

GLOBAL WARMING, VENTILATION & HIGH ALTITUDE HEALTH PROBLEMS

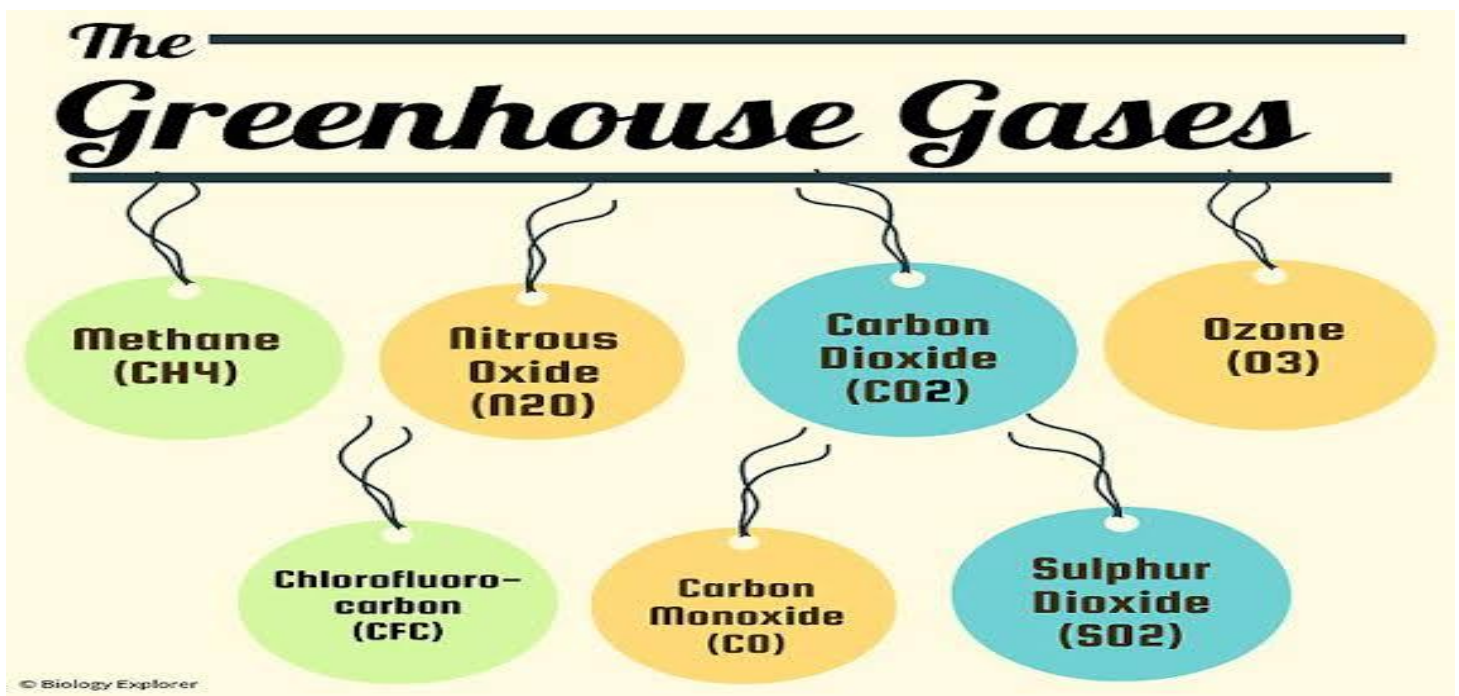
INTRODUCTION

- 1990s decade was the warmest decade and the year 1998 was the warmest year recorded since 1861.
- 14.6 million hectars of natural forest are lost each year an area larger than England .Because of raising temperature.
- UN secretary called climatically changes as the biggest challenge of 21stcentury.



DEFINITION

Global warming is the gradual rise in temperature of earth's atmosphere. It is caused because the quantities of greenhouse gases in our atmosphere have exceeded their accepted limit.



Cause of increase in green house gases

- Large scale brining of fossil like coal, petrol, diesel, natural gases for electricity generation and transformation.
- Industrialization, urbanization, vehicular traffic ,nuclear explosion , use of chemical fertilization.
- deforestation & increased ozone depletion

2. Delayed impact

- Ozone depletion
- Air pollution
- Shift of hydrological cycle-reduction of qualitative and quantitative availability of water.

Solution of global warming

- Use the `3R` policy-

- 1.REUSE

- 2.REDUCE

- 3.RECYCLE

- take public transportation instead of private vehicles

- increase tree plantation by public awareness & partnership

- promote the use of solar energy instead of electricity use

Disinfection of Air

1-Mechanical ventilation

2-UV radiation

3-Chemical mist

4-Dust control

VENTILATION

ventilation is not only process which purify the impure air but also simultaneously controls the factors like air temperature air movement , bacterial count and bad odor of air.

USE :

- To provide oxygen for metabolism & to dilute metabolic pollutants.
- To assist in maintaining good indoor quality by diluting and removing other pollutants.
- For cooling and to provide oxygen to combustion appliances.

STANDARDS OF VENTILATION

- Most of these have been based on the efficiency of ventilation.

1 .CUBIC SPACE

- Average person emits 0.6 cubic feet of co₂ per hour.
- Permissible impurity: 0.0002 cubic feet of co₂ in 1 cubic feet of space.

2. AIR CHANGE

- More important than cubic space.
- Recommendation for air changes
- in living rooms:2-3 times air change per hour.
- working rooms & assemblies:4-6 times air change per hour.

3. FLOOR SPACE

- Optimum floor space per person vary from 50-100 sq.ft.

TYPES OF VENTILATION

1. NATURAL VENTILATION

- Wind
- Inequality of temperatures
- Diffusion

• 2. ARTIFICIAL/MECHANICAL

- Exhaust
- Balanced
- Plenum
- Air conditioning

NATURAL VENTILATION

➤ WIND:

- An active force is ventilation.
- When it blows through a room is called as 'perflation'
- Windows & doors facing each other provide 'cross ventilation'.

➤ DIFFUSION:

- Air passes through the smallest spaces by diffusion.
- It is a slow process & hence not dependent upon this as a single means of ventilation.

➤ INEQUALITY OF TEMPERATURE:

- Air flows from high density to low density.
- It rises when slightly heated & escapes from openings provided high up in the room.
- Outside air which is cooler & denser will enter the room through inlets placed at a lower level.

MECHANICAL VENTILATION

➤ EXHAUST VENTILATION:

- Air is extracted or exhausted to the outside by exhaust fans usually driven by electricity.
- The exhaust fans are fixed in external walls, high up near the roof.
- Ventilation may be regulated by adjusting the speed of fans.
- It is generally provided in large halls & auditorium for removal of vitiated air.

➤ PLENUM VENTILATION:

- Here the fresh air blown into the room by centrifugal fans.
- Air is delivered through ducts at desired point.
- It is limited utility.

➤ BALANCED VENTILATION:

- A combination of exhaust & plenum ventilation.
- The blowing fan must balance the exhaust fan.

➤ AIR CONDITIONING

- Defined as “the simultaneous control of all, or at least the first three those factors affecting both the physical and chemical conditions of the atmosphere within any confined space or rooms.

➤ TRANSITION ROOM:

- The air is filtered when drawn in AC system for the room.
- Excess humidity is removed.
- Mixing some % of fresh air with re-circulated air is regulated.

MOUNTAIN AIR & ALTITUDE SICKNESS:HEALTH PROBLEMS

- Altitude is defined on the basis of the following scale(base sea level)

High altitude: 8000 to 12000 feet

Very high altitude:12000-18000

Extremely high altitude:>18000 feet.

- ALTITUDE SICKNESS** : when individual shows symptoms of disease as travels to high altitude is called as altitude sickness.

- CONTENT OF AIR AT SEA LEVEL**

pressure:760 mmhg

100 molecules of air;210 oxygen molecules;780 nitrogen molecules and 10 other molecules.

- CONTENT OF AIR AT 18,000 FEET**

pressure:380 mmhg

500 molecules of air,105 oxygen molecules,390 nitrogen molecules and 5 other molecules.

FOUR FACTORS AFFECTS RESPONSE TO ALTITUDE

1. Height of altitude.
2. Rate of ascent/speed of getting down from high altitude.
3. The altitude of a person slept at before moving to new altitude.
4. Individual factors such as genetic make-up and physiology.

EFFECT OF HIGH ALTITUDE

- Response to altitude is unique. Body physiological performances are not similar to that of sea level.
- Body either adjusts to the altitude or person may fall ill.

ACUTE MOUNTAIN SICKNESS

- Stop moving up until symptoms resolve.
- Administer oxygen in brain illness.
- Hydrate and eat.
- Descend 1000 feet, if symptoms do not resolve in 24-48 hrs.

TO PREVENT ALTITUDE ILLNESS...

...quit smoking, hydrate by consuming fluids, high carbohydrate diet, and alcohol or take any drug that suppresses breathing.



REFERENCES

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