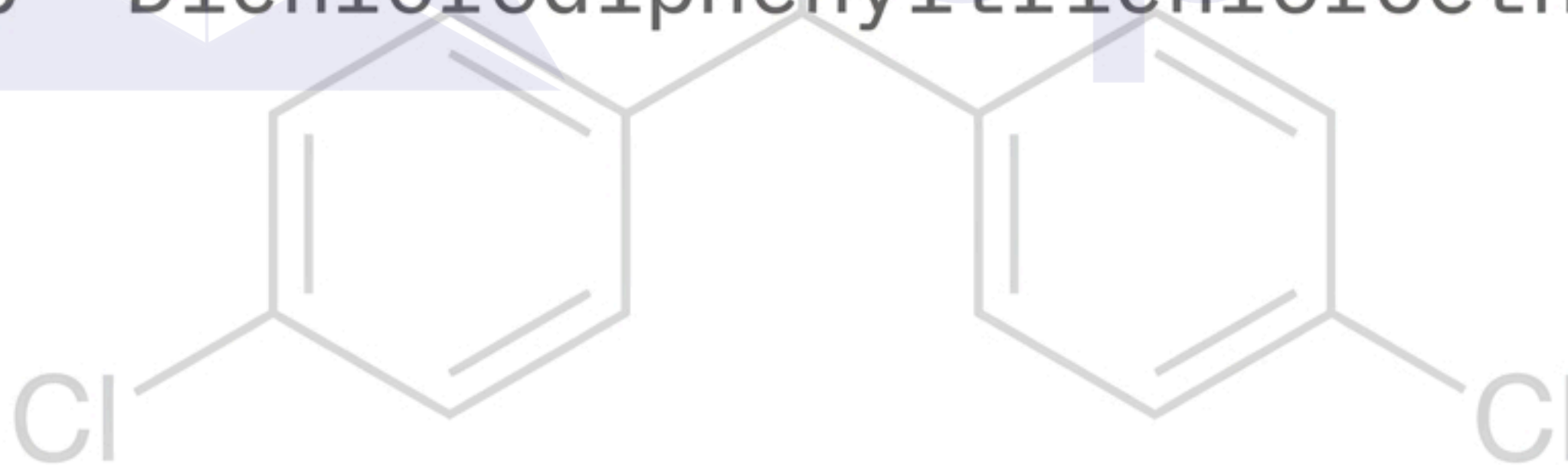


UNIT 6 • HALOALKANES AND HALOARENES

DDT

(p,p'-Dichlorodiphenyltrichloroethane)



The Chemical Profile: Key Vocabulary



Chemical Stability

Extreme resistance to breakdown by environmental factors or soil bacteria.



Fat Solubility

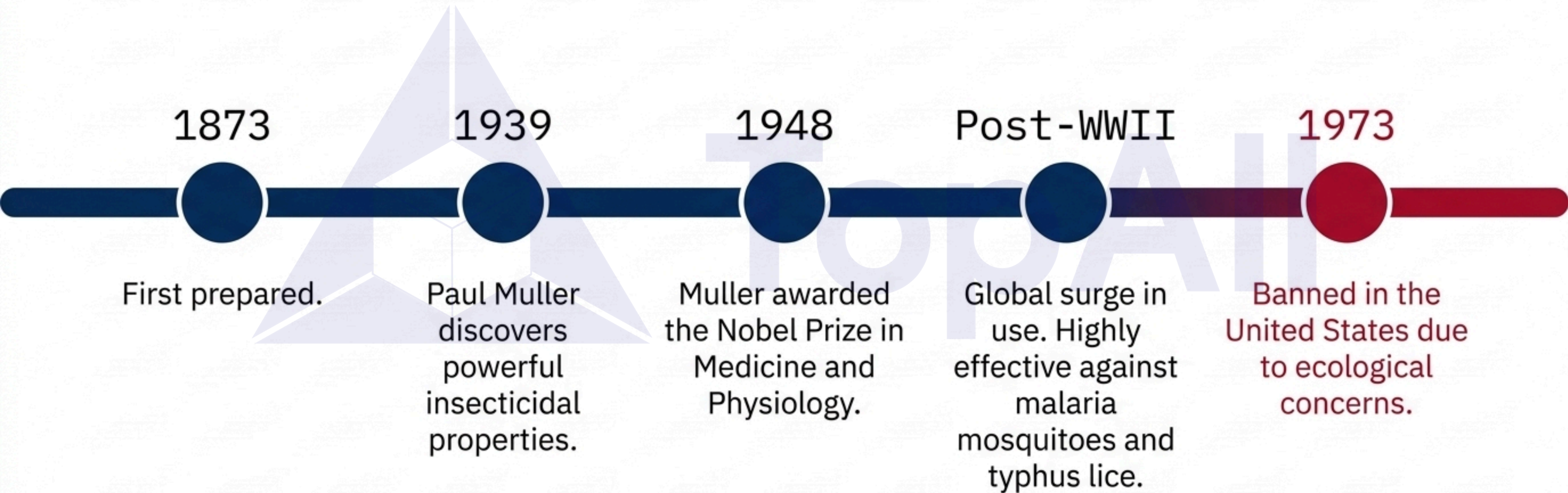
Highly hydrophobic; readily dissolves in lipids and biological fats rather than water.



Fatty-Tissue Storage

The inability of animal metabolisms to rapidly process the chemical, leading to long-term bodily retention.

The Rise and Fall of DDT





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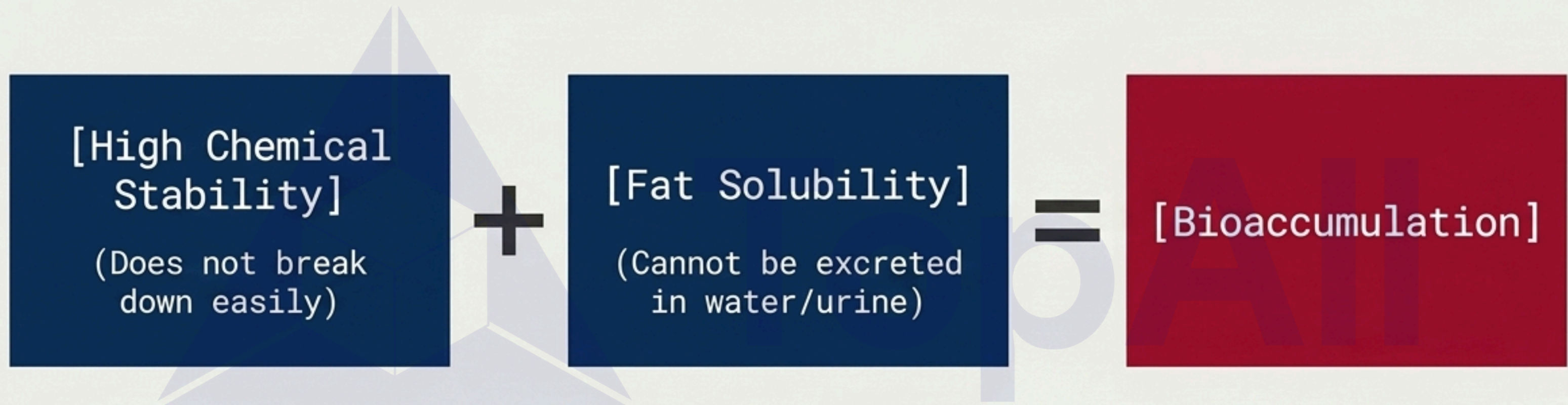
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The Mechanism of Bioaccumulation



Because DDT is not rapidly metabolized by animals, repeated steady ingestion causes the chemical to stockpile systematically within the fatty tissues over time.

The Ecological Fallout



Target 1: Insects

Biological Adaptation

Despite initial success, many insect species rapidly developed biological resistance to DDT, reducing its efficacy over time.



Target 2: Fish

Severe Toxicity

Discovered to have a highly disproportionate, lethal toxicity towards fish populations, devastating aquatic ecosystems.

Common Exam Traps

Watch for this

Trap 1: The Bioaccumulation Mechanism

Bioaccumulation is the strict combination of stability + fat solubility. Do not select options that attribute it simply to “high toxicity.”

Trap 2: The Scope of the Ban

DDT was banned in the United States in 1973, NOT globally. Do not select options claiming a worldwide eradication; it is still actively used in some parts of the world today for malaria control.

Key Takeaways

- ✓ DDT is a highly stable, fat-soluble compound. This specific combination prevents rapid metabolism, causing it to structurally bioaccumulate in fatty tissues.
- ✓ Despite Nobel-winning success in combating malaria and typhus post-WWII, catastrophic aquatic toxicity and growing insect resistance led to severe regional bans (e.g., US in 1973).



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