

Introduction impacts on human health exposure to



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Introduction

Production of energy has become a critical issue in environmental conservation as the world battles the increasing global climatic change in the 21st century. Greenhouse gases emission and oil spills into the environment have become threats to green living. Poor energy production technologies as well as other environmental pollutants that result from the power plants continue to impact on our environment.

Production technologies which can give us 100% energy efficiency have not been implemented in most power plants especially in fossil fuel power plants.

Oil Spills

Oil spills have become part of our history although occasionally, but their consequences have been far reaching and devastating. Among the major oil spills that we have had in history are the 1990 Gulf War oil spill and the BP oil spill in the Gulf of Mexico which is the most recent. The ex-CEO of BP PLC, Tony Hayward admitted that BP was inadequately prepared to respond to such disasters.

Environmental Impacts of Oil Spill

Oil spills may result from negligence; poor mechanisms for monitoring the processes of the mining stage and for controlling the potential risks involved in the mining stage or may be intentional as it happened in the Gulf War oil spill. Oil is a viscous liquid and therefore when it occurs in the ocean, it spreads on the surface creating a cohesive oil slick. Since oil contains volatile

organic compounds, about 20-40% will evaporate thus reducing the mass available (Karthik 2).

The oil vapors in the atmosphere causes toxic acid rain and may also cause erratic climate change. A small percentage dissolves into the water while the remainder, which is now oil residue, forms a thick mousse which floats on the water surface. This interferes with the oxygen supply to marine plants and animals. The marine plants gradually die and with time, the aquatic life which depends on the marine vegetation also dies.

This in turn leads to accumulation of toxins in the bodies of fish, oysters, clams as well as mussels causing the death of other successive members in the food chain. Besides, mammals such as otters and seals lose out water resistant compounds in their coats making it difficult for them to fly (Karthik 3). When it reaches the coastlines, it reacts with the boulders, beach sand, vegetation as well as the terrestrial habitat for flora and fauna thereby contaminating the living habitat. The vegetation along the coastline therefore become vulnerable to erosion due to the effect of the oil on the boulders, gravel and rocks which lie along the coastline and the beach (Karthik 3-4).

Impacts on Human Health

Exposure to the chemical compounds in oil is perilous to human health.

People working in areas that have been polluted by the resulting oil spill suffer from severe headaches, step throat, respiratory problems, and dermatitis among other diseases. Oil spills also cause contamination of sea

food leading to food poisoning and may also affect mental health of individuals (Karthik 7-8).

Economic Impacts oil Spill

When oil spills occur, the country, and by extension the world, loses many tones of oil. Considering that fossil fuels are non-renewable energy resource, such situations lead to continued depletion. More losses are incurred as much resources is applied to contain the situation for an economic loss which could have been prevented through efficient production and mining methods. The Gulf of Mexico BP oil spill cost the company over \$3 billion in clean up and over \$20 billion in paying for damages (Buzzle Staff and Agencies 1).

Greenhouse gases emission from Power Plants

Carbon dioxide and methane gases emitted from these power plants act as transparent blanket leading to the greenhouse effect.

Sulfur dioxide emitted from these power plants reacts with water vapor and oxygen in the atmosphere causing acid rain. Acid rain kills certain living organisms which include fish and plants and is also likely to cause damage to limestone buildings. These gases also have dangerous impacts on human health (Lackner (b) 21). Infrastructures put in place in fossil fuel power plants have been major cause of carbon emissions into the environment. There exists a gap between the measures that are currently in place and what can be done to reduce pollution from the fossil fuel power plants. The amount of CO₂ emitted into the atmosphere is about 8Gt per year (Lackner (a) 52) and this is expected to spread gradually into the mobile carbon pools which

include the atmosphere, ocean as well as the biosphere thus disrupting the equilibrium systems in the atmosphere. It therefore becomes very difficult to remove once it enters the mobile carbon pool. High levels of carbon lead to immobilization by geological weathering which may even make the removal more complex.

This trend is expected to rise as long there is substantial emission of CO₂ into the atmosphere making stabilization of CO₂ levels very difficult. This calls for modern and more efficient technologies for achieving 100% energy efficiency in the power plants. This implies that we should consider adopting carbon capture technologies in power plants.

According to Brennan and Lackner (361) CO₂ storage tanks could be designed to enhance efficiency in power plants and help eliminate emission of CO₂ into the atmosphere and would also help convert flue gas into solid and liquid waste. This would greatly help in eliminating pollutants into the atmosphere and by-products could also be used by related industries. This process would ensure that we achieve green production of energy from fossil fuel power plants. Adoption of alternative renewable sources would also help reduce overreliance on fossil fuels and achieve green energy production. This should include the use of hydro, solar, geothermal, wind energies as well as efficient production of nuclear energy which involves reprocessing and nuclear fusion (Lackner (b) 46-48).

Conclusion

Environmental conservation aimed at combating the increasing global climate change should involve adopting more efficient technologies for

production of energy and implementation of modern monitoring technologies for the production processes. This would help reduce carbon emissions and accidents which occur in oil mining and production.

It should also involve adoption of renewable sources of energy.

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