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## Obtaining lubricants using polycarbonate plastic substrate

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### ABSTRACT

*Oil spill contamination takes an effective role in Marine life, where in inland and waters all over the world. It takes place in effective way due to usage of oil where oil is used and delivered. Where this oil usage is also takes place in Marine transportation like ships and boats in motion of ships. There is a chance of oil spillage in oceans and lakes in some conditions like failure of engine, failure of any motor devices. This creates an impact on animals and plants which depend on Marine source, also affects human life. Hence it influences the whole life chain by the cause of oil spillage. So, the reduction of oil spillage is difficult, and somewhat impossible. So, we planned to remove spilled oil from oceans and lakes by using a foam board sheets and poly carbonate plastic substrates. This project helps us to achieve purity in water and creates balanced Marine environment.*

**Keywords**— Oil spills, Environment impact, oil pollution

### 1. INTRODUCTION

Oil spill is the release of pollutants like hydro carbons into the marine ecosystem. Oil spill release pollutants from tankers, offshore platforms and spills are refined in petroleum products such as gasoline. Oil spills creates imbalance in life of birds, mammals, and also reduces ability. Oil spill makes them more vulnerable. These oil spills also pollute drinking water which is very harmful for living creatures. Polluted water can also impact on tourism which is harmful to human beings especially for fisherman. Clean up and recovery from oil is difficult and also depends on many factors, including the type of oil spilled, the temperature of the water and also the types of shorelines and beaches.

#### 1.1 OIL BOOMS

It is the most popular common technique in cleaning water with a simple designing water technique. It stops and reduces the

spreading of oil in an entire ocean. It is suitable for small areas; in case of large areas it is difficult to manage the spillage of oil.

#### 1.2 SKIMMERS

It is performed after the formation of oil booms, where skimmers are fixed to the marine vehicles in order to remove oil and greasy material from marine life.

#### 1.3 BURNING

In this method we perform the burning of oil with high ignition temperature. It is very popular method for effective removal of oil from water.

### 2. LITERATURE REVIEW

#### 2.1 Surveys are held on 2003-2019

##### 2.1.1 Analysis for the development of laser fluoro-sensors for oil spill application

Browine, Foo pie

*Marine pollution* 74 (10-20), 774-844, 2005

Active sensors are the laser Fluro-sensors which provide source of their own. It is employed or fixed around the clock either in day light or entire darkness. Several compounds like hydrocarbons, aromatic compounds and petroleum products are not observed by oil and causes ultraviolet violation this is removed quickly by visible spectrum rather than UV spectrum.

##### 2.1.2 Exposure to oil spill has most effective for cleaning workers' health

Wansha

*Lancet* 371 (9532), 197, 2008

The tanker named "prestige" in North Western Coast of Spain, where the wild life has been affected. A report is released in last week by higher research Council in Spanish which toxic effects has been highlighted. Many volunteers and soldiers are participated in cleaning of oil spill.

### 2.1.3 The Deep-water Horizon oil slick by the lens of human health and marine ecosystem

Prince B, Momu K...- *Current environment ...*, 2011 –Wringer

The current review of our research is to find the effect of deep-water horizon spill on health of living organisms and entire ecosystem. The main theme and work carried by us is to find a solution to those impacts. We imply these findings and promote a research agenda.

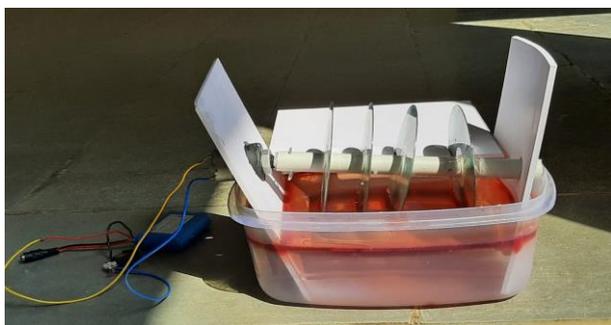
### 2.1.4 Produced projects in New York and Labrador, Ukraine

Implemented by seabird conservation *Nobitha Fraser, Vincent Marine pollution 147 (2), 46-55, 2014*

## 3. PROPOSED WORK

The following are the steps followed in making this device

- Shape the PCP material according to the PVC pipe size.
- Similarly make 5 more PCP substrates.
- Proper installation of gear motor on pipe is required.
- Make proper connections using battery.
- Modelling and development of machine.
- Obtaining the lubricant from PCP substrate is observe through foam board.



## 4. METHODOLOGY

Cleaning oil spills is difficult and take several days to clean the spilled oil. There is a species known as *Fusobacteria* which is further useful to clean up oil spill because it has ability to colonise and degrade oil slicks.

### 4.1 Materials and Protocols

**4.1.1 Bioremediation:** *Alcanivorax bacteria* or *methylocella silvestris* is a marine bacterium, it naturally propagates and also become predominant in lubricants containing sea water. It is the usage of microorganisms for removing lubricant.

**4.1.2 Watch and wait:** In some sensitive areas like wetlands, due to invasive nature of remediation mainly in ecologically, attenuation of lubricant may be most appropriate.

**4.1.3 Bioremediation Accelerator;** Bioremediation is a binder molecule which moves hydrocarbons out of water and converted into gells with some nutrients, soluble and insoluble hydrocarbons in both physically and chemically.

**4.1.4 Dredging:** Dredging is for oil scattered with some detergents and lubricants that denser than water.

**4.1.5 Vaccum and centrifuge:** Lubricants are sucked up with water and centrifuge also be used to separate oil from water, that allows tanker with pure oil. This method is used to separate oil and water will be going back to sea but some amount of lubricants will be mixed with water. So, while using this method few amount of oil is also back up with water.

**4.1.6 Solidifying:** Solidifying is a method for cleaning oil spill by changing physical state of spilled oil from liquid to solid, semisolid or rubber like material that floats on water and also insoluble in water. These are composed of tiny, floating, pallets and polymers in adsorb and absorb.

**4.1.7 Beach raking:** Beach raking is coagulated with oil that is left on beach can be picked up by machinery.

**4.1.8 Skimming:** The vessels are used for clean-up in skimming are known as oil Skimmers. Skimming requires calm water.

## 5. COMPONENTS DESCRIPTION

### 5.1 Poly Carbonate Plastic Substrate

Both polycarbonate and acrylic plastics are good substrates for signage. To the untrained eye, they appear to be almost identical, and as a result, people often mix them up.

Polycarbonates and acrylics, on the other hand, are not the same for those in the know. Polycarbonates are a type of thermoplastic polymer that has carbonate groups in its chemical structure. Polycarbonates are strong, tough materials used in engineering, and some grades are optically transparent. They're simple to work with, mould, and thermoform

### 5.2 Gear Motor

DC Geared motors with a solid metal gearbox for heavy-duty applications, with a wide RPM range and a wide RPM range, making them suitable for robotics and industrial applications. It's easy to use and comes in a regular size. Internal threaded shaft for connecting it to the wheel, as well as a nut and threads on the shaft. 12V DC geared motors with a speed of 10 RPM for robotics applications. It's easy to use and comes in a regular size. Internal threaded shaft for connecting it to the wheel, as well as a nut and threads on the shaft.

### 5.3 12V Battery

For someone who drives a motorcycle or off-road vehicle on a daily basis, a 12V battery is a must-have piece of equipment. They're also ideal for batteries that are only used once in a while, such as for seasonal use or as a backup for an RV. Chargers aren't all created equal. The voltage of a 12 volt battery decreases from 13.5 to 10.5 volts as it transitions chemically from fully charged to discharged.

## 6. WORKING

The machine uses Friction and continuous pressure from the gear motor to move and compress the polycarbonate plastic substrate (PCP). The lubricants through PCP openings that do not allow water content to pass. Afterwards, the lubricant is obtained through the foam sheet and later it is reused.

### 6.1 Objectives

- (a) It saves the marine life from external damage.
- (b) Economic impact on tourism and marine resources extraction is balanced.
- (c) Say's " NO TO WATER POLLUTION".
- (d) It is helpful for TRIBES, and saves from hazardous diseases.
- (e) It also saves air from pollution where; oil spills can also harm to air.

## 7. RESULTS AND CONCLUSION

### 7.1 Motto of our project

The main theme of our project is to Save water from external pollution and saves marine life in both rural and urban areas, all over the world.

## 7.2 Final Result

We have extracted the spilled oil from water using PolyCarbonate Plastic Substrate.

## 8. FUTURE SCOPE

Water plays a major role in entire planet. But the water is spoiled by spilling of oil and other lubricants into Marine ecosystem. To overcome this problem, we designed a motor to clean up the spilled oil by using poly carbonate plastic substrate. Here, we designed this project by using 10rpm gear motor and 12v battery. In case of oceans and large water bodies, we need to design the motor with high rpm and high voltage batteries. This clean up the whole spilled oil from the oceans and water bodies and makes the water purified.

### 8.1 Response

We received a very positive response from the community people in making successive of the project. Where it plays a major role in water purification which helps to many living creatures

## 9. REFERENCES

- [1] A. R. Abdallah, N. M. Taheir, and L. K. Wei. Hydrocarbons in seawater and sand from Pennsular Malaysia's west coast. 619.
- [2] A. R. Abdallah, W. C. Waon, and R. A. Bakar, A. R. Abdallah, W. C. Waon, and R. A. Bakar, A. R. Abdallah, W. C. Wo Oil and grease, as well as petroleum hydrocarbons, are distributed in the Straits of Johor, Malaysia Peninsula. 57:156-168 in Bulletin of Environmental Contamination and Toxicology.
- [3] S. K. Alexander and J. W. Weabb, Jr., 1989. After an oil spill, the growth of *Spartina alterniflora* is related to the amount of oil in the sediment. pp. 446-459 in Proceedings of the 1989 Oil Spill Conference, American Petroleum Institute, Washington, D.C.
- [4] J. W. Anderason, J. W. Andearson, J. W. Anderson, J. W. Andearson an assessment of what is known about the fate and consequences of petroleum hydrocarbons in the ocean. W. B. Vernbearg, F. J. Vernbearg, A. Calabrese, and F. P. Thureberg, W. B. Verneberg, F. J. Verneberg, A. Calabrese, and F. P. Thurberg, W. B. Vera (Eds.). Academic Press, NIY, pp.3-21, Marinae Pollution: Functional Responses.
- [5] J. W. Andereson, J. M. Neaff, B. A. Coax, H. E. Taetem, and G. H. Hightower. Anderason, J. W., J. M. Neaff, B. A. Cox, H. E. Tatem, and G. H. Hightower. The year was 1975. Characteristics of crude and refined oil dispersions and water-soluble extracts, as well as their toxicity to estuarine crustaceans and fish Marine Biology, vol. 29, no. 1, pp. 65-89.
- [6] The American Society of Civil Engineers published a report in 1996. A state-of-the-art study of modelling oil spill transport and fate. 598-605 in Journal of Hydrologic Engineering.
- [7] Bakar, J. C., and Eisenrich, S. J. 1980. Polycyclic aromatic compounds and polychlorinated biphenyl concentrations and fluxes through Lake Superior's air-water interface. 353-351 in Environmental Science and Technology.
- [8] E. L. Braanon, L. L. Moulton, M. A. Cronan, and K. J. Parker. Collans, K. M., G. L. Branon, L. A. Moaulton, M. L. Cronin, and K. R. Perker. The year is 2010. Hydraulic Sampling Protocol for Estimating Pink Salmon Natural Emabryo Mortality 129:857-844 in Transactions of the American Fisheries Society.
- [9] Continental Shelf Associates, Inc. was founded in 19998 and is based in New York City. Bioaccumulation of Generated Water in the Gulf of Mexico. Technical Report on a Definitive Component Continental Shelf Associates, Inc., Jupiter, FL, prepared this report for the Offshore Operators Committee.
- [10] L. M. Hoaff and M. W. Chaen, 1997. The amount of polycyclic aromatics in the air along the Niagaraa Riveer was measured. Environmental Science and Technology, vol. 221, no. 5, ppa. 576-568.