The carbon atom essay samples

Environment, Animals

Introduction

The carbon atom is one of the most fascinating atoms in the world. This is because of the processes and transformations it can go through time from organism to organism. The journey that the carbon atom goes through from the atmosphere into the plant, then the animal and then out again into the atmosphere over and over through a myriad of processes is called the carbon cycle, and if one of the most important cycles in life as we know it. The carbon atom partaking in the life cycles by being part of the building blocks of both living and nonliving organisms is called biogeochemical process.

The Carbon Cycle Story

My name is Carbon but often I am referred to as the building block of life. I am found in abundance in almost every facet of life. I am the fourth most common element on earth meaning that I help in the formation in almost everything living and nonliving. The journey of the carbon cycle where I am transformed from a form to form and from one place to the other can start anywhere. This is because the journey of the carbon cycles is recycled over and over until it is almost impossible to determine the place of origin.

So we will begin the story of the carbon cycle in the atmosphere. There is no shortage of ways in which I (in the form of carbon dioxide) can find myself in the atmosphere. Some of the ways include respiration by animals and plants, including humans and industrial waste. My nature is very curious. One of my many qualities is the fact that I can combine with a variety of other elements to form a compound in the atmosphere. I can combine with oxygen

molecules to become a compound known as carbon dioxide. Other elements I can combine with include nitrogen and hydrogen. However, in the atmosphere, I am almost always found in the company of two oxygen atoms forming carbon dioxide. As stated earlier, my combination with the two oxygen atoms helps us from a compound known as carbon dioxide. This is the form in which I am found most in the atmosphere. In this from I can stay in the atmosphere for up to 100 years. However, the accumulation of this compound in the atmosphere is hazardous over the long haul. Fortunately, due to my many uses around the world, there are a number of ways in which I can leave the atmosphere for more useful and less harmful ways.

One of the ways in which I can leave the atmosphere is through a process known as photosynthesis. Essentially, this is one of the ways in which I leave the atmosphere and enter the plant. It usually happens in the gaseous compound I form with the help of the two oxygen atoms called carbon dioxide. Since I am usually in gaseous form, I am absorbed through tiny holes in the surface of the leaf known as stomata. After I enter the leaf, the process of photosynthesis takes place. Put simply, photosynthesis is a process whereby the plant uses sunlight to produce simple sugars that are then converted to a chemical known as ATP, which is necessary for all life. As expected carbon plays a major role in the process. To form the simple sugar that is used to form the compound ATP, the plant uses water molecules and combines it with carbon dioxide taken from the atmosphere and uses sunlight to convert the two into a simple sugar and some water. Photosynthesis occurs in a two part process; one is the dark reaction the other is the light reaction. The process through which I am absorbed from

the atmosphere happens in the reaction. This process happens in the part of the leaf known as the stroma. In the stroma, carbon dioxide is taken from the atmosphere through the stomata of the leaf. In this stage, I am modified by the addition of a hydrogen molecule to form a carbohydrate. The process through which I am coupled to an organic amalgam is commonly referred to as carbon fixation. This process is commonly known as the Calvin Cycle. In this process, the compound carbon dioxide I am an art of which is captured by a chemical in the leaf known as ribulose biphosphate. Six of my molecules are used to produce one molecule of a simple sugar known as glucose and six molecules of water.

After this process, the energy formed is used for growth by the plant; the rest is used to form carbohydrates, fats and vitamins. At this period, I undergo other processes of transformation and conversion when I am the plant is eaten by the animal. As a pure carbon atom, I am rarely found in the body. However, I am found in copious amounts in the form of various organic amalgams in the body of animals. I am found in almost every cell in the body of an animal and more often than not makeup approximately 18 per cent of the body.

As often is the case, carbon enters the body of an animal through eating of plants or animals that have carbon in their constitution. Taking the example of an herbivorous animal which eats plants that have carbon in their systems, the animal ingests the plant for food. The carbon in the plant enters the body of the animal and is converted into glucose in the cell. One of the quickest ways in which carbon in the form of carbon dioxide is released from the body by the plant is through respiration. Essentially, respiration is the

process through which energy is released from the cell after conversion of glucose that is a compound that carbon is a part of.

Since the plant has already performed the process of carbon fixation, the animal eats the plant without the need of further conversion. The process of cell respiration happens in the mitochondria. This is where the glucose, a compound of carbon, oxygen and hydrogen, releases energy after a reaction with inhaled oxygen. After the reaction, the oxygen in the glucose compound is reduced to form water by combining it with hydrogen molecules while the carbon in the compound combines with oxygen to form carbon dioxide that is released into the atmosphere.

Another form through I can leave the body of an animal or plant to rejoin the atmosphere is a longer process of decay. When the animal or the plant dies, tiny microbes that exist anywhere on the earth’s surface feed on them for energy and in turn they produce carbon dioxide during their respiration therefore releasing me back to the atmosphere therefore restarting the cycle.

The other process through which the carbon in the form of carbon dioxide can go back to the atmosphere from the plants and animals is longer and can take millennia. In this method, when plants and animals die they decompose, and the carbon in their bodies lay on the ground. It is washed of through a variety of channels and ultimately finds itself in the ocean. In the ocean, it forms either a carbonate or bicarbonate. In most cases, this bicarbonate is joined to calcium forming calcium bicarbonate. This accumulates and becomes sedimentary rocks at the bottom of the ocean. They can stay in that from for billions of years and the carbon, in the form of

carbon dioxide released to the atmosphere through eruptions of this rocks in activities such as volcanoes.