Impacts of Air Pollution

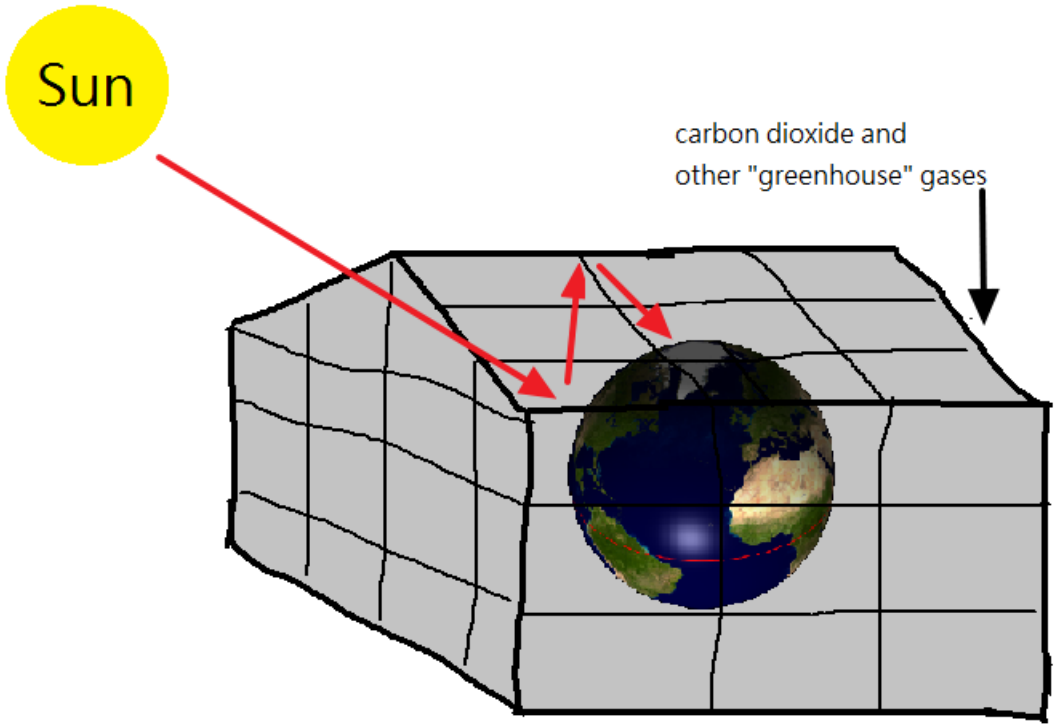
by Sophia

WHAT'S COVERED

In this lesson, we will discuss the impacts of air pollution. We will discuss the five major environmental impacts: increase in the greenhouse effect, ozone layer depletion, smog, acid rain, and impacts from particulate matter. Specifically, this lesson will cover the following:

1. Greenhouse Effect

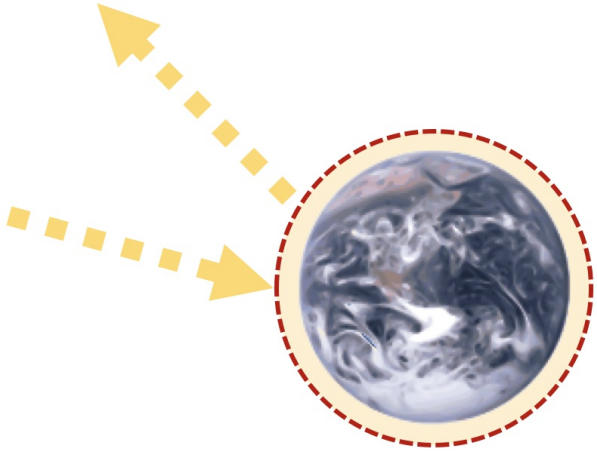
Certain gases, labeled greenhouse gases, can trap solar radiation, keeping it from reflecting off into space. As illustrated in the diagram below, solar radiation enters the atmosphere, and bounces off clouds and Earth's surface back toward space. It is reflected back by greenhouse gases in the atmosphere, which return the radiation as heat back to Earth's surface.



This means that more radiation is trapped in the lower atmosphere of Earth instead of being let back into space. The increasing greenhouse effect from greenhouse gases is leading to acceleration of global climate change.

2. Depletion of the Ozone Layer

There is a naturally occurring layer in our atmosphere called the ozone layer. It protects Earth from receiving too much solar radiation.



However, air pollutants like chlorofluorocarbons (CFCs) can react with ozone and deplete the amount available in the upper atmosphere. The result is an increased amount of radiation reaching Earth's surface.

DID YOU KNOW

This increased amount of radiation can increase cancer, particularly skin cancer.

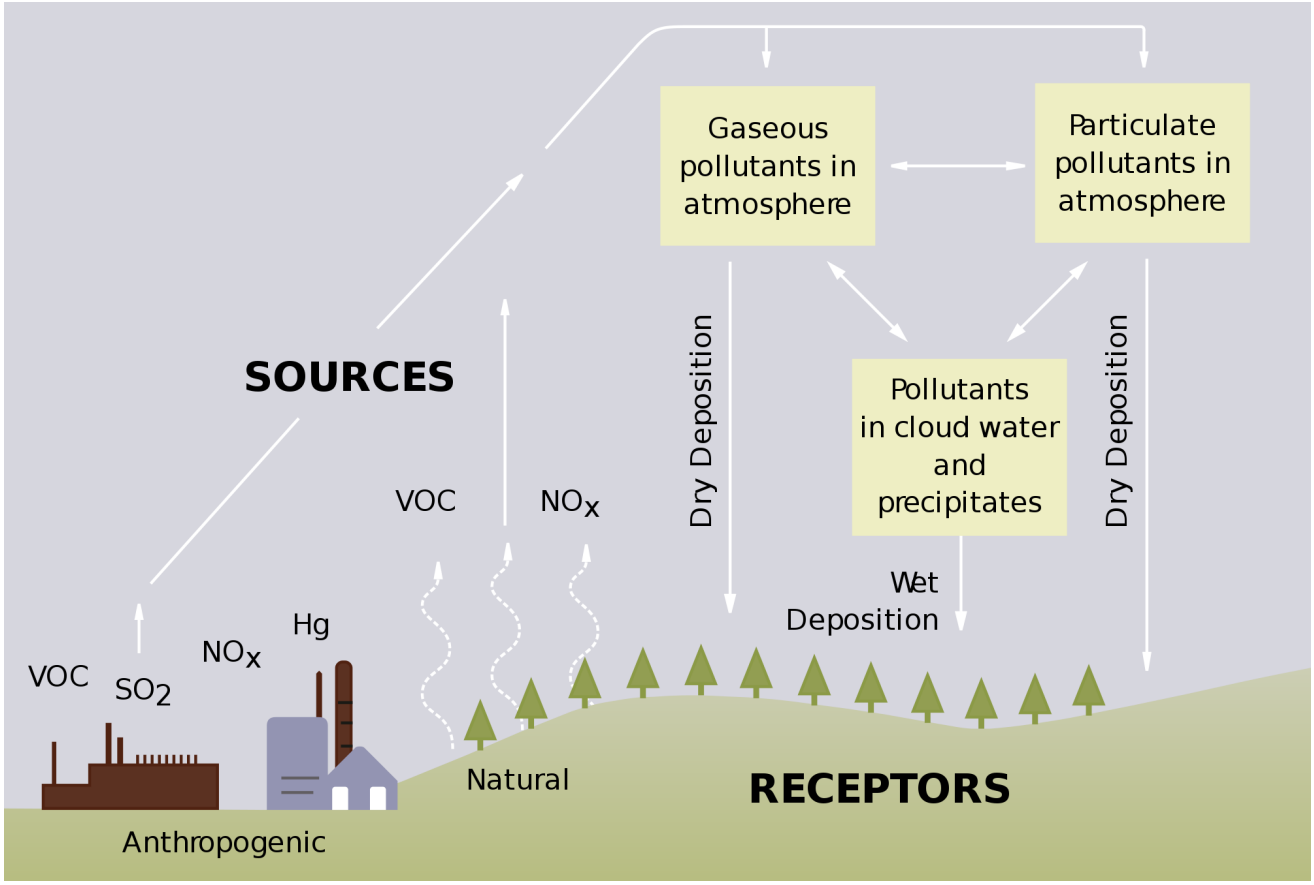
3. Smog

Smog is created when ground-level ozone combines with pollutants such as sulfur oxide, nitrogen oxide, volatile organic compounds, and other elements. Smog is usually the result of vehicle fumes, sunlight, and moisture.

It can cause respiratory infections and damage, as well as harm the body's organs, tissues, and cardiovascular systems. Other health problems such as emphysema, asthma, and bronchitis can also occur.

4. Acid Rain

Acid rain results when pollutants, such as sulfur and nitrogen oxides, mix with water in the air and then precipitate (see diagram below). Because air pollution can disperse and travel long distances through the air, impacts can occur far from the source of the pollutants. Ecosystems near and far can experience acidified soils and damaged root systems from air pollution, and this can prevent roots from absorbing nutrients or providing stability in a storm.



Acid rain damages forests, creating uneven and sparse foliage, which reduces the efficiency of photosynthesis. Water systems, most commonly lakes, can become acidified, and this negatively impacts ecosystems and even kills species.

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4. Particulate Matter

Pollutants that don't mix with water when they are airborne, such as those released by the coal plant pictured below, will eventually be deposited on land or in water systems.

The impacts of particulate matter on human and ecosystem health can be damaging. Particulates can lead to damaged respiratory systems, as well as infections. In addition, they can negatively impact cardiovascular systems, organs, and tissues. Illnesses like emphysema, asthma, and bronchitis can also result.

SUMMARY

In this lesson, we learned about air pollution and the five major environmental impacts that it can have: **greenhouse effect**, **'ozone layer depletion**, **smog**, **acid rain**, and **particulate matter**.

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