Environment & Ecology · GS - III

The proposed destruction of ageing explosive materials containing toxic substances highlights the conflict between defence safety requirements and environmental protection. Examine the challenges involved in managing hazardous military waste and suggest a framework for balancing operational safety with public health and ecological security.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 24/11/2026	GS - III	Environment & Ecology

MARKS	WORD LIMIT
15	~250 words

Answer Hint

Hazardous military waste, lead contamination, explosive safety, environmental impact assessment, public health, precautionary principle, scientific disposal, regulatory oversight

Model Answer

Introduction

Military installations often store ageing explosives and hazardous materials that may become unstable over time. Their disposal presents a complex challenge because unsafe handling can cause accidental explosions, while improper destruction can release toxic substances into the environment.

Major Challenges

1. **Explosive instability:** Ageing materials may become sensitive to temperature changes, increasing the risk of accidental detonation during storage, transportation or disposal.

2. **Toxic contamination:** Explosives containing heavy metals such as lead can release toxic residues and contaminated dust, affecting soil, groundwater and surrounding ecosystems.

3. **Public health risks:** Lead exposure can damage the nervous system and kidneys. Children and pregnant women are particularly vulnerable to its effects.

4. **Technical limitations:** Disposal requires specialised infrastructure, trained personnel and scientifically validated treatment methods.

5. **Institutional coordination:** Defence authorities, environmental regulators, local administrations and public health agencies must coordinate to ensure safe disposal and transparent oversight.

Framework for Responsible Management

1. **Scientific risk assessment:** Conduct independent assessments of material stability, contamination pathways and potential exposure to nearby populations.

2. **Environmentally sound disposal:** Evaluate suitable treatment and disposal technologies based on their safety, emissions and residual waste characteristics.

3. **Regulatory monitoring:** Establish continuous air, soil and groundwater monitoring around military disposal sites.

4. **Public participation:** Inform local communities about potential risks, emergency procedures and monitoring outcomes.

5. **Emergency preparedness:** Develop protocols for extreme weather, accidental explosions and hazardous-material exposure.

6. **Institutional accountability:** Require transparent reporting, independent audits and clear responsibility for environmental remediation.

Conclusion

Defence preparedness and environmental protection need not be competing objectives. A science-based disposal framework, supported by regulatory oversight and community participation, can reduce operational risks while safeguarding public health and ecological security.