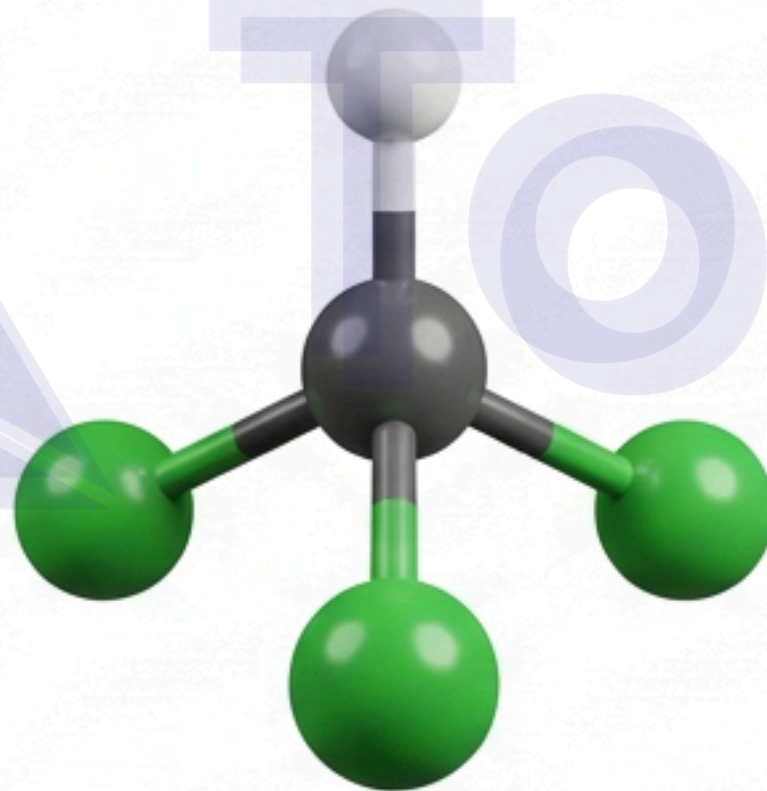
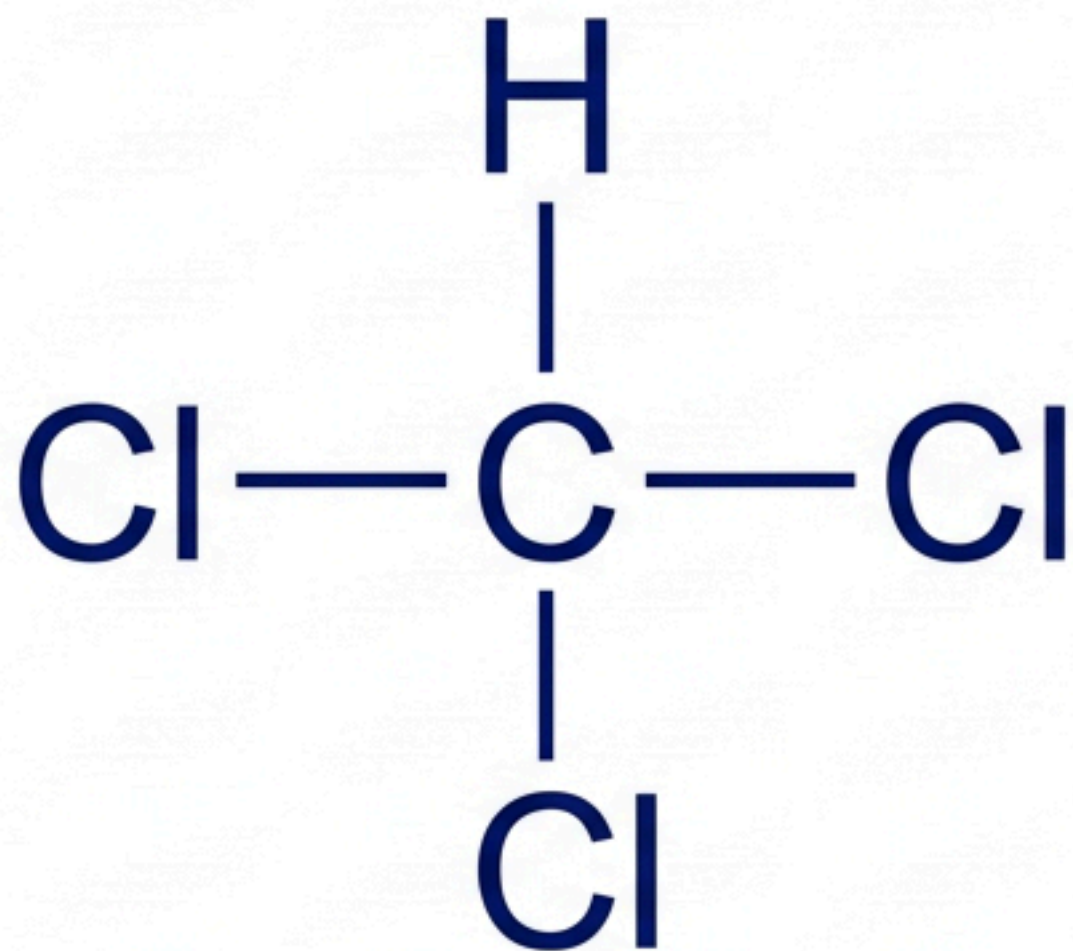


Chloroform: CHCl_3

Trichloromethane: Properties, Hazards, and Applications



Chemical Identity



Common Name

Chloroform

IUPAC Name

Trichloromethane



Classification: Polyhalogen Compound / Trihalomethane



Physical State: Volatile, sweet-smelling liquid

Key Trait

Heavy (Polychloro derivatives are denser than water)

Modern Utility: Solvent & Feedstock



Chemical Solvent

Highly effective for dissolving fats, alkaloids, iodine, and other relatively non-polar substances.



Industrial Feedstock

Historically and currently a major precursor in the production of the Freon refrigerant R-22.



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Historical Context: The Anesthetic Era



Historical Application

Once widely used globally as a general anesthetic during surgery (Mechanism: Central Nervous System depressant).

Toxicity Threshold

Breathing just 900 ppm causes acute dizziness, fatigue, and headache.

Chronic Damage & Phase-Out

Chronic exposure damages the liver and kidneys. Completely replaced by less toxic, safer alternatives (e.g., ether).



Critical Hazard: Phosgene Formation



Chloroform is slowly oxidized by atmospheric air in the presence of light to form Carbonyl Chloride (Phosgene)—an extremely poisonous gas.



Safety Protocol: Storage Requirements



Blocks Light

Must be stored in dark-coloured bottles to prevent photolytic oxidation.

Displaces Oxygen

Bottles must be closed and filled to the absolute brim to exclude all ambient air/oxygen.



High-Yield Review: Chloroform



Concept	Exam Focus / Rationale 
Nomenclature	IUPAC: Trichloromethane. Common: Chloroform .
Hazard Profile	CNS depressant. Chronic exposure severely damages liver and kidneys .
The Trap (Phosgene)	$\text{CHCl}_3 + \text{O}_2 + \text{Light} = \text{COCl}_2$ (Carbonyl Chloride/Phosgene). Extremely poisonous .
The Fix (Storage)	Dark bottles (blocks light) + Zero headspace /filled to brim (blocks oxygen).



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