Oil Spill, Effects & Management

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Weathering processes with time
EFFECTS OF OIL

• marine life
  (benthic organisms, fish, sea birds)

• marine ecosystems
  (marshes, mangroves, corals)

• coastal activities
  (bathing, boating, diving, shoreline contamination)
  (damage to sand dunes & change in natural profile of the beach)
  (impact on fisheries & aquaculture)
Polluted marsh land
Mangroves
BOOM
Curtain boom
Self-inflating boom
HarbourFlex is an extremely durable, low-maintenance boom designed for permanent installation in harbours and tidal inlets. HarbourFlex-S comes with smaller floats and is designed for use with Aqua-Guard's SeaReel system.
dispersants
• solvent, surfactant
• redistributes oil
• quick response
• no fire risk and birds risk
• inhibits ‘mousse’ formation
• biodegradation help

dispersants - disadvantages
• oil not removed
• ecology impact
• not on viscous oils (>2000 cSt)
• approval needed

avoid use near
• water intakes
• salt marshes
• coral reefs
• stagnant water
• mangroves
• fish hatcheries
NUMBERS OF SPILLS OVER 700 TONNES (1970-2008)

- 1970-79: 25.2 spills per year on average
- 1980-89: 9.3 spills per year on average
- 1990-99: 7.8 spills per year on average
- 2000-08: 3.4 spills per year on average
QUANTITIES OF OIL SPILT (1970-2008)
INCIDENCE OF SPILLS < 7 TONNES BY CAUSE (1974-2008)

- Loading/discharging: 36%
- Other/Unknown: 28%
- Bunkering: 7%
- Collisions: 3%
- Groundings: 8%
- Hull failures: 8%
- Fires & explosions: 1%
- Other operations: 15%
INCIDENCE OF SPILLS 7-700 TONNES BY CAUSE (1974-2008)
INCIDENCE OF SPILLS >700 TONNES BY CAUSE (1974-2008)
- **tanker**: Exxon Valdez (987 ft)
- **year**: 1989 (Prince of William Sound)
- **struck reef**
- **carried**: 170000 tons
- **spilt**: 35000 tons
- **delay in mobilising equipment**
- **2 billion dollars**
- **82 aircrafts, 1436 vessels used**
- **420,000 feet of boom used**
- **1100 miles affected**
- **33000 birds**
SHORELINE CLEAN-UP
MAJOR OIL SPILLS IN INDIAN WATERS

- **tanker**: Transhuron
  - **year**: 1974 (Laccadives)
  - **spilt**: 36000 tons

- **Sagar Vikas (blow out)**
  - **year**: 1982 (Bombay High)
  - **spilt**: 5000 tonnes

- **tanker**: Maersk Navigator
  - **year**: 1992 (Andaman Sea)
  - **spilt**: 25000 tonnes

- **Bombay High (Offshore)**
  - **year**: 1993
  - **pipe line leakage**
  - **spilt**: 1600 tonnes
MV SEA TRANSPORTER

- 5 June 1994 - ore carrier grounded near Sinquerim, Goa.
- 1000 t residual oil
- 13 June 1994 - coast guard began oil flushing
- 2 July 1994 - crack developed. 2 t spill
- 800 l dispersant used for spill
- 12 July 1994 - oil flushing ended
• 23 March, 2005, iron-ore barge ‘Prapti’ collided with a Singaporean bulk carrier ‘Maritime Wisdom’.
• 4 nautical miles off Aguada, Goa
• Spilled about 110 tonnes of HFO.
• Rupture was sealed and the remaining cargo was transformed to another tank.
• Oil spread over an area of 2.3 miles²
• Dispersant treatment was carried out.
• 25 March, 2005, pollution response was withdrawn.
Puncture (150/75mm) into oil tank
Heavy fuel oil spillage
Coast Guard response vessel
MSC Chitra Oil Spill off Mumbai

- August 7, 2010 (09.48 hrs) - MSC Chitra collided with MV Khalijia – III about 10 Km off Mumbai coast
- 2662 tonnes fuel oil
  283 tonnes diesel
  88040 litres of lubricant
- 1200 containers (sodium hydroxide & pesticides)
- Vessel tilted 45 degrees soon after collision
- Spillage of about 400 tonnes
- Coast Guard began combating operation on 8 August using oil spill response vessels and aircrafts for spraying dispersants
• Oil spillage on beaches of Mumbai and neighbouring Raigad areas.

• Oil also sighted at Sewri and Colaba areas.

• 300 containers tumbled into water so far.

• Pesticides bottles were found in Colaba & Raigad areas.

• Mumbai & JNPT ports closed for the heavier traffic.

• MPT hired SMIT salvage, Netherlands company to salvage the containers and resurface the vessel.
WASTE MANAGEMENT

• 1000 m³ - 25% evaporation
• 750 m³ - emulsify (80% water)
• 3750 m³ - 20% recovered
• 3000 m³ - (10 - 20) * qty beached
• 30000 m³ - 60000 m³ for disposal
THANK YOU