

## Greenhouse Gases - a Brief Review

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### ABSTRACT

Many investigators have expressed urgent need for pollution control measures which are effective and acceptable. Many harmful gases cause different health problems to human beings. Gases such as carbon dioxide, sulphur dioxide and hydrogen sulphide can be removed from exhaust gases by different methods. Greenhouse gases allow shortwave radiations to pass through the earth's atmosphere and heat the land and oceans. The long wave radiation emitted from earth surface cannot pass through atmosphere due to these greenhouse gases. This phenomenon leads to greenhouse effect. Vehicular and industrial pollution is main contributor to the greenhouse gases and global warming. Water vapor plays a very important role in energy transport by convection. Combination of solar radioactive heating and the strength of the greenhouse effect determine the surface temperature of a planet.

**Key words:** Hydrocarbons, radiations, natural gas, chlorofluorocarbons, accumulation.

### INTRODUCTION

Global warming is one of the most talked about term in environmental science. The temperature of the earth is ever increasing in fact, more so in last five decades. Many investigators have expressed urgent need for pollution control measures which are effective and acceptable. Many harmful gases cause different health problems to human beings. <sup>[1-2]</sup> Gases such as carbon dioxide, sulphur dioxide and hydrogen sulphide can be remove from exhaust gases by different methods. <sup>[3-5]</sup> Greenhouse gases allow shortwave radiations to pass through the earth's atmosphere and heat the land and oceans. The long wave radiations emitted from earth surface cannot pass through atmosphere due to these greenhouse gases. This phenomenon leads to greenhouse effect. Many investigators have carried out studies on greenhouse gases, their effect and control. Current review summarizes research and studies and greenhouse gases.

### GREENHOUSE GASES - A BRIEF REVIEW

Stojanovic et.al. carried out studies on greenhouse gases and means of their prevention. <sup>[6]</sup> According to them, water vapor is one of the greatest contributors to the greenhouse effect on earth. According to their studies water vapor plays dominant role in the greenhouse effect. Other gases such as carbon dioxide, chlorofluorocarbons, methane, and nitrogen dioxide also affects greenhouse phenomenon. According to an investigation carried out by El Zein and Chehaye, vehicular and industrial pollution is main contributor to the global warming. <sup>[7]</sup> Their studies indicated that the main cause of greenhouse effect is effect of pollution and atmospheric stability conditions. According to them, the causes for global warming can be divided into two parts, natural and man-made. Purchase and use of environmental friendly products can help the cause. Studies carried out by A. Shrivastava and S.

Shrivastava indicated that the climate changes as a result of global warming have reached irregular levels.<sup>[8]</sup> Few indications are rainfall and hurricanes of unusual intensity. Also they proposed an ecological model for understanding the impact of greenhouse warming on the natural environment. According to Lacis, combination of solar radioactive heating and the strength of the greenhouse effect determine the surface temperature of a planet.<sup>[9]</sup> He noted that water vapor plays a very important role in energy transport by convection. They concluded that direct human efforts are required to reduce the atmospheric carbon dioxide level. Sreenivas et.al. investigated influence of meteorology and interrelationship with greenhouse gases.<sup>[10]</sup> They pointed out that gases like carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>) are climate forcing agents. During their investigation, they observed that methane recorded the maximum during post monsoon and minimum during monsoon. The meteorological factors like air temperature, wind speed, wind direction and relative humidity had strong impact on GHGs. Pearson et.al. carried out studies on the effects of environmental warming and drying on instantaneous CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O fluxes in three sedge fens.<sup>[11]</sup> They used open top chambers (OTCs) for inducing warming. They observed that the drainage effect overrode warming effect. Luo et.al. carried out investigation on effects of soil temperature and moisture on methane uptake and nitrous oxide emissions.<sup>[12]</sup> They studied three distinct semi-natural or natural ecosystems. Fekete et.al. studied analysis of current greenhouse gas emission trends.<sup>[13]</sup> They studied greenhouse phenomenon in the light of prevailing policies and regulations. According to their estimates the current policies may lead to 3.7 degree rise in temperature. Byrne and Goldblatt carried out studies on radioactive forcing of greenhouse gases.<sup>[14]</sup> Their studies indicated that CO<sub>2</sub> radioactive forcing is consistent. They found a logarithmic relation between greenhouse intensity and

water vapour content. According to Chilingar et.al., rising concentration of CO<sub>2</sub> should result in the cooling of climate.<sup>[15]</sup> According to them, methane accumulation has no essential effect on the earth's climate. According to studies carried out by Howarth, use of fossil fuel is major source of emission of greenhouse gases.<sup>[16]</sup> Use of natural gas can reduce the emission to considerable extent. He noted that unprecedented investment in natural gas infrastructure and regulatory oversight can be a limiting factor. According to him, for any forcible use of natural gas, GHG is larger than other fossil fuels. They emphasized that use of wind, solar, and water power can effectively lower GHG effect. Singh et.al. studied the effect of microbial processes on GHGs.<sup>[17]</sup> It is important to consider few interactions between microorganisms and other biotic and abiotic factors. Ramanathan and Feng studied global and regional perspectives of air pollution, greenhouse gases and climate change.<sup>[18]</sup> Atmospheric brown clouds (ABCs) containing sub micron size particles (aerosols) are formed by transport of air pollution across continents. Robinson et.al. carried out studies on literature concerning the environmental consequences of increased levels of atmospheric carbon dioxide.<sup>[19]</sup> They stated that there is no reason to worry about warmer climate. According to them, warmer climate extends the growing seasons and generally improves the habitability of colder regions. Smith et.al. carried out studies on various soil physical factors and the biological processes which cause the production and consumption in soils of greenhouse gases.<sup>[20]</sup> The release of carbon dioxide, according to them, is function of temperature for considerably wide range of temperature. For dry soil, it becomes function of water contents. Gas diffusivity, according to them is main factor controlling oxidation. According to studies carried out by Aggarwal and Markanda, the rapid heating of earth is taking place due to greenhouse effect, more so in last two decades.<sup>[21]</sup>

According to their studies the carbon dioxide and water vapour emission by human being also contributes to the greenhouse effect. In their studies, they presented the combined effect of greenhouse gases due to human activities and greenhouse gases emitted by human population.

## CONCLUSION

The rapid heating of earth is taking place due to greenhouse effect, more so in last four-five decades. Warmer climate extends the growing seasons and generally improves the habitability of colder regions. For any forcible use of natural gas, GHG is larger than for fossil fuels. Gases like carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>) are climate forcing agents. The temperature of the earth is ever increasing, more so in last five decades. Many investigators have expressed urgent need for pollution control measures which are effective and acceptable. Many harmful gases cause different health problems to human beings. Current review summarizes research and studies and greenhouse gases.

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How to cite this article: Kulkarni SJ. Greenhouse gases - a brief review. *International Journal of Research and Review*. 2017; 4(3):18-21.

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