

Unit 3: Matter & Energy Flow on Earth

Objectives:

E2.4B - Explain how the impact of human activities on the environment (e.g., deforestation, air pollution, coral reef destruction) can be understood through the analysis of interactions between the four Earth systems.

E2.4c - Explain ozone depletion in the stratosphere and methods to slow human activities to reduce ozone depletion.

Impact of Human Activities

Deforestation is the permanent destruction of indigenous forests and woodlands.

Often the land is cleared for conversion into agricultural land to feed growing numbers of people, cattle ranching, or to obtain firewood or building materials.

Forests and woodlands act as major carbon stores. Removing these stores means that carbon dioxide levels in the atmosphere will climb. Trees also help to circulate water in the local ecosystem, removing them leads to the possibility of a drier climate.

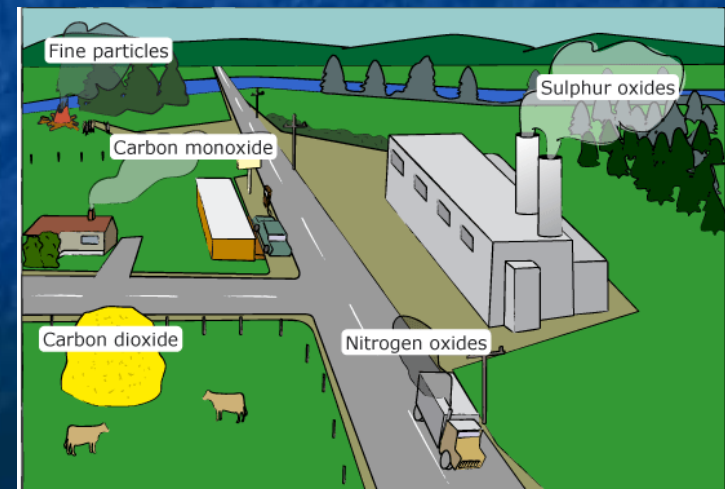


Impact of Human Activities

Air pollution comes from a number of sources. These include industrial sites, home heating, transportation vehicles, and even outdoor burning.

Human activities can release substances into the air, some of which cause problems for humans, plants, and animals.

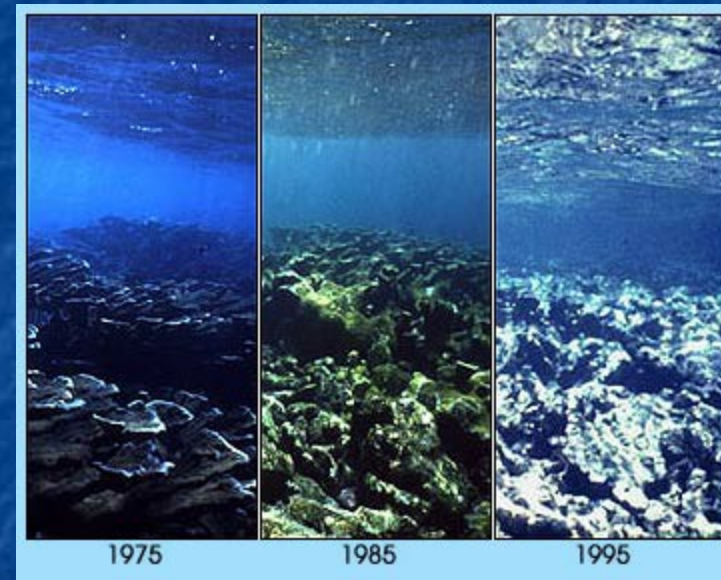
People with health problems such as asthma, heart, and lung disease may also suffer more when the air is polluted.



Impact of Human Activities

Coral reefs are stony structures built by a symbiotic relationship between coral, an animal, and single-celled algae -- a plant. The coral houses the algae, which use photosynthesis to make sugar that helps feed the coral. The coral's waste products, including nitrogen and phosphorus compounds, fertilize the algae. Live coral polyps grow on the dead bodies of their ancestors, allowing coral to build up to tremendous depths if left alone.

Coral reef destruction can occur when seawater warms up. The coral expels the algae, losing its major source of food. The algae give the reefs its color, so “bleaching” occurs. Overfertilization is another problem.



Impact of Human Activities

Humans have released chlorofluorocarbons (CFCs), halons, and methyl bromides into the atmosphere causing **ozone depletion**.

CFCs have been used in many applications, including refrigeration, air conditioning, aerosol propellant, and cleaners for metals and electronic components.

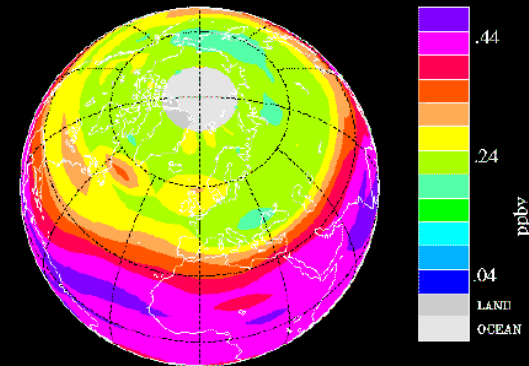
Halons are used to extinguish fires where large computers, military hardware, and commercial aircraft engines are found.

Methyl bromides are used in agricultural fumigants.

The use of CFCs has been greatly reduced thanks to international agreements on production and consumption of halogen-containing gases.

CLAES: CF_2Cl_2 in the Stratosphere

September 25, 1992: Northern Hemisphere



March 27, 1992: Southern Hemisphere

