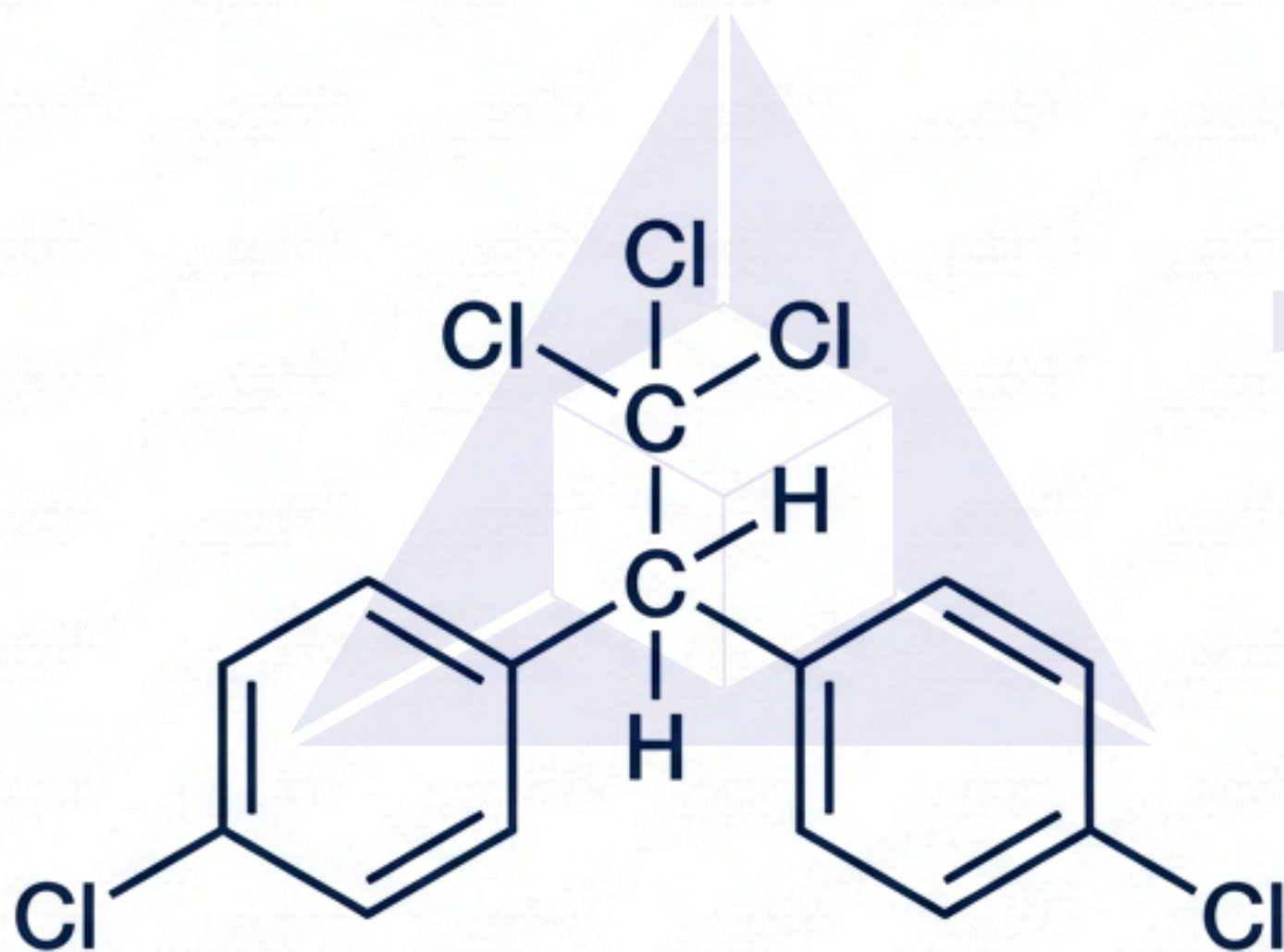


DDT: From Insecticide to Environmental Concern

The rise, fall, and chemical legacy of the world's most infamous polyhalogen compound.

What is DDT?



MOLECULAR PROFILE

- Classified as a Polyhalogen Compound.
- Functions as a Chlorinated Organic Insecticide.

p,p'-Dichlorodiphenyltrichloroethane

The DDT Timeline



1873

Originally Prepared

The compound is synthesized for the first time in a laboratory.

1939

Effectiveness Discovered

Paul Muller at Geigy Pharmaceuticals in Switzerland discovers its power as an insecticide.

1948

Global Recognition

Paul Muller is awarded the Nobel Prize in Medicine and Physiology.

1973

Regulatory Ban

The United States officially bans the use of DDT due to environmental concerns.



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The Golden Age of Application



SUCCESS

Malaria Control

Effectively targeted and eliminated mosquito vectors, seeing massive global use after World War II to protect human populations.

SUCCESS

Typhus Control

Highly effective against lice populations that carry typhus, saving countless lives during wartime conditions.

The Turning Point

By the late 1940s, extensive use revealed critical unintended consequences.

ALERT

Insect Resistance

Many species of target insects rapidly developed evolutionary resistance to DDT, diminishing its agricultural and medical effectiveness over time.

WARNING

Ecological Toxicity

Discovered to have profoundly high toxicity towards fish and other non-target organisms, devastating local aquatic ecosystems.

The Chemistry of Persistence

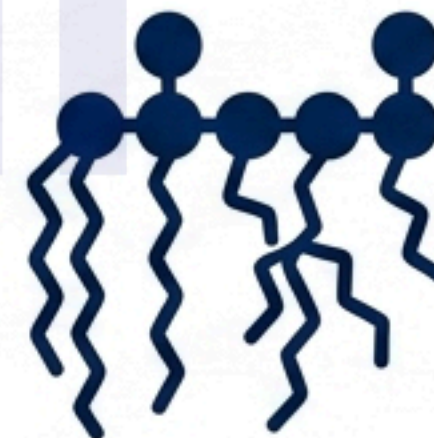
Chemical Stability

DDT is highly resistant to natural decomposition. Instead of breaking down after application, it **persists in the environment** for years, continuously interacting with local flora and fauna.



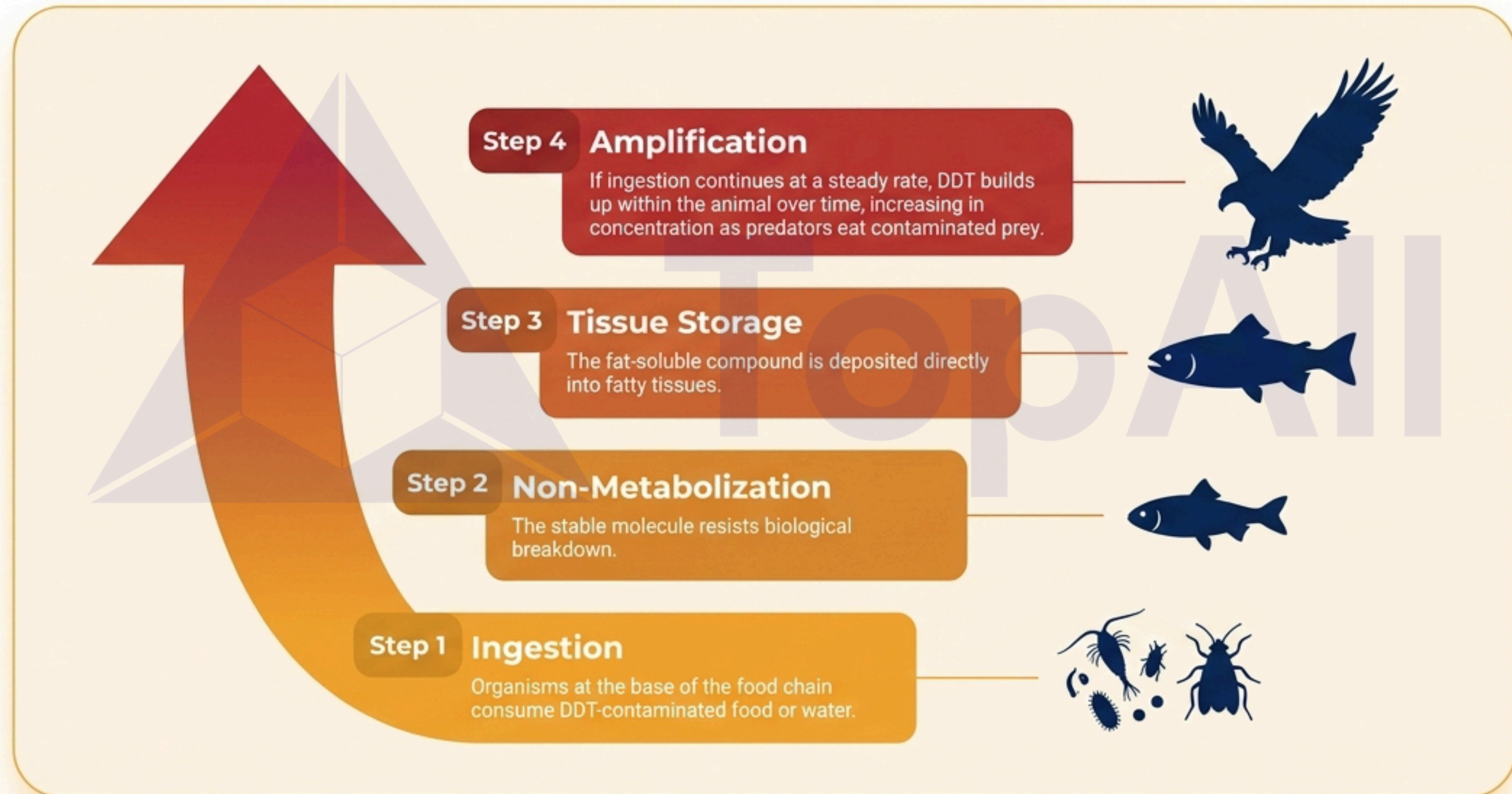
Fat Solubility

The molecule is highly lipophilic. It is **not metabolized rapidly** by animals. Instead of being excreted, it is deposited and permanently stored directly in **fatty tissues**.



Ecosystem Impact

FOOD-CHAIN ACCUMULATION



Final Exam Takeaway

Compound Type:	Polyhalogen / Chlorinated Organic
Claim to Fame:	Malaria & Typhus vector control (Nobel Prize 1948)
Mechanism of Harm:	High Chemical Stability + Fat Solubility = Bioaccumulation.
Regulatory Status:	(Banned in US (1973) but persists environmentally globally.



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