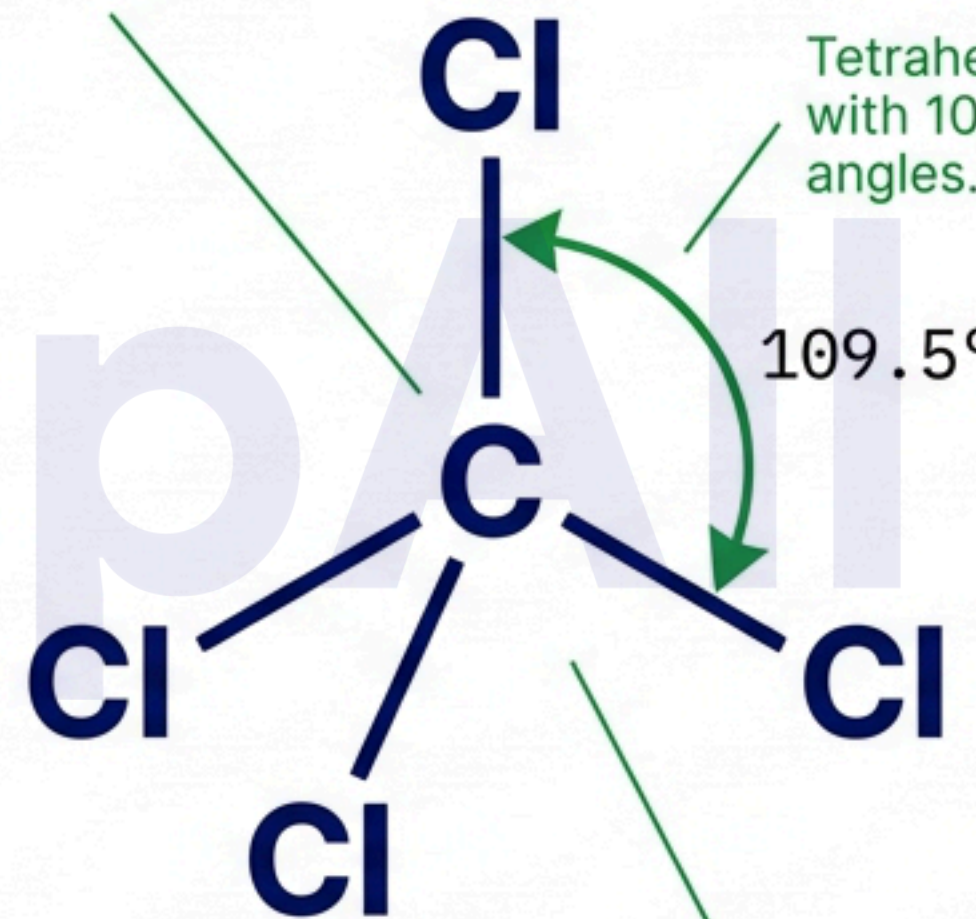
Carbon tetrachloride

Density:

1.595 g/cm³ (Heavier than water)

Central carbon is
 sp^3 hybridized.

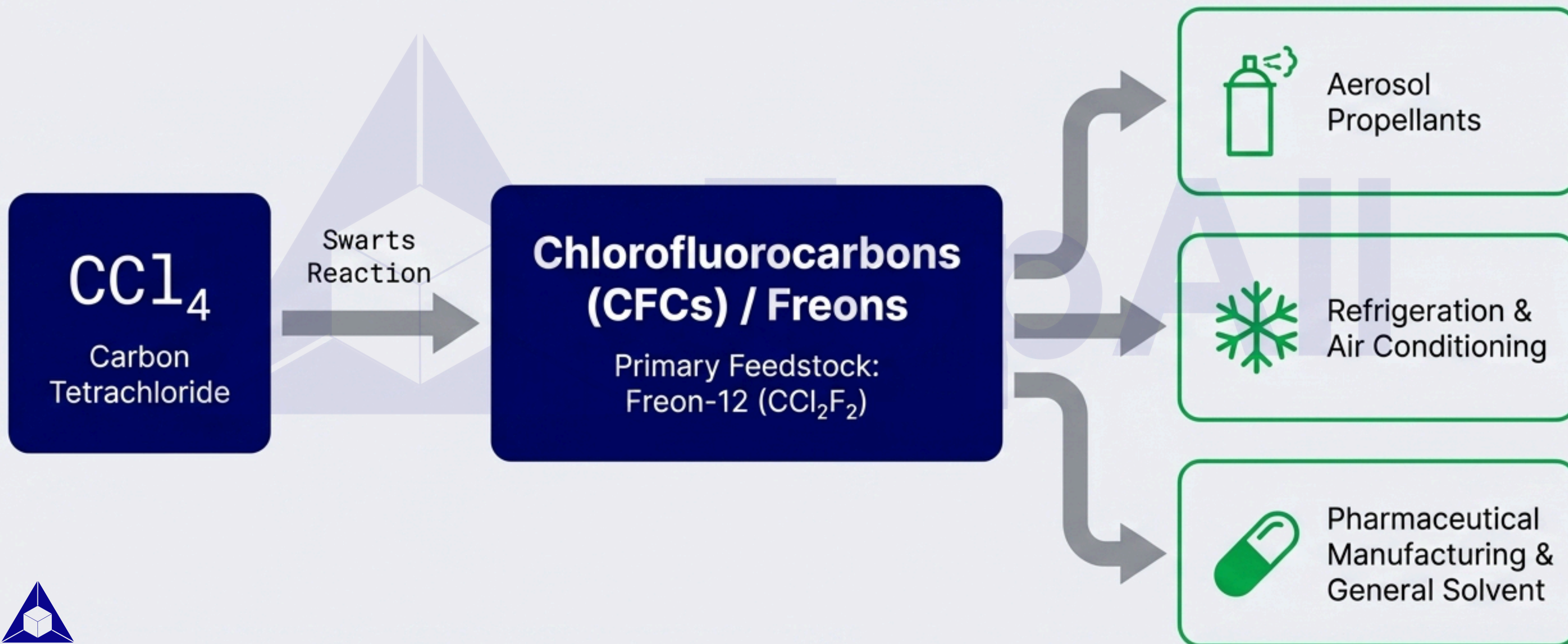
Tetrahedral geometry
with 109.5° bond
angles.



Highly symmetrical,
resulting in a non-polar
molecule.

Modern Industrial Utility

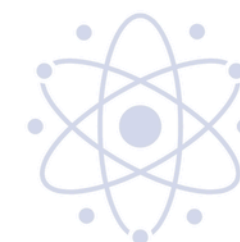
Status: Active Industrial Feedstock





You've Learned the Theory. Let's Test Them Now.

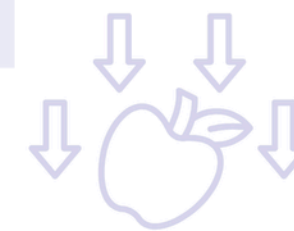
$$E=mc^2$$



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- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter

The Phase-Out: Obsolete Applications



Phase-out began mid-1960s due to emerging toxicity evidence.



Industrial Degreasing

Formerly widely used as a cleaning fluid for heavy machinery



Household Spot Remover

Once a ubiquitous domestic cleaning agent for fabrics



Fire Suppression

Utilized in early fire extinguishers before the severe health risks were fully understood.

The transition away from these direct-contact uses marked the first major regulatory response to CCl₄ exposure

Biological Hazard Profile: Direct Toxicity



Central Nervous System

Immediate/Severe

Dizziness, light-headedness, nausea, vomiting. Can cause permanent nerve cell damage. Severe cases lead rapidly to stupor, coma, or death.

Cardiovascular System

Acute

Exposure can induce irregular heartbeat or sudden cardiac arrest.

Ocular System

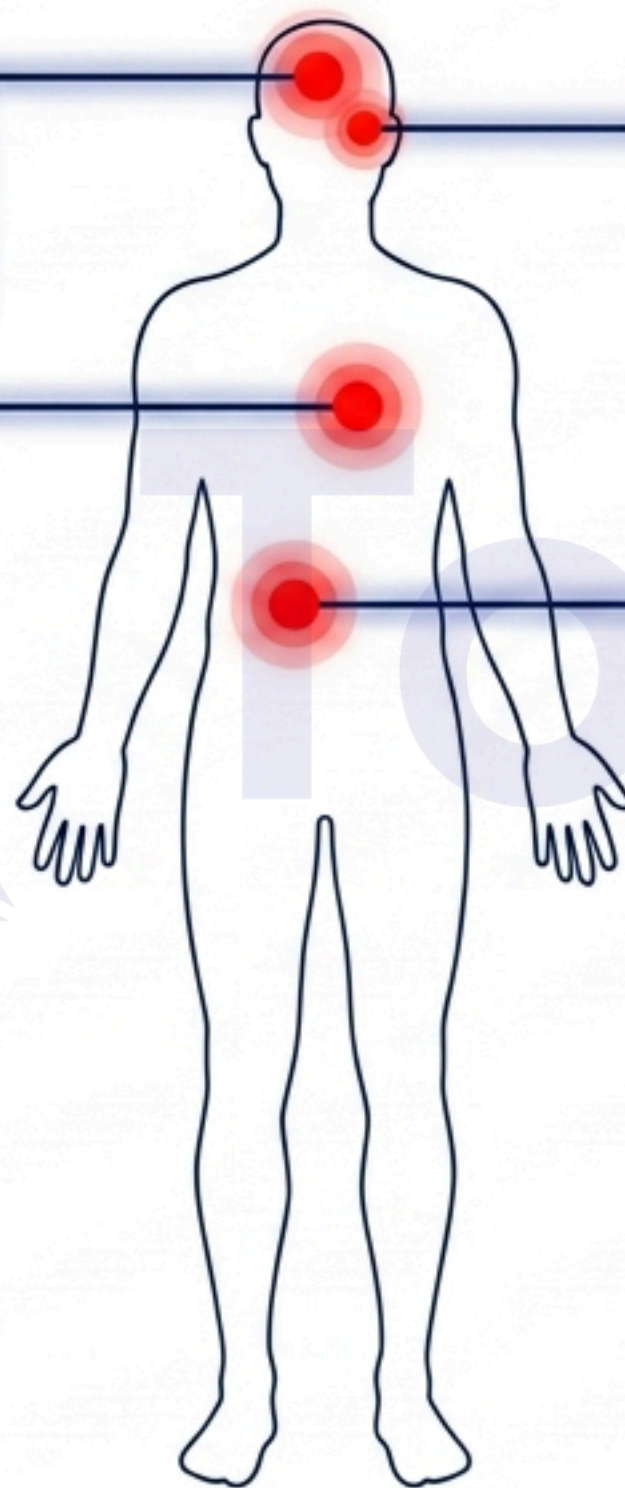
Contact

Direct physical contact causes intense corneal irritation.

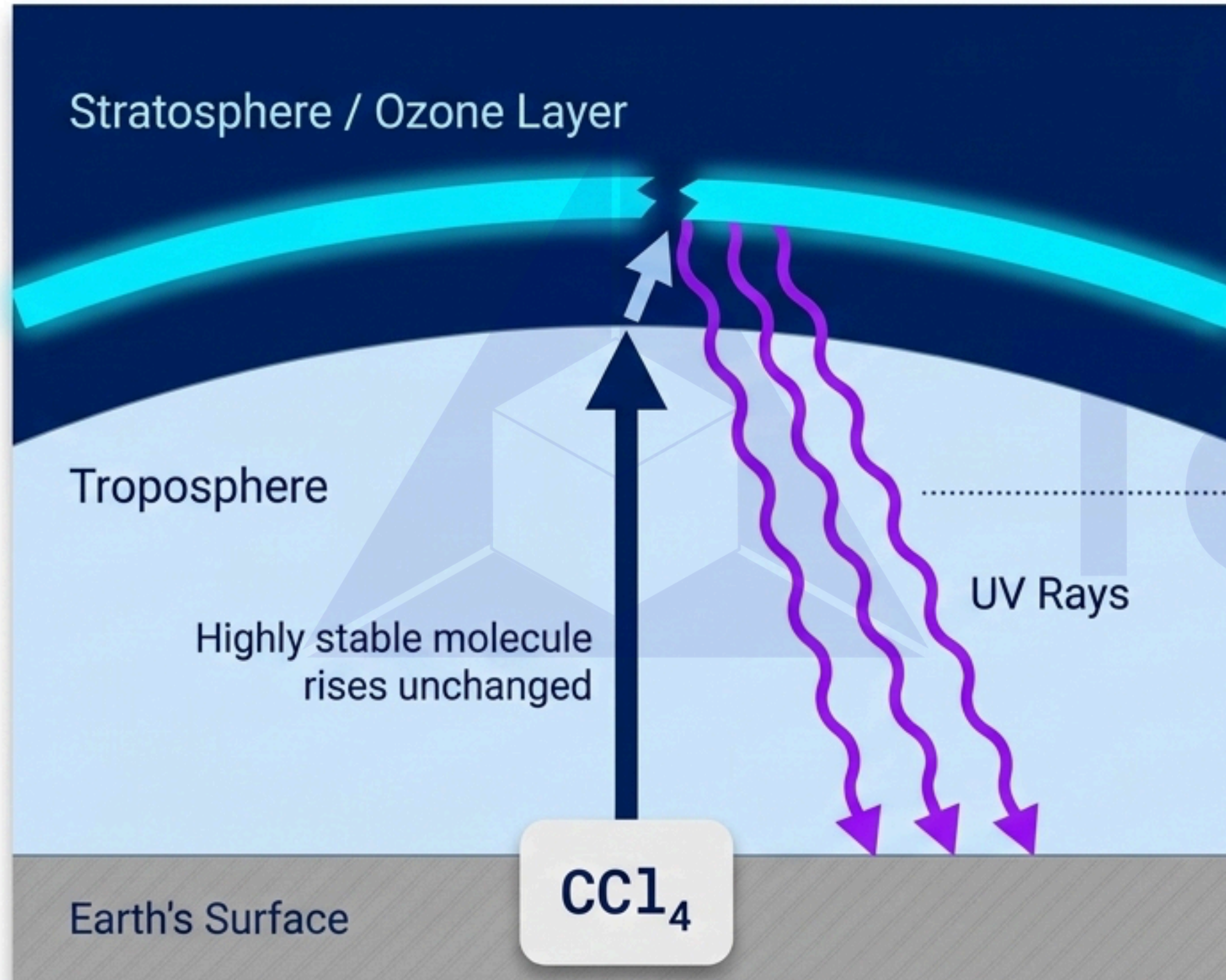
Hepatic System

Chronic

Strong evidence indicates exposure causes liver cancer in humans.



Atmospheric Risk: Ozone Depletion Mechanism



Secondary Human Consequences

Increased risk of skin cancer.

Escalation in eye diseases and ocular disorders.

Potential disruption of the human immune system.

CCl₄ Master Summary

EXAM FOCUS

Comparison & Recall Matrix

Identity & Structure

IUPAC:

Tetrachloromethane

Formula:

CCl₄

Geometry:

Tetrahedral, sp³ hybridized

Density:

Heavier than water (1.595 g/cm³)

Utility & Applications

Modern:

Feedstock for CFCs (Freon-12 via Swarts reaction), aerosol propellants, pharmaceutical manufacturing.

Obsolete:

Pre-1960s degreaser, spot remover, fire extinguisher.

Hazards & Toxicity

Biological:

CNS depression (coma/death), liver cancer, cardiac arrest.

Environmental:

Ozone layer depletion leading to increased UV exposure, skin cancer, and immune disruption.



You've Learned the Theory.

Now Let's Test It.

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