Project Report on Green House Effect

Green House Effect is heating up of earth's atmosphere due to the trapping of intra-red ray. (reflected from the earth's surface) by the carbon dioxide layer in the atmosphere is called green-house effect.

The green-house effect in the atmosphere occurs due to the presence of a blanket of carbon-dioxide gas in the atmosphere. This blanket of carbon dioxide gas in the atmosphere allows the sunlight to come in freely but does not allow the intra-red radiation reflected by the earth's surface to go out. It is just because the sun light can come in freely but the intra-red rays cannot go out freely that the temperature of earth's atmosphere is raised.

The rise in temperature produce gas in the by green-house effect on earth's atmosphere depends on the amount of carbon dioxide gas in the atmosphere. In other words, the proportion of carbon dioxide in atmosphere effects the temperature of atmosphere. So, if the proportion of carbon dioxide gas in the atmosphere increases, than the temperature of earth's atmosphere will also rise further.

What is Green House Effect ?

The name "Green-house effect" comes from the fact that this effect is use in horticulture for the up bringing of green plant's in small house made of glass walls and glass root. The green walls and roofs of a green-house allows the sun-light to come in freely but it does not allows the long wavelength infrared radiations reflected by the soil, plants and other contents of green house to go out. These trapped intra-red rays show their heating effect due to which the temperature is raised inside the green house. Thus,

even without an external supply of heat, the temperature inside a green house is found to be higher than it is outside. Thus, green house acts as a heat trap. Due to the presence of carbon dioxide, our atmosphere acts like the glass rat of an ordinary horticultural green-house.

Causes of Green House Effect

The principal cause of Green-House effect is the increase in the quantity of green house gases like CO_2 in the atmosphere. The naturally occurring "Green House gases", including carbon dioxide, methane, nitrous oxide and water vapor, keep ground temperature at a global average of 15^0 Celsius. without this natural blanked earth's surface would be about 30^0 Celsius colder than it is today, making the planet a freezing barren, lifeless place similar to Mars. The green house gases keep the surface warm because as incoming solar radiation strikes earths, the surface gives off infrared radiation or heat, that the gases temporarily trap and keep near ground level.

Problem from Green House Effect

The problem is that human activity may be making the green house gas blanket "thicker" For example, burning tonsil fuel throws huge amounts of CO_2 into the air, the destruction of forests allows carbon stored in the trees to escape into the atmosphere and other activities such as raising cattle and planting rice emit methane, nitrous oxide, and other green house gases. Until man kind began burning fossil fuels, green house gases that occur naturally remained in relative balance. But the beginning of the Industrial Revolution in Britain ushered in rapid industrialization that greatly increased man's assault on the ecology.

Importance of Carbon Dioxide- The Green House Effect

Carbon dioxide present in small proportion (0.03%) is nonetheless a very important member of the atmosphere. The proportion of (O_2) is maintained by a host of difference processes. The major consumers of CO_2 from the atmosphere are the green plants use the CO_2 to prepare their tool and the oceans dissolve the CO_2 in the form of carbonates. The major suppliers of CO_2 to the atmosphere are the volcanic earth processes and living organisms. The atmosphere gains CO_2 from the volcanoes which release this gas from the interior of the earth and from organisms in the process of their respiration and decay. In this manner both the atmosphere and the oceans continuously exchange CO_2 with the rocks, plants and higher organisms.

Role of Carbondioxide in Green House Effect

The carbon dioxide in the atmosphere also performs another major role. The earth receives light of different wavelengths from the sun. The Ozone in the upper atmosphere absorbs most of the harmful ultraviolet radiation and lets the other wavelengths pass through. However, some of the light incident on earth is reflected back in the form of intra-red light that is light whose wavelength is greater than that of red light. Carbon dioxide molecules have the ability to absorb the intra-red radiation reflected from the earth. A blanket of CO_2 can, therefore, trap intra-red light in the atmosphere causing the atmosphere to heat up-This heating due to trapped radiation is called the Green House effect.

Role of Automobile in Green House Effect

A similar phenomena is observed inside an automobile. The sun's rays enter the car through the glass window. Some of this light is reflected from the metal and the upholstery inside the car in the form of intra-red light. The glass windows like CO_2 can trap this reflected intra-red light and cause the interior of the car to heat up considerably. Infect the name green house is derived from a glass structure used to cultivate putted plants in some countries water vapors and ozone also have the ability to

trap intra-red radiation and also some times referred to as green house gases. However, water vapors is only found near the surface of the earth and ozone only in the upper reaches of the atmosphere carbon dioxide which is much more evenly distributed in the atmosphere and contributes to the green house effect to a larger extent.

The proportion of carbon dioxide can therefore, effect the temperature of the atmosphere. If this proportion increases, the temperature is liable to rise.

The atmosphere has been evolving over billions of years and will continue to do so. However, in this century the atmosphere has received a large contribution from man himself. In the course of modern human activities, huge quantities of carbon dioxide are released into the atmosphere. This is done during the burning of tonsil fuels.

It is estimated that man in burning fusel fuels is releasing 6000 million tones of CO_2 into the atmosphere each year. The cultivation of soil releases vast quantities of carbon dioxide produced by bacteria to escape in to the air. These agricultural pursuits release 2000 million tones more. A part from CO_2 mans industrial activities also release large quantities of noxious gases like nitrous oxide (N_2O), carbon monoxide and sulpher dioxide solid suspensions and dust are also increasing in proportion.

Nature however, is extremely kind. It cleanses many of the pollutions with rain. Green plants absorbs most of the excess CO_2 from the atmosphere and give back healthy oxygen in return. By destroying green plants and trees we destroy those very agents that clean our atmosphere. Afforestation, that is, the replanting of destroyed trees and forests is one solution for preserving a healthy proportion of CO_2 in the atmosphere.

Over the past hundred years we have released approximately 360000 million tones of CO_2 and are continuing to do so at an increasing pace. As a result of this large scale dumping, the proportion of CO_2 has increased by 13 per cent. If the green house effect is understood correctly, this would have increased the average temperature of the earth

by if. At the end of this century, the earths average temperature would have increases by about 3.60 F. The full consequence of this disastrous rise have jet to be understood.

Green House Effect from Automobile

The internal heating due to green- house effect can be observed in a car parked in sun-shine with all its windows closed, This can be explained as follows : The glass windows of a car allow the visible sunlight and the very short wavelength intra-red rays contained in sunlight to pass through them freely and go inside the car. These rays are reflected from the inside surface of the car (like dash-board, seats, etc.) Now, the intra-red radiation emitted by very hot sun and which entered the closed car was of very short wavelength, but the intra-red radiation reflected (or emitted) by the less hot "inside surface" of cares of longer wavelength. The glass windows of car do not allow this long wavelength intra-red radiation to go out through them. So, the intra-red rays get trapped inside the car. since the intra-red radiations produce a heating effect, therefore, the interior (inside) of the car gets heated considerably. Thus glass is a solid substance which produces green house effect.

Those gases which can trap intra-red radiation given by the sun to produce green-house effect leading to heating up of the environment are called green-house gases. One of the most important green-house gas is carbon dioxide. Water vapor and ozone also have the ability to trap the intra-red radiation so they are also called green house gases. Thus, we have three green-house gases :-

i. Carbon dioxide, CO_2
ii. Water vapor, H_2O and
iii. Ozone, O_3

Out of these three, water-vapor and ozone do not contribute much green-house effect to the earth's atmosphere because ozone is present only in the upper part of atmosphere whereas water. Vapor is found only near the surface of earth (which is at the bottom of the atmosphere). Only carbon dioxide contributes largely to the green house effect in

the earth's atmosphere, because carbon dioxide is much more uniformly distributed in atmosphere.

The green-house effect produced by carbon dioxide gas is very crucial to our existence on earth. This can be explained as fellows : By producing the green-house effect, carbon dioxide gas in the atmosphere traps the intra-red rays (heat rays), leading to the heating of earth and its atmosphere. This heating of earth (or rise in temperature of earth) is very necessary for our existence because without it, the whole earth would be converted into an extremely cold planet, making the existence of life difficult.

Our earth's atmosphere is transparent to the visible radiations coming from sun, stars etc. But reflects back the infrared radiations and hence it does not allow the infrared radiations to pass. The energy from the sun, heats the earth which in turn starts emitting radiations. Since the earth gets heated to much lower temperature than the temperature of sun, the radiations emitted by earth are mostly in the infrared region, according to Planck’s low. These radiations emitted by earth are reflected back by earth's atmosphere. Due to which the earth's surface remains warm at night.

Green House Gases Effect and Global Warming

Sun emits light of different wavelengths consisting of ultra-violet, visible region and intra-red of these the harmful ultra. Violet radiations one absorbed by the ozone layer in the stratosphere and warm the air rather than coming to the surface of the earths. The visible and intra-red radiations pass through the atmosphere and reach the surface of the earth. However, some of the light incident on the earth is reflected back. For example of the total incoming light that falls upon the earth, about 50% reaches the surface and is absorbed by it, About 20% of the incoming light is absorbed by gases in the atmosphere, such as ultraviolet light by ozone in astrosphere and intra-red by CO_2 and water vapour present in air. The remaining 30% is reflected back in to space by sand, snow, cloud ice snow and other reflecting bodies without being absorbed.

Some gases in air such CO_2 has the property of allowing visible light to pass through it but absorbing the intra-red radiations reflected from the surface of earth. Therefore, all the IR emitted from the earth's surface and atmosphere escape directly into space. After the absorption of IR radiation by CO_2 molecules these thermal IR radiations are re-emitted in all direction and some are redirected back towards earth surface and heat up the atmosphere.

Chlorofluere carbons have also the greatest potential to cause global warming due to their greater efficiencies of absorbing thermal IR radiations. Each molecule of cfc has the potential to cause the same extent of global warming as do tens of thousands molecules of CO_2cfc's are being excessively used in insulating freezers, refrigerators and air conditioners and are posing threat of global warming However, Government is now trying, to control the production of cfc's.

Effects of Global Temperature on Climate on the Earth

The next effect of increased level of all these green house gases is increased green house effect or global warming which may lead to increased global temperature. If nothing is done to control the concentration of these gases in to the atmosphere, than average temperature will increase. It has been observed that the average temperature of the earth has increased by about. If due to green house effect. If CO_2 is continued to be released into the atmosphere at the present rate then by the end of this century the earths average temperature is expected to increase by 3.60F. This excessive heating of the earth would melt all the snow on poles and different mountains. This would increase the water level of the sea and as a result the cities located on the coastal areas are likely to the flooded.

The increase in average global temperature can have the following effects on the climate of the earth.

a. In temperature regions, the summer will be longer and hotler and winter will be shorter and warmer. A warmer climate will make certain cities extremely hot to live.
b. There will be increase in total amount of global rainfall but some regions will receive less rainfall.
c. The number of days having intense showers and high temperature both will increase.
d. The problem of desertification bought and soil erosion will become more worese.
e. As a result of rise in temperature of the earth, ocean will get warm up and sea level would rise flooding low lying regions. The increase in sea level would have profound effects on habitation patterns and will threaten to submerge many coastal countries like. Bangladesh, Indonesia, Maldives, parts of coastal India and many other island nations.
f. Increase in greenhouse effect is expected to cause cooling of the stratosphere. This is because most thermal IR radiation will be absorbed at low attitudes and little will be left to warm stratosphere.
g. Tropical storms, hurricanes etc will be stronger and more frequent and will cause devastation.
h. Some areas may become more humid or welter or some other areas will become dry. The tropics may become wetter and the subtropics which are already dry, are expected to be drier.
i. Due to global warming, human health will be affected. Increased number of hot days and extreme weather may cause chronic.
j. Insect carrying diseases such as malaria may also increase.
k. Animal health will also be affected due to spread of diseases by parasites.
l. Ocean temperature change may also affect marine life adversely.

Bibliography

- Internet Source : www.google.com www.yahoo.com