Air Components in ENVIREMENT

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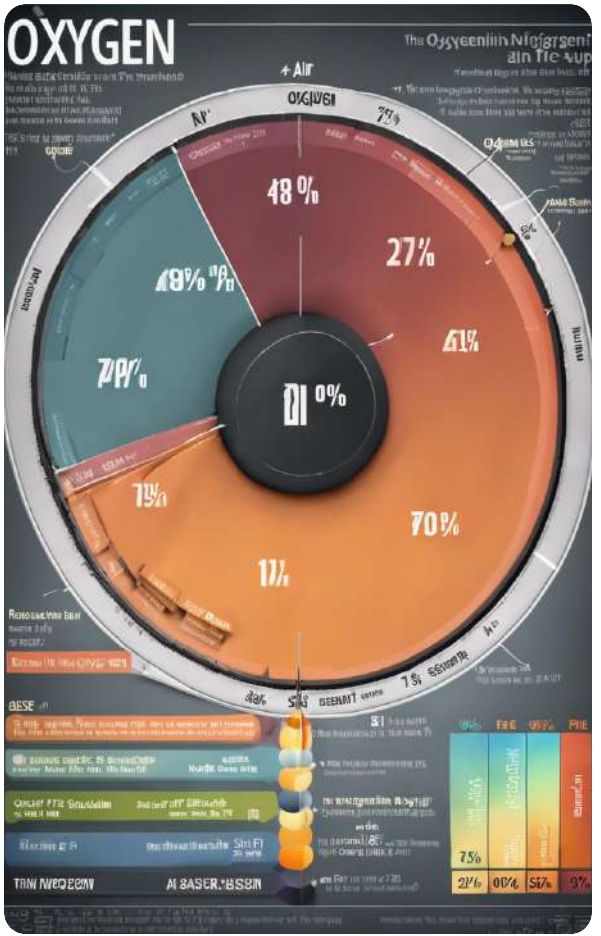
ECOLOGY



Air Composition and Properties

- Nitrogen makes up 78%
- Oxygen accounts for 21%
- Remaining gases are argon, carbon dioxide, and trace amounts of others
- Air is a mixture of transparent gases with no color or smell
- It is well blended globally from sea level to the stratosphere

Exploring Air Composition

Main Gases

Oxygen and nitrogen dominate air

Trace Elements

Carbon dioxide and argon found in small amounts

Ozone Presence

Ozone layer protects from UV rays

Human Needs

Oxygen essential for cellular respiration

Oxygen Levels Support Life

Oxygen concentration impacts breathing and heartbeat.

At 11-12% oxygen, animals maintain normal functions but breathing and heart rates increase.

Below 7% oxygen, suffocation occurs as animals can no longer sustain life.

Ozone in the lower atmosphere is a triple oxygen molecule that impacts air quality.

10-15%

increase

30%

reduction

20%

rise

Protecting Earth's Atmosphere

97%

ozone layer

75%

skin cancer cases

0.5°C

global temperature rise

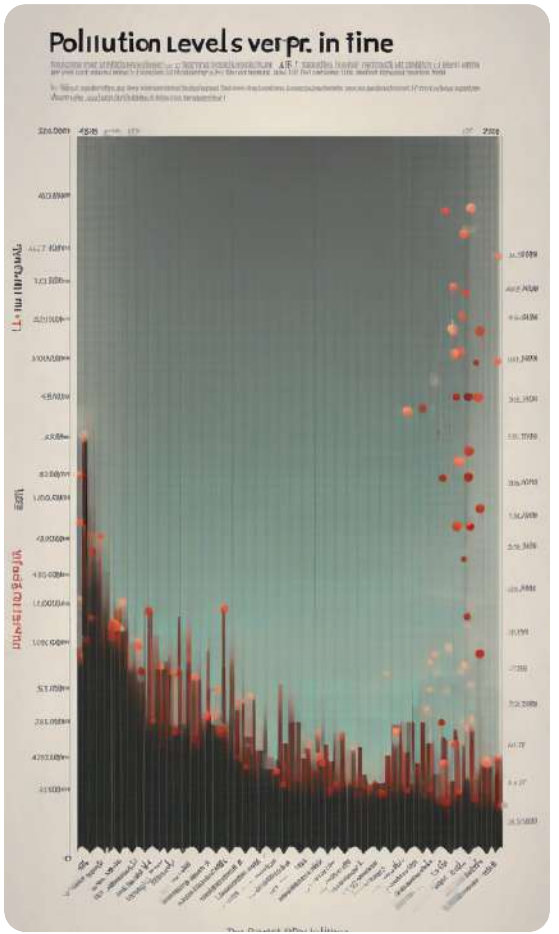
AIR:- is a mixture of different gases are colorless and odorless and do not interact with each other in the natural condition. It is well blended at a high distance and latitudes (80-100) km. At zero temperature and atmospheric pressure 760 mm Hg..

30 km

altitude

0.02-0.03

parts per million



20 parts per million

lethal level

78.19 parts per billion

industrial cities highest

Rapid death

occurs above limit

Low immunity

prolonged exposure impacts

Nitrogen Oxide Toxicity in Animals

Nitrogen oxides from industrial emissions deposit in pastures, poisoning livestock.

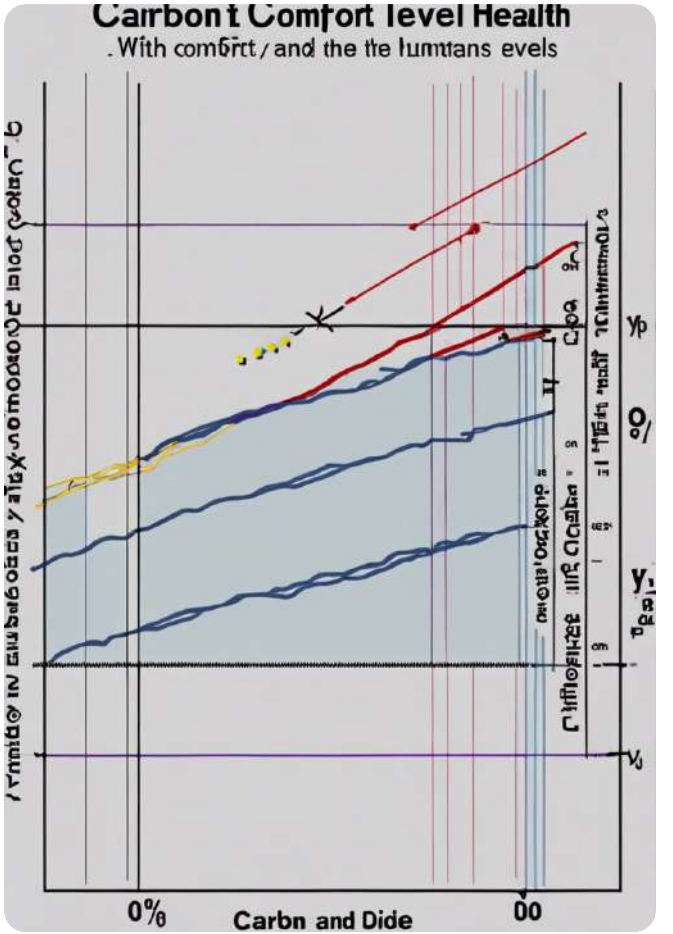
Symptoms include difficulty breathing, blue skin discoloration, and rapid heartbeat.

Animals that ingest silage contaminated with nitrogen oxides also face health risks.

Farmers should test silage and move animals from affected pastures until gas levels decline.

Carbon Dioxide Limits for Human Comfort

- The recommended level for residential areas is 0.1% or 1000 parts per million.
- At 0.5-0.7% the air starts feeling stuffy and uncomfortable for humans.
- Prolonged exposure above 4% can cause health issues like headaches and dizziness.
- Levels over 7-8% can result in fainting or loss of consciousness.



15%

increase paralyzed

25%

rate death

3

lecture course

Policy aims

This slide provides an overview of the key policies discussed in this presentation.

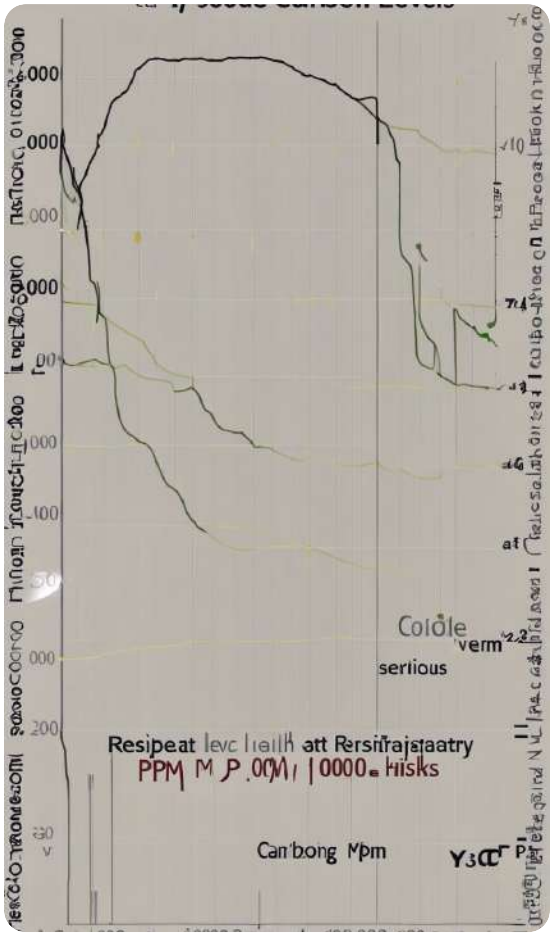
Oxygen's Role for Animals

Oxygen provides energy and sustains life.

1. Gas exchange through respiration

2. Aerobic cellular respiration requires oxygen

3. Supports growth, development, and activity



500 ppm

safe level

2,000 ppm

respiratory issues

1,000 ppm

reduced performance

3,000 ppm

serious health risks

High Emissions Control

Promote Ventilation

Disperse Droppings Rapidly

Monitor Gas Levels Closely

0.1

lethal level

0.170

cows per hour

0.113

horses per hour

Ammonia's Impact

Health Effects

High concentrations can irritate respiratory tracts and eyes, leading to reduced weight gain and increased mortality in birds.

Ventilation Needs

To dilute gases and maintain air quality, houses require adequate airflow from ventilation systems.

Management Strategies

Frequent litter removal, drying periods, and enzymes added to litter can break down nitrogenous wastes and lower ammonia levels.

Ammonia Properties

Ammonia gas is characterized by its pungent odor and harmful health effects at high concentrations.

Exposure Levels

Low levels cause eye irritation, while higher amounts can damage respiratory tissues.

Safety Precautions

Proper ventilation and protective equipment are needed when working with ammonia.

Hydrogen Sulfide Gas Hazards

Toxic Effects

Hydrogen sulfide gas can be deadly to poultry at high concentrations by disrupting cellular respiration. It is important to properly dispose of organic matter to prevent dangerous buildup.

Safety Precautions

Ventilation systems must keep air circulating and dilute any gases. Workers should wear protective equipment like respirators when concentrations may exceed safe limits. Proper litter management prevents risks to farm operations.

Indicators of Poor Ventilation

Moisture buildup shows stale air.

Animals huddle together for warmth.

Ammonia levels rise above acceptable amounts.