



Impact Assessment of Sea Water Quality in Alang Ship Recycling Yard-A case study

ABSTRACT

Oceans, which account for 70 per cent of the surface of our planet, play a pivotal role in the health of our planet and those who inhabit it.

Alang Ship Breaking Yard is the world's largest ship breaking yard followed by Aliaga Ship Breaking Yard (Turkey), Chittagong Ship Breaking Yard (Bangladesh) and Gadani ship-breaking yard (Pakistan). But salvage yards at Alang have generated controversy about impact on the environment. This case study focuses on "Impact Assessment of Sea Water Quality in Alang Ship Recycling Yard". The study area includes area located at Alang-Sosiya Ship Recycling Yard located near village Alang of Talaja Taluka of Bhavnagar District in Gujarat State of India. The case study includes following:-

- 1) To evolve the prevailing status of water quality of study area
- 2) To assess the impact of pollution due to ship breaking activities on the water quality of Alang by comparing present study of Alang with earlier information available of the site
- 3) To compare present status of the study area with neighbouring area viz. Dahej and Bhavnagar

DESCRIPTION OF RECYCLING YARD & STUDY AREA

- Alang ship - breaking yard set up in 1982, is located in the Gulf of Khambhat, 50 kilometers southeast of Bhavnagar. The Gulf of Khambhat is known for its high tidal range (Average 10 m) and makes it convenient to bring down the ships to shore based facilities
- The shipyards at Alang recycle approximately 30% of the volume of ships salvaged around the world. Stretching over ~10 km of the coastline, at present there are 167 ship recycling plots that are leased out to private entrepreneurs for ship recycling activity.

SOURCES OF WATER POLLUTION

(during Ship Recycling Activity)

- Ballast Water: It is mainly fresh sea water and used for balancing ship during voyage. But sometimes oil gets mixed and gets contaminated. Huge in quantity. Required to be handled and disposed properly during ship recycling/cutting.
- Used Oil/Waste Oil/Oily Sludge: Spent Oil present in ship engine, Waste oil/Oily sludge required to be handled and disposed properly during ship recycling/cutting.
- Bilge Water: Oily water temporary stored in ship during long voyage, required to be handled and disposed properly during ship recycling/cutting.
- Fuel Oils: Oils used to fuel ship engines (FO/MGO) required to be handled and unload properly during ship recycling/cutting

Parameters Selection

Sr. No.	Parameter
1	Temperature
2	pH
3	Suspended Solids
4	Turbidity
5	Salinity
6	Dissolved Oxygen(DO)
7	Bio-chemical Oxygen Demand(BOD)
8	Petroleum Hydrocarbon(PHc)

Sampling Locations

Location	Latitude	Longitude
S1	21027'06.97"N	72013'53.39"E
S2	21025'52.87"N	72013'03.64"E
S3	21025'03.91"N	72012'19.59"E
S4	21023'44.54"N	21023'44.54"N
S5	21021'50.73"N	72009'20.55"E
S6	21020'52.48"N	72008'25.13"E

Current Sampling Results

Location	Temp	pH	SS	Turbidity	Salinity	DO	BOD	PHc
	oC	-	mg/l	NTU	Ppt	mg/l	mg/l	(µg/l)
S1	23.0	7.9	1729	2441	30.5	6.3	3.4	144.6
S2	23.5	8.0	1464	2107	30.7	6.3	3.7	315.1
S3	23.0	8.0	564	352	30.7	5.7	3.0	614.0
S4	23.0	8.0	392	64.1	30.7	6.0	3.7	584.3
S5	23.0	8.0	484	274.5	30.7	5.9	3.3	446.9
S6	23.0	8.0	434	968	30.7	6.0	3.5	342.1
Avg. Value	23.1	8.0	845	1034.4	30.7	6.0	3.4	407.8

(Period: Feb-Mar, 2022)

Comparison with earlier study of the Alang site (i.e. Water quality (avg. values) at Alang during 2007-2008)

Location	Temp	pH	SS	Turbidity	Salinity	DO	BOD	PHc
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Avg. Value	23.1	8.0	845	1034.4	30.7	6.0	3.4	407.8
Earlier Value (Source: CSIR-NIO)	28.6	8.2	276	-	29.2	6.9	5.9	524.3
Comment /Conclusion	No Significant change, as changes with temp. of atmosphere	No Significant change	No Significant change as tide and current speed and time of collection affects SS value	Turbidity will be in line with SS values	No significant change	No significant change	significant increase	significant increase

Comparison with neighbouring area viz. Dahej and Bhavnagar

Location	Temp	pH	SS	Turbidity	Salinity	DO	BOD	PHc
	oC	-	mg/l	NTU	Ppt	mg/l	mg/l	(µg/l)
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Avg. Value	23.1	8.0	845	1034.4	30.7	6.0	3.4	407.8
Dahej/Bhavnagar Value (Year: 1996-2007) Avg Value (Source: CSIR-NIO)	26.2/27.7	7.9/8.0	1666/716	-	27.1/28.7	6.1/6.4	1.2/1.8	6.8/10.5
Comment/Conclusion	Comparable	Comparable	Comparable	Turbidity will be in line with SS values	Comparable	Comparable	Slightly higher	Significantly higher

Current Transition Period in Alang SRY

At Alang, there are 29 ship recyclers out of a total of 130 who are operational and have acquired statements of compliance to the Hong Kong Convention–2009. Total ship yards at Alang is 153. So far total 90 ship–recycling plots have earned statement of compliance. The compliance to HKC is checked by International Classification Societies and Indian Registrar of Shipping (IRS) recognized for it. The Classification Societies check each component prescribed under the Ship Recycling Facility Management Plan as per HKC and then certify for it.

GMB has proposed for upgradation of existing ship recycling yard at Alang-Sosiya, Gujarat, which are: (i) Upgradation of existing ship recycling plots, (ii) Hazardous Material Removal Pre-Treatment Facility as Dry Dock, (iii) Additional Environmental Facility (Waste Oil Treatment and Incinerator Plant, (iv) Improvement of Labour Welfare Infrastructure (Housing, sanitation, water supply, hospital facilities, community center and community school) and (v) Additional Plots. GMB has obtained Environment and CRZ clearance for this.

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