Nutrition cycle

Business, Industries

This paper gives the summary of the Nutrition cycle in the atmosphere. The Carbon cycle, Nitrogen cycle, Phosphorous cycle, Sulfur cycle and Hydrologic cycle are all discussed. The paper also mentions how the human activity has affected these cycles.

Carbon cycle

The Carbon Cycle is the circulation of carbon, fats, proteins, DNA and many other organic compounds that is required for life in the biosphere. It makes up for 0. 038% of the volume of troposphere and is also present in water. The carbon dioxide present in the atmosphere is balanced by the generating, removing (terrestrial and aquatic producers) and cooling in the cycle. Any small changes in this cycle will affect the climate and life forms on the earth (Chapter3 55).

Photosynthesis converts Carbon Dioxide into glucose. Aerobic respiration then breaks glucose and organic compounds and reconverts it to Carbon Dioxide and is released into the atmosphere. Recycling of Carbon takes place in the form of decomposition of dead plant matter to give fossil fuels such as coal and oil. These fossil fuels are non renewable energy (Chapter3 55).

There are two main ways by which humans are affected, they are as follows – Firstly, humans clear trees and plants that help in photosynthesis and absorbs Carbon Dioxide. Secondly, Carbon Dioxide is added back to the atmosphere by burning wood and fossil fuels. The addition of Carbon Dioxide and other gases enhances the Earth’s natural green house effect. All this leads toglobal warmingwhich affects thefoodproduced and wildlife, temperature, precipitation and increases sea levels (Chapter3 55).

Nitrogen cycle

Nitrogen is available in large quantities in the atmosphere but cannot be directly used or absorbed by mutlicellular plants and animals. Nitrogen gas makes up for 78% of the volume of the troposphere Atmospheric discharges like lighting, bacteria in aquatic systems in soil and the roots of plants convert the Nitrogen available into Nutrients that can be absorbed by plants or animals. This process is known as the Nitrogen Cycle (Chapter3 55).

The process consists of Nitrification which converts nitrite ions to nitrate ions. Then Ammonification occurs wherein bacteria convert the detritus into simple nitrogen containing compounds such as Ammonia and water soluble salts (Ammonium ions). Denitrification then converts the Ammonia and Ammonium ions back into nitrite and nitrate ions and then further into Nitrogen gas and Nitrous gas, which is released into the atmosphere (Chapter3 55, 56).

There are many ways by which humans are affected; some of them are as follows – First, Acid rain consisting of Nitrogen Dioxide and Nitric Acid causes damages in the form of acid depositions. Second, livestock and inorganic fertilizers release Nitrous Oxide into the atmosphere. This affects the ozone layer. Third, Nitrates contaminate groundwater making it harmful to drink. Fourth, Destruction of forests, wetlands and grasslands release Nitrogen compounds into the troposphere. Fifth, aquatic ecosystems is disturbed when too much nitrates is released. Sixth, Harvesting of Nitrogen rich crops, irrigation and then burning or clearing of topsoil before replanting crops removes Nitrogen in the topsoil (Chapter3 56).

Phosphorous cycle

Phosphorus circulation occurs through the water, earth’s crust and then the living organisms. The Phosphorus cycle is slower and flows from land to the oceans. It is found as Phosphate salts such as Phosphate ions present in terrestrial rock formations and sediments at the bottom of the ocean. Water flows erodes these inorganic compounds and transfers it to the oceans where deposition occurs. This sedimentation limits the growth of plants as it is only slightly soluble but very harmful (Chapter3 57, 58).

There are three main ways by which humans are affected, they are as follows – Firstly, Phosphate rock mining is done to make inorganic fertilizers and detergents. Secondly, deforestationof tropical forests causes reduction of phosphate in tropical soils. Thirdly, aquatic life is disturbed due to Phosphates in animal wastes, fertilizers and sewage (Chapter3 58, 59).

Sulfur cycle

Sulfur circulation occurs through the biosphere. Sulfur is stored underground in rocks and minerals; these also include sulfate salts that are buried in ocean sediments. Sulfur enters the atmosphere as Hydrogen Sulfides, Sulfur dioxides, Sufides and Sulfate salts. Acid deposition occurs due to the conversion of Sulfur Dioxide to Sulfur trioxide and then to Sulfuric acid, which along withair pollutionharms tress and aquatic life (Chapter3 59).

There are three main ways by which humans are affected, they are as follows – Firstly, burning of coal and oil to produce electric power adds Sulfur into the atmosphere. Secondly, Refining of Sulfur containing petroleum is done to give gasoline, heating oil and many other products. Thirdly, metallic

mineral ores containing Sulfur are converted into free metals like copper, lead and zinc, this process releases huge amount of Sulfur dioxide into the atmosphere (Chapter3 59).

Hydrologic cycle

The solar energy causes evaporation of water vapour on the earth's surface into the atmosphere. Fresh water then returns to the earth's surface as precipitation which gets locked in glaciers, some water gets stored in the ground as aquifers and the rest becomes surface runoff, which means water flows into lakes and streams, eventually flowing into the oceans. This process of evaporation, precipitation and percolation is a continuous cycle and is called the Water or Hydrologic cycle. This is therefore a global cycle that that collects, purifies, distributes and recycles the earth's water supply (Chapter3 53, 54).

There are three main ways by which humans are affected, they are as follows – Firstly, fresh water is obtained from streams, lakes and underground water. Secondly, land vegetation is cleared to build roads and construction buildings, for mining and for agricultural purposes. This process destroys wetlands and causes soil erosion, landslides and flooding. Thirdly, various nutrients in the form of fertilizers (phosphates and nitrates) and other pollutants are added to water causing imbalance in the ecological process that involves the purification of water (Chapter3 54, 55).

Works Cited

Chapter 3. Ecosystems: What are they and how do they work? EnvironmentalScience

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