Environment & Ecology · GS - III

What is oil pollution? What are its impacts on the marine ecosystem? In what way is oil pollution particularly harmful for a country like India?

EXAM YEAR	PAPER	SUBJECT
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MARKS	WORD LIMIT
10	~150 words

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Answer Hint

Oil pollution introduces petroleum hydrocarbons into marine environments, disrupting organisms, habitats and food chains; India's long coastline, dense coastal population, fisheries and dependence on maritime trade make it particularly vulnerable.

Model Answer

Introduction

Oil pollution refers to the release of crude oil, petroleum products or related hydrocarbons into marine and coastal environments, often through tanker accidents, offshore activities, pipelines and operational discharges.

Body

Impacts on Marine Ecosystems

Toxicity: Hydrocarbons can poison fish, plankton, marine mammals and seabirds.

Reduced oxygen exchange: Oil films can interfere with air-water interactions and affect aquatic organisms.

Habitat damage: Mangroves, coral reefs, beaches and wetlands can be severely affected.

Food-chain disruption: Persistent hydrocarbons can accumulate in organisms and disturb marine food webs.

Reproductive effects: Exposure may impair growth, reproduction and development of marine species.

Why India is Particularly Vulnerable

Long coastline: India's extensive coastline exposes a large ecological and economic zone to maritime pollution.

Dense coastal population: Millions depend on coastal ecosystems for livelihoods.

Fisheries: Oil contamination can reduce fish stocks and damage fishing communities.

Ecologically sensitive areas: Mangroves, coral reefs, estuaries and coastal wetlands are vulnerable to spills.

High maritime traffic: India's strategic location on major sea routes increases exposure to shipping-related accidents.

Energy dependence: Large-scale import and transport of crude oil increase spill risks.

Way Forward

Strengthening oil-spill preparedness, port safety, coastal monitoring, contingency planning and enforcement of international maritime pollution standards is essential.

Conclusion

For India, oil pollution is not merely an environmental issue; it is also a **livelihood, food-security and coastal-economy concern**. Prevention and rapid response are therefore crucial.

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