

# ANALYSIS & MINIMIZATION OF MARINE ENVIRONMENTAL POLLUTION DUE TO OIL SPILL WASTE

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**Abstract :** Taking into consideration the work done by Mr Afroz Shah, of cleaning Versova Lake. He tried collecting the waste manually with the help of his team. However it was a manual work, consuming a plathora amount of time. But we have seen very drastic and beautiful changes in the environmental cover of Versova. Growth of tortoise has been also seen in the vicinity of that area. But if the same work is done technically we can clear maximum area within short period of time. To provide the same work a bit technical view a mechanical device is necessary which could gather all the waste at rapid pace. The expanse including varieties of waste is quite large hence plastic and oil are the basic aspects to be focused on. These wastes are non-degradable. Sea being a mother of large living organisms it is necessary to keep it safe as early as possible. Sea wastes are marine debris which are created by humans that has deliberately or accidentally been released in different water bodies. This disposal has to be cleaned in order to avoid excess accumulation which may in future not even provide space for we human beings to survive due to increase in water boundaries. In the following project we have studied the technical ways to prepare a device to collect the sea waste more rapidly and effectively. Taking into reference the seabin used by 'Andrew "Turtle" Turton Inventor Co-founder Director. He used jute as an oil collector. We have replaced jute by hairs. We have been trying to prevent the cash crop growth from our country. In order to avoid mono-cropping system; which requires huge amount of fertility of soil; by hindering the growth of most useful crops, jute losses its strength when it becomes wet. We have found a large quantity of hair waste generated worldwide. Among most of its Important uses these hairs can also be invested for a social cause. We have studied the absorption capacity of hair which is found to be good absorbent which can hold the oil. This project can be helpful for the countries like India who are still developing in order to invest few amount to collect the waste generated. As India is facing shortage of jute its replacement in designing seabin can be helpful.

**IndexTerms - Component,formatting,style,styling,insert.**

## I. INTRODUCTION

Natural beauty of ocean is found to be polluted due to dumping of solid waste. As we know that, ocean covers the maximum portion of earth. According to Archimedes principle every substance occupies space. In the similar manner ocean has its limiting boundaries; If one tries to add another substances ocean may cross its boundaries. It means the area in which we are living today might be occupied by ocean tomorrow.

Taking into consideration this aspect we are trying to deal with solid waste management project. The expand of solid waste is very large. It includes various discarded materials like bio-medical waste, chemical waste from laboratories, paper, cardboard packing materials, agricultural waste, industrial waste, etc. It is observed that presence of this waste in water leads to maximum destruction of living organisms.

### A. Need of the Study

Considering many aspect water is the most shared resource on earth. About 50% of the Earths land surface is observed to be covered with shared rivers and lake basins. Some 276 river basins across the boundaries of more than two countries and about 40% population of the world lives in river and lake basins crossing the International boundaries. These places or states surrounding the transboundary waters are facing increasing demand for water, hydraulic variability, unilateral basin development and other conflicts that could lead to tensions over transboundary water. Adding to these challenges various institutions promoting joint management are often missing. These challenges are often found to be different across different transboundaries. As far as water is considered firm boundaries cannot be specified as per land. Hence, the waste deposited in the water bodies leads to large conflicts between two states sharing the same transboundary.

Taking into the consideration the global cause, waste management is no longer considered to be a regional issue. A collective solution is far more important to be taken into consideration. This pollution is not only affecting the relation between the transboundary waters but is also an important factor in reduction of quality of water.

Reduced quality of water causes harm not only to the aquatic life but also various living organism surviving on land which further leads to damaging various types of ecosystems.

In India, an efficient and proper waste management system is urgently necessary for control of spread of infectious diseases, pollution, to conserve various environmental resources including forests, minerals, waters, etc. India being blessed by water bodies on major parts of its boundaries it is very necessary to preserve the natural water boundaries of India. Most of Indian economy is blessed on water cover areas eg. Fishing. A huge amount of population have to suffer starvation due to water pollution. Not only people depending upon oceans for their occupation but also people who depend upon these water bodies for

food have to suffer due to spreading of diseases from aquatic life. Certain items from this waste are non-biodegradable, radioactive, highly toxic, corrosive which affects the turbidity of the water.



Fig1. India's Ganga river pollution

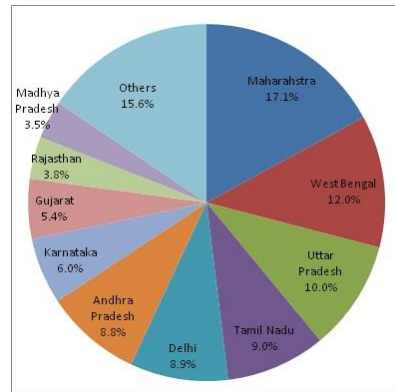


Fig2. Amount of pollution in the states of India

## II. OBJECTIVE OF THE STUDY

1. To make amendments in the current problems faced in existing ocean bodies.
2. To make an economical as well as stable mechanical device to increase the speed of collection.
3. To provide technical aspect for collection of waste.
4. Further development of educational programs.
5. New model of Seabins with the aim of getting off the dock.
6. To be a key player in a circular plastic economy.
7. To not have our captured plastics from the Seabins going to landfill or being incinerated.
8. To not have a need of Seabin.
9. To be in a financial position where we can help other groups or not for profit organizations in less fortunate situations.

## III. METHODOLOGY

- Collecting data regarding all the basic characteristics of sewage as well as all the changes or pollution it has created in the sea water
- Designing an economical as well as stable and aesthetic design of a device to collect the waste at a rapid rate
- Providing mobility to the device to cover maximum area and reduce the time required to clear off the waste
- Developing various recycling methods to prevent its dumping on the land surface

### A. Data Collection

There are various sources for the deposition of oil waste into the ocean. These sources are some accidental spills or leaks and some other are the results of chronic and careless habits in the use of oil and oil products. Other resource of oil deposition consists of oily stormwater drainage from cities and farms, untreated waste disposal from factories and industrial facilities and unregulated recreational boating.

Oil which spills on the ocean, it first spreads in the water basically on the surface, depending on its relative density and composition. The oil slick which is formed remain cohesive or may break in case of rough seas. Oil containing volatile organic compounds evaporates partially, losing between 20 and 40% of its mass and becoming denser and more viscous. A small amount of oil may dissolve in water. Part of the oil may sink along with suspended particles of particulate matter and the remainder and the particles accumulate into sticky tar balls.

This oil waste along with the wave reaches the shoreline or coast, it interacts with sediments such as beach sand and gravel, rocks and boulders, vegetation and terrestrial habits of both wildlife and humans causing erosion as well as contamination. In order to collect this waste it is necessary to take an element to collect it. We have taken hairs to collect oil. A layer of hairs has been used to trap oil. An estimate study for the amount of hairs to be used is found out.

We have performed an experiment, for that we have taken 250ml of water and the quantity of hairs needed is measured by Digital Weighing Machine the data collected is as follows:

From this table a ratio of big data can be calculated

OIL(ml)	HAIRS(gm)
1. 2.5	0.223
2. 5	1.134
3. 7.5	2.189
4. 10	3.679



#### IV. DESIGNING

A small replica is designed to collect waste water and separate all the floating waste and water specifically.

#### V. CONCLUSION

The most economical as well as stable and aesthetic design will be made to clear maximum amount of waste against the most unfavourable and critical environmental condition. A futuristic view of reaching several multitudes in research and improvement in the procedures of solid waste in sea is expected.

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