

## “Oil: Nature v/s Necessity”

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**Abstract:** Petroleum, commonly referred to as oil, is closely linked to virtually all aspects of present society, especially for transportation and heating for both homes and for commercial activities. The environmental impact of petroleum is often negative because it is toxic to almost all forms of life. This paper discusses the Current Global Oil Industry and Its Hazards to the environment through Oil Spills and its impact on human being, animals and marine habitats.

**Keywords:** Petroleum Industry, Crude Oil, Environmental Hazards, Oil spill, Marine Pollution

### 1. The Global Oil Industries

Energy is the fuel of modern world. A major part of this energy we consume in the form of transportation, electricity, etc is generated through oil and/or its derivatives. The Total oil consumption of the world by the end of 2010 was 85.6 million barrels (13,610,000 m<sup>3</sup>) per day. With U.S. being the top consumer, followed by Japan, china and India at the fourth place. This high demand for oil across the globe is forcing governments and oil companies to explore, extract and refine more crude oil than ever before.

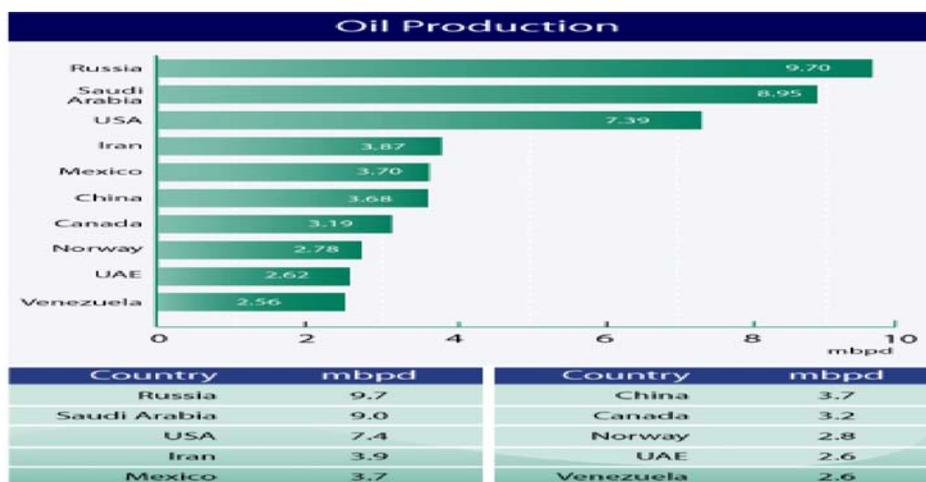


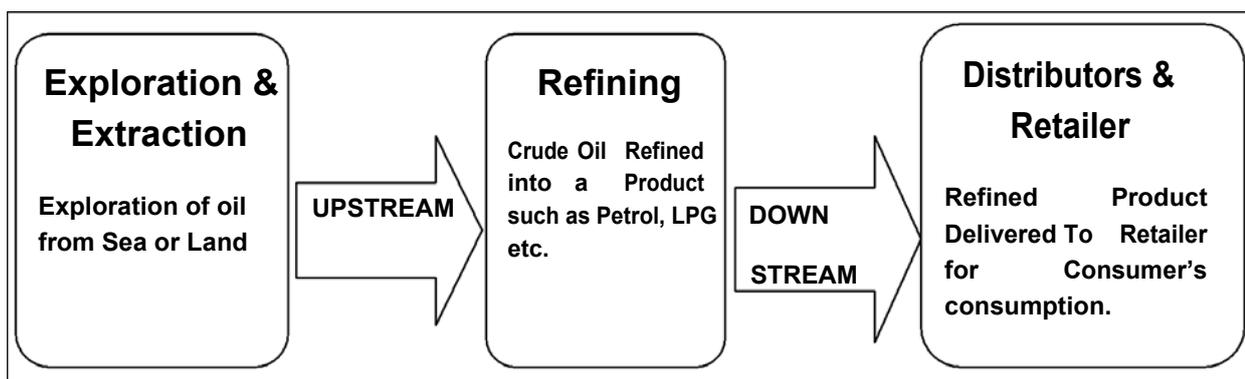
Figure 1: Top 10 Crude Oil Producing Countries in the 2007.

Source: International Energy Agency (IEA) – January 2007

The oil industry includes the global processes of exploration, extraction, refining, transporting (ships, pipelines, roads and railways), and marketing petroleum products. Once Crude oil is explored and extracted, it is send to an oil refinery for refining process. This process is termed as “Up Stream Supply Chain”. Crude oil has many derivate, but fuel (petrol, diesel, kerosene, etc) and LPG are the most consumed ones. Petroleum is also the raw material for many chemical products, including pharmaceuticals, solvents, fertilizers, pesticides, and plastics. Once the refinery converts raw crude oil

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into refined product, these product is then supplied to network of distributors, retailers and finally to consumers forming the “Down Stream Supply Chain”.



## 2. Environmental Issues of Oil

Oil has become a necessity of our life, In this process of satisfying the population’s ever increasing demand for oil, environment is being adversely effected in every processes of the petroleum industry, right from extraction till usage. In fact the impact of environmental hazards caused by oil industry through small and big oil spills have a far reaching effect on environment, flora and fauna.

### 2.1 . Oil Spills

An oil spill is the release of a liquid petroleum hydrocarbon into the environment, especially marine areas, due to human activity, and is a form of pollution. The term is mostly used to describe marine oil spills, where oil is released into the ocean or coastal waters. Oil spills may be due to releases of crude oil from supply tankers, offshore crude oil drilling platforms, drilling rigs and wells, as well as spills of refined petroleum products (such as petrol, diesel) and their by-products, heavier fuels used by large ship, etc. Oil wastes enters the ocean come from many sources, some being accidental spills or leaks, and some being the results of chronic and careless habits in the use of oil and oil products. Most waste oil in the ocean consists of oily storm water drainage from cities and farms, untreated waste disposal from factories and industrial facilities, and unregulated recreational boating.

### 2.2 . Effects of Oil on Marine Life

Oil waste poisons the sensitive marine and coastal organic substrate, interrupting the food chain on which fish and sea creatures depend, and on which their reproductive success is based. Wildlife other than fish and sea creatures, including mammals, reptiles, amphibians, and birds that live in or near the ocean, are also poisoned by oil waste. The hazards for wildlife include toxic effects of exposure or ingestion, injuries such as smothering and deterioration of thermal insulation, and damage to their reproductive systems and behaviors. Long-term ecological effects that contaminate or destroy the marine organic substrate and thereby interrupt the food chain are also harmful to the wildlife, so species populations may change or disappear.

*“In 2000, several thousand penguins were affected by a fuel oil spill after the iron-ore carrier Treasure sank off South Africa. Many oil-soaked birds had to be cleaned and released”*

### 2.3 . Effects of Oil Spill on Human

Crude oil is made up of thousands of chemical compounds. Some of the lighter ones, including benzene and toluene, are known as volatile organic compounds (VOCs) and tend to evaporate soon after

they reach the water's surface. These chemicals can cause respiratory problems as well as temporary central nervous system troubles. And some VOCs have been linked to cancers at high exposure levels. When oil comes into contact with skin, it can also cause dermatitis and other skin infections. The Population residing near the oil spill region and rescue worker in charge of cleaning up oil spills are most likely to be affected with health problems such as: chest pain, coughing, dizziness, headaches, respiratory distress and vomiting. These symptoms are typical of acute exposure to hydrocarbons or hydrogen sulfide.

## 2.4. Effects of Oil on Fisheries and Aquaculture

Fishing and aquaculture are important industries which may be affected by oil spills in various ways. Commercially exploited animals and plants may be killed as a result of oil smothering and toxicity. Catches and cultivated stock may become physically contaminated or may acquire an objectionable oil-derived taste known as 'tainting'. Fishing and cultivation gear may be oiled, leading to the risk of catches or stock becoming contaminated or fishing being halted until gear is cleaned or replaced. The interruption of subsistence, recreational and commercial fishing activity and the disruption of seafood cultivation cycles can have important economic consequences. The reluctance of consumers to purchase seafood products from an affected region can also result in a loss of market confidence.

## 2.5 Effects of Oil on Tourism Industry

Coastal areas are usually thickly populated and attract many recreational activities and related facilities that have been developed for fishing, boating, snorkeling and scuba diving, swimming, nature parks, beaches, and other resident and tourist attractions. Oil waste that invades and pollutes these areas, negatively effects human activities and has devastating and long-term effects on the local economy and society.

*Prince William Sound in Alaska was a Famous Tourist Destination in USA but on March 23, 1989, The Exxon Valdez, an Oil Tanker Ship, Struck the 'Bligh Reef' and spilled 260,000 to 750,000 barrels (41,000 to 119,000 m<sup>3</sup>) of crude oil into the sea, Adversely effecting the marine life and Tourism Industry. It is considered to be one of the most devastating human-caused environmental disasters.*

## 3. Conclusion

Today we are Exploring, Extracting & Consuming More Oil than ever before. With This High Demand, The Incidences of Oil Spills is bound to Increase. Since "Prevention is better then Cure", Oil Companies & Governments across the world should work on Strategies to Avoid Oil Spill incidence, as after a major oil spill disaster, no amounts of efforts, money and technology can completely reverse the ecological balance of the effected region. In spite of these measures, if an Oil Spill incident occurs, nations must be equipped with 'Quick Response Team' of Trained Professionals to stop further spill and clean up the contamination. Oil Companies must take responsibilities and measures to invest in re-creating the ecological balance of the effected region.

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