

CARBON CAPTURE STORAGE (CCS) PROCESS - A NEW TECHNOLOGY TO MITIGATE CO₂ POLLUTION FROM AUTOMOBILE ENGINES

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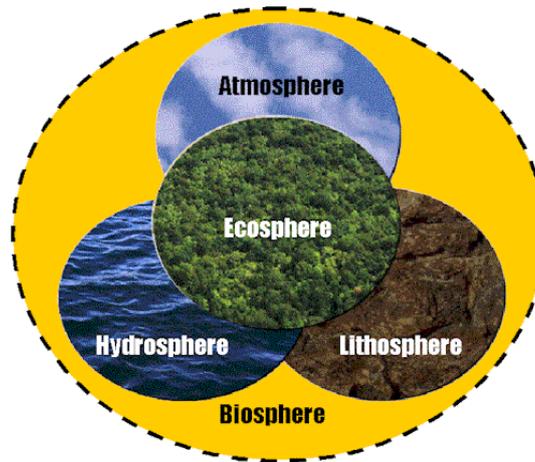
ABSTRACT

In the nature cycle of carbon dioxide, every time large amount of CO₂ is releasing from burning of fossil fuels such as gas, coal and oils and apart of CO₂ is absorbed by the plants. But the content of CO₂ is gradually increasing year by year due to more releases from automobiles. The release of automobile is due to the over utilisation of fuels. The effect of CO₂ is raising the temperature all over the earth i.e., GLOBAL WARMING. Some of the carbon capture storage techniques are used at large scale industrial plants. Research is going on to separate CO₂ from burning of fossil fuels. The current technology required several times the theoretical energy requirements to separate CO₂ from fossil fuel conversion effluent. The effective CO₂ Emission abatement strategies such as CCS process are required to combat this trend. The intensive research in the feasibility the study of CO₂ capture from automobile Engineers will help of CO₂ Emission to the atmosphere capturing a small amount of CO₂ from Vehicles should have large scale benefits. An attempt has been made to work on a machine that would be pulling CO₂ to scrub out the Emission from diffuse sources, such as automobile Exhaust. The scrubber binds the CO₂ to Sodium Hydroxide. The acidic CO₂ combines with the base to get neutralise eventually resulting in a batch of separated CO₂ that can be sent to keep CO₂ emission out of the exhaust gas and it has safe storage with benefits.

Keywords: *Environmental Pollution, CO₂, Global Warming, Climate change, CCS*

I. INTRODUCTION

Atmospheric CO₂ increased in past from volcanism and mountain formation by shifting continental plates as fossil and geological records indicate. The resulting greenhouse effect damaged life on the planet until air-CO₂ concentrations diminished gradually over millions of years through long-term storage of the water-dissolved aerosol finally formed mineral carbonates.



From the beginning of the Industrial Revolution time period, the gas exterior from burning of fossil fuels and extensive clearing of forests has contributed to a increase in the atmospheric concentration of carbon dioxide and recently it has been estimated that, if greenhouse gas emissions continue at the present rate, Earth's surface temperature could exceed historical values as early as possible, with almost harmful effects on ecosystems, biodiversity and the living conditions of people all over the world.

According to the EPA (Environmental Protection Agency), the main human activity that emits CO₂ is the combustion of fossil fuels (coal, natural gas, and oil) for energy and transportation, although certain industrial processes and land-use changes also emit CO₂.

The Earth's atmosphere is being changed at an unprecedented rate, primarily by humanity's ever-expanding energy consumption, and these changes represent a major threat to global health and security. Sound policies must be quickly developed and implemented to provide for the protection of the planet's atmosphere.

II. GLOBAL WARMING AND ENVIRONMENTAL SIDE EFFECTS

Increasing global temperature would result in the increasing the sea levels and will change the amount and pattern of environment, including an expanse of the desert regions. Some other effects include increases in the intensity of extreme weather conditions, changes in agricultural productions, glacier retreat, species extinctions and increases in the ranges of disease.

The greenhouse gases that cause climate change includes as the following: Carbon Dioxide, Methane and Nitrous Oxide are among the most noticeable gases. Carbon dioxide emissions therefore are the most important cause of global warming. CO₂ is created by burning fuels like oil, natural gas, diesel, petrol, organic-petrol, and ethanol.

As the scientists report, Global warming is defined as an increase in the average temperature of the Earth's atmosphere, especially an increase great enough to cause changes in the global climate conditions. The term global warming is synonymous with Enhanced greenhouse effect, implying an increase in the amount of greenhouse gases in the earth's atmosphere, leading to entrapment of more and more solar radiations, and thus increasing the overall temperature of the earth. The heating situation of the earth in itself causes the life of humanity to be in danger. Our world is characterized by fast moving geopolitical and natural changes and the

scenarios drawn by climate change specialists are alarming. If we want to avoid dangerous climate change and its ample consequences for creatures all over the world, it is necessary to take actions right now.

III. CARBON CAPTURE AND STORAGE (CCS) PROCESS:

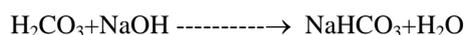
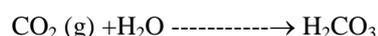
Therefore Global climate is maybe the most challenging environmental problem the world will be facing in future. To decrease the growth of greenhouse gases and its consequences, a set of CO₂-limiting policies will be needed. Carbon capture and storage (CCS) technology is one of the most important technologies around the world that is considered as one of the options for reducing CO₂ gas and decreasing the global warming although, some aspects of using this technology, especially those of regulatory issues on this aspects should be more considered by States all around the world. In this article we will consider the impacts of applying CCS on the reduction of air pollution and global warming and also survey the Side effects of this technology in the context of international environmental law.

CCS is a process of capturing waste CO₂ from large point sources such as fossil fuel power plants. Now the world tries to reduce release of CO₂ from automobile and from industrial plants. It is a process used at large scale industrial plants but this paper focuses on automobile releases. Here in this process we were use to capture CO₂ and storage or it converts to any other harmless gas. In the abstract storing a small amount of CO₂ will have large scale benefits. Carbon Capture and Storage (CCS) is a technology that can capture up to 90% of the carbon dioxide (CO₂) emissions produced from the use of fossil fuels in electricity generation and industrial processes, preventing the carbon dioxide from entering the atmosphere. Furthermore, the use of CCS with renewable biomass is one of the few carbon abatement technologies that can be used in a 'carbon-negative' mode – actually taking carbon dioxide out of the atmosphere.

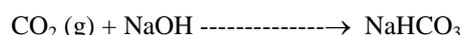
IV. MECHANISM

The authors made an attempt to set up a chemical substance at the release of CO₂ at muffler. A scrubber is used to absorb CO₂. Actually CO₂ is acidic nature which on treatment with bases neutralisation will takes place, so the Emission of CO₂ restricted. One of the strong Base is NaOH which can be used to convert CO₂ to corresponding salt.

When CO₂ (g) is reacts with Dil. NaOH the following reaction will takes place



When CO₂ (g) is reacts with Con. NaOH the following reaction takes place



V. CONCLUSION

It's good to point that increase in the amount of carbon dioxide will cause loss to the future generations because of its harmful effects accordingly. This paper would examine the impacts of CCS technology as one of the newest processes in order to minimize the global warming effect and the future of this technology and the way which it works. At the beginning of this paper it should be mentioned that this paper includes some new and up to date information on the relation between technology of CCS and human common heritage as a worldwide concept that is new in itself.

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