#423909

Explain tropospheric pollution in 100 words.

Solution

The presence of unwanted substances in the lowest layer of the atmosphere results in tropospheric pollution. Major gaseous pollutants include oxides of sulphur, nitrogen, carbon and hydrocarbons.

Burning of fossil fuels (coal, automibile fuel) produce oxides of sulphur and nitrogenn. They react with water in presence of oxygen of air and form nitric acid and sulphuric acid This causes acd rain which is harmful to agriculture plants and trees. It causes various respiratory ailments.

Burning of hydrocarbons (carcinogens) produce oxides of carbon. CO is poisonous and can lead to death. CO_2 is responsible for global warming. Particulates of smoke dust mist and fume are harmful for human health and cause respiratory ailments.

$$2SO_{2(g)} + O_{2(g)} + 2H_2O_{(l)} \longrightarrow 2H_2SO_{4(aq)}$$
$$4NO_{2(g)} + O_{2(g)} + 2H_2O_{(l)} \longrightarrow 4HNO_{3(aq)}$$

#423917

What do you mean by ozone hole? What are its consequences?

Solution

In polar regions, stratospheric clouds provide the surface for chlorine nitrate and hypochlorous acid. They react to form chlorine molecules. Photolysis of chlorine molecules ar $HOCl$ gives chlorine free radicals.

The chlorine free radicals lead to the decomposition of ozone

This initiates a chain reaction. The chlorine free radical is continuously regenerated which depletes the ozone layer. It is called ozone hole.

Consequences of ozone depletion:

The ozone layer protects the earth from the harmful UV radiations of the sun. Due to its depletion, more radiation enters the earth's atmosphere. UV radiations cause aging of skin, cataract, skin cancer and sunburns. Hence, they are harmful. They cause the death of phytoplanktons which leads to a decrease of fish productivity. Excess exposure may even cause mutation in plants, increase UV radiation, decrease moisture content of soil and damage both plants and fibers.

$$ClONO_{2(g)} + H_2O_{(g)} \longrightarrow HOCl_{(g)} + HNO_{3(g)}$$
$$ClONO_{2(g)} + HCl_{(g)} \longrightarrow Cl_{2(g)} + HNO_{3(g)}$$
$$HOCl_{(g)} \xrightarrow{h\nu} \dot{O}H_{(g)} + \dot{C}l_{(g)}$$
$$Cl_{2(g)} \xrightarrow{h\nu} \dot{C}l_{(g)} + \dot{C}l_{(g)}$$
$$\dot{C}l_{(g)} + O_{3(g)} \longrightarrow ClO_{(g)} + O_{2(g)}$$

#463298

What are the different ways in which water gets contaminated?

Solution

Water gets contaminated by following:

1. Untreated sewage

2. Practice of bathing and washing near a water body

3. Practice of cremating the dead bodies near river banks

4. Oil spill

#463302

Explain the differences between pure air and polluted air.

Solution

Pure air	Polluted air
1. Pure air contains around 78% nitrogen, 21% oxygen and 0.03% carbon dioxide.	1. Polluted air has no such definite composition of these gases.
2. Other gases such as argon, methane, ozone, and water vapours are also present in small quantities.	2. Polluted air has harmful gases like nitrogen dioxide, sulphur dioxide, carbon monoxide, particulate matter etc.
3. It is fresh and healthy for lungs.	3. It can cause respiratory diseases.

#463305

Describe the Greenhouse Effect in your own words.

Solution

The greenhouse effect is a phenomenon when the earth acts like a greenhouse trapping the solar radiations which are supposed to be reflected back to the atmosphere. Thes radiations are trapped by some gases like methane, carbon dioxide and water vapours, which are found excessively due to air pollution. So, this results in global warming.

#463425

Why does the increased level of nutrients in the water affect the survival of aquatic organisms?

Solution

Eutrophication is when the environment becomes enriched with nutrients. It is a natural process in lakes, occurring as they age through geological time. It causes structural changes to the ecosystem such as increased production of algae and aquatic plants, general deterioration water quality and other effects leading to the deficiency of oxygen the water which affects the survival of aquatic organisms like fishes etc.

#464605

Why is water essential for life?

Solution

Water forms the major component of a living organism. It plays a vital role as all the metabolic processes required for growth and development requires a liquid medium. Most the reactions occurs when the substances are in dissolved state. Water also helps in transportation of these dissolved substances in the body. Water helps in maintaining the body temperature.

#464608

You have seen weather reports on television and in newspapers. How do you think we are able to predict the weather?

Solution

A daily weather forecast is the work of people working for the weather department and meteorologists all over the country. Modern day computers have made it possible to precisely predict the changes in the weather. Weather satellites are present to take photographs of clouds from space. The low and high temperature of a day is measured by thermometer known as the maximum-minimum thermometer. Rain gauge is used for the measurement of rainfall. Wind speed is measured by anemometers.

#526428

Outline salient features of carbon cycling in an ecosystem.

Solution

Photosynthesis fixes carbon from the abiotic environment and incorporates into the biological compounds of producers; food chain transfers the fixed carbon to different troph levels. Burial of dead trees in past led to the formation of coal beds and oils of aquatic animals led to underground deposits of oil and natural gas. Coal, oil, and natural gas (fossil fuels) serve as vast deposits of carbon compounds. Burning and combustion of fossil fuel return the carbon back to the atmosphere. Carbon stored in the shell of marine organisms forms sedimentary rocks. When exposed, chemical and physical weathering return the carbon back to the atmosphere.