

2. Kerala Oil Spill Contingency Plan – Environment

1. Why in News

1. Recent shipwrecks off Kerala exposed serious oil spill risks
2. MSC Elsa 3 and MV Wan Hai 503 incidents prompted authorities to formulate Oil Spill Contingency Plan (OSCP)
3. Hazardous cargo including calcium carbide threatened coastal ecosystems
4. Plastic pellets (nurdles) washed ashore affecting fisheries, tourism, biodiversity
5. Disaster preparedness gap revealed in coordinated response
6. Kerala State Pollution Control Board drafting comprehensive OSCP

2. About Oil Spill Contingency Plan (OSCP)

Definition and Purpose

1. State-level emergency response framework
2. Prevent, manage, and mitigate marine oil spill disasters along Kerala's coastline
3. Comprehensive preparedness and action plan

Initiation

1. Introduced by – Kerala State Pollution Control Board (KSPCB)
2. Under directions of – National Green Tribunal (NGT)
3. Response to recent maritime incidents and environmental concerns

Nodal Body

1. Indian Coast Guard functions as central coordinating agency
2. Marine oil pollution response
3. Implementation support and monitoring

Scope and Coverage

1. Marine oil spills – Within 12 nautical miles (24 km) of Kerala's coastline
2. Riverine systems – Extending 40 km inland or till tidal influence evident
3. Comprehensive coastal and estuarine coverage

Components

1. Hydrodynamic studies – Water movement, current patterns, spill trajectory prediction
2. Oil spill modelling – Simulation of spill spread, impact zones
3. Net environmental benefit analysis – Evaluate response strategies' ecological trade-offs

3. Key Provisions of OSCP

Environmental Mapping

1. Environmental Sensitive Index (ESI) zones mapped
2. Identifies –
 1. Ecologically fragile coastal stretches
 2. Fishing areas and livelihoods zones
 3. Vulnerable marine habitats (coral reefs, seagrass beds, mangroves)
 4. Nesting sites, breeding grounds
3. Prioritization of protection efforts

4. About Environmental Sensitive Index (ESI) Zones

Definition

1. Mapped coastal and marine areas classified by sensitivity to oil spills and marine pollution
2. Scientific assessment of vulnerability

Purpose

1. Help authorities identify –
 1. Ecologically fragile regions requiring immediate protection
 2. Areas requiring priority protection during oil spills

3. Suitable response and clean-up strategies based on sensitivity
2. Guides resource allocation and tactical decisions

Emergency Response Protocols

Crisis-management protocols – Standard operating procedures for spill incidents

Chain of command – Clear hierarchy and decision-making authority

Departmental responsibilities – Role clarity for KSPCB, Coast Guard, ports, fisheries, disaster management, police

Marine emergency response mechanisms – Containment, booming, skimming, dispersant application

Shoreline Clean-up Framework

Shoreline clean-up procedures – Manual, mechanical, bioremediation methods

Equipment deployment – Booms, skimmers, sorbents, dispersants

Oil-characteristic assessment – Type, viscosity, weathering state determination

Tactical booming/site response operations – Protective booming of sensitive areas, recovery operations

Wildlife Protection Measures

Wildlife rescue plans – Protocols for oiled bird, marine mammal, turtle rehabilitation

Pollution emergency guidelines for ships – Preventive measures, immediate response requirements

Mitigation measures for biodiversity conservation – Minimize ecological damage during response operations

Coordination with wildlife experts and rehabilitation centres

5. Need for Kerala-Specific Oil Spill Contingency Plan

Rising Maritime Risks

Kerala's 590-km coastline lies close to major international shipping routes

Increasing vulnerability to –

1. Tanker accidents
2. Hazardous cargo spills
3. Collision incidents

Of 14 districts, nine are oil spill-prone (coastal districts particularly vulnerable)

High vessel traffic density

Recent Shipwrecks

MSC Elsa 3 sinking –

1. Carried hazardous cargo
2. Calcium carbide release (reacts violently with water producing flammable acetylene)
3. Highlighted absence of coordinated spill-response framework

MV Wan Hai 503 incident –

4. Cargo container spills
5. Environmental contamination

Exposed preparedness gaps

Coastal Pollution Threat

1. Plastic pellets (nurdles) washed ashore
2. Hazardous substances contamination
3. Threats to –
 1. Fisheries – Contaminated catch, destroyed fishing grounds
 2. Tourism – Beach pollution, visitor deterrence
 3. Mangroves – Root system damage, ecosystem disruption
 4. Marine biodiversity – Species mortality, habitat degradation
4. Economic and ecological impacts severe

Disaster Preparedness Gap

Lack of coordinated equipment databases – Unknown availability, location of response equipment

Shoreline response mechanisms absent – No predefined clean-up strategies

Inter-agency coordination weak – Fragmented response, role confusion

Delayed effective containment and clean-up – Slow mobilization, inefficient operations

Learning from past failures

6. Significance of Oil Spill Contingency Plan

Faster Response Mechanism

1. Predefined command structure eliminates decision-making delays
2. Resource database enables quick equipment, personnel mobilization
3. Quicker containment limits spill spread
4. Emergency coordination streamlined through clear protocols
5. Golden hours utilized effectively

Coastal Ecosystem Protection

1. Plan prioritizes environmentally sensitive regions
2. Safeguards –
 1. Coral ecosystems – Prevent smothering, toxic contamination
 2. Mangroves – Protect nursery grounds, carbon sinks
 3. Fisheries – Preserve breeding grounds, economic livelihoods
 4. Coastal livelihoods – Tourism, aquaculture, traditional fishing
3. Targeted protection of high-value areas

Scientific Spill Management

Hydrodynamic modelling – Predicts spill trajectory, spread patterns

Marine sensitivity mapping – Identifies vulnerable zones scientifically

Net environmental benefit analysis – Chooses response methods causing least ecological harm (e.g., dispersant use vs. mechanical recovery trade-offs)

Evidence-based disaster response planning replaces ad-hoc approaches

Decision support systems

Institutional Coordination

1. Strengthens coordination among –
 1. KSPCB – Pollution monitoring, regulatory oversight
 2. Ports and harbours – Facility-level response, vessel management
 3. Fisheries departments – Livelihood protection, fishing ground assessment
 4. Disaster authorities – Emergency management, public safety
 5. Indian Coast Guard – Overall coordination, specialized response
2. Unified command structure
3. Information sharing protocols

Compliance with National Framework

1. Aligns Kerala's preparedness with National Oil Spill Disaster Contingency Plan (NOS-DCP)
2. Guidelines of 2015, 2018, and 2024 incorporated
3. National-state integration
4. Mutual assistance mechanisms
5. Consistent standards across maritime states

7. National Oil Spill Disaster Contingency Plan (NOS-DCP)

Overview

1. India's apex framework for preparedness, coordination, response to marine oil spill incidents
2. Covers India's maritime zones and Exclusive Economic Zone (EEZ)

Development

Prepared by – Indian Coast Guard (ICG)

Approved by – Committee of Secretaries in 1993

Periodic revisions – Multiple updates aligning with evolving international maritime and environmental standards

Expanded Framework (2014–15 Revision)

1. Incorporated Hazardous and Noxious Substances (HNS) incidents
2. Not just oil spills, but chemicals, toxic cargo
3. Online contingency-plan submissions by stakeholders
4. Digital platform for coordination

Nodal Implementing Body

1. Indian Coast Guard is nodal national authority
2. Implementation, coordination, monitoring of oil spill preparedness and response
3. Within India's Exclusive Economic Zone (EEZ) (200 nautical miles from baseline)

Leadership

1. Director General of Indian Coast Guard acts as Chairperson of NOS-DCP Committee
2. Strategic oversight and policy direction

8. Key Provisions of NOS-DCP

Tiered Response Mechanism

Three-tier response structure based on spill magnitude and capacity –

Tier 1 – Local port/operator response –

1. First responder
2. Port or Oil Handling Agency (OHA) own resources
3. Small, contained spills

Tier 2 – Regional assistance –

4. Beyond Tier 1 capacity
5. Regional Coast Guard stations, nearby ports assist
6. Medium-scale spills

Tier 3 – National/international support –

7. Major disasters
8. National resources mobilized
9. International assistance requested (if needed)
10. Large-scale, complex spills

Incident Command System (ICS)

1. Coordinated command mechanism through Maritime Rescue Coordination Centres (MRCCs)
2. Effective emergency response and communication
3. MRCCs located – West Coast, East Coast, Andaman & Nicobar
4. Unified command structure
5. Information management

Stakeholder Preparedness

1. Ports and Oil Handling Agencies (OHAs) must maintain –
 1. Approved contingency plans – Site-specific response strategies
 2. Trained manpower – Response teams, equipment operators
 3. Pollution-control equipment – Booms, skimmers, dispersants, sorbents
2. Regular audits and inspections
3. Compliance mandatory

Environmental Protection Measures

Rapid containment – Minimize spill spread

Approved dispersant use – Chemical treatment where appropriate, considering environmental trade-offs

Marine ecosystem protection – Priority to sensitive areas

Identification of polluters – Legal accountability, "polluter pays" principal enforcement

Liability and compensation mechanisms

Reporting and Coordination

1. All oil spill incidents in maritime zones must be immediately reported to Coast Guard MRCCs
2. Located on – West Coast (Mumbai), East Coast (Chennai), Andaman & Nicobar (Port Blair)
3. 24/7 monitoring and response
4. Single point of contact

Capacity Building

1. Regular mock drills – Simulate spill scenarios, test response
2. National Pollution Response Exercise (NATPOLREX) – Annual/periodic large-scale exercise
3. Strengthen preparedness
4. Inter-agency coordination – Multiple stakeholders participate
5. Identify gaps, improve procedures
6. Training programs for personnel

9. Challenges in Implementation

Resource Constraints

1. Specialized equipment expensive
2. Maintenance costs high
3. Adequate stockpiling at multiple locations needed
4. Budgetary limitations

Inter-Agency Coordination

1. Multiple departments involved (Coast Guard, Navy, ports, pollution control, fisheries, forest, disaster management)
2. Role clarity and communication challenges
3. Need for regular joint exercises

Technical Expertise

1. Specialized skills required (oil spill modelling, dispersant application, wildlife rehabilitation)
2. Training and capacity building continuous need
3. Retention of trained personnel

Private Sector Engagement

1. Shipping companies, port operators, oil companies must invest in preparedness
2. Compliance enforcement needed
3. Cost-sharing mechanisms

Environmental vs. Economic Trade-offs

1. Dispersant use debates (chemical treatment vs. natural degradation)
2. Fishing bans during spills (livelihood impact)
3. Balancing rapid clean-up with minimal ecological disruption

10. Way Forward

Strengthen Infrastructure

1. Establish regional response centres with pre-positioned equipment
2. Strategic stockpiling at vulnerable locations
3. Mobile response units

Enhance Coordination

1. Regular joint training exercises
2. Integrated communication systems
3. Memoranda of Understanding (MoUs) between agencies
4. Standard Operating Procedures (SOPs) clarity

Technology Integration

1. Real-time oil spill trajectory modelling
2. Satellite monitoring and early warning
3. Drone surveillance for rapid assessment
4. Mobile apps for reporting and coordination

Community Participation

1. Train coastal communities as first responders
2. Awareness programs on reporting and basic response
3. Livelihood support during and after spills

International Cooperation

1. Regional agreements with neighbouring countries (Sri Lanka, Maldives)
2. Access to international expertise and resources
3. Mutual assistance arrangements

Legal and Financial Mechanisms

1. Strict liability for polluters
2. Mandatory insurance for vessels and OHAs
3. Compensation funds for affected communities
4. Deterrent penalties for non-compliance

Research and Development

1. Indigenous response technologies
2. Bioremediation methods suited to Indian conditions
3. Environmental impact studies
4. Best practices documentation

11. Conclusion

Kerala's Oil Spill Contingency Plan strengthens coastal resilience through scientific preparedness, rapid response systems, and coordinated institutional action. Integration with National Oil Spill Disaster Contingency Plan ensures consistency. Environmental Sensitive Index mapping prioritizes protection of ecologically fragile regions. Tiered response mechanism, stakeholder preparedness, capacity building through regular drills, and Indian Coast Guard's nodal coordination essential for effective management of growing marine pollution threats safeguarding fisheries, tourism, biodiversity, and coastal livelihoods along Kerala's vulnerable 590-km coastline.

Source - <https://www.thehindu.com/news/national/kerala/how-does-kerala-plan-to-tackle-oil-spill-hazards/article70952518.ece>