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How Useful Is Biodegradable Plastic to Reduce Earth Pollution?

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One of the experiments being done to reduce the use of plastic is biodegradable plastic. The global market of bioplastics has crossed 7.7 billion dollars

An estimate of 830 million tons of plastic littered the earth was presented in a report of Science Advance journal a year or two ago. Considering that 800 crore people live on the earth, one crore tons of plastic per capita should come to everyone's share! This waste is not only thrown by 800 crore people living today, it has continuously increased in the last one century. In the last hundred-and-a-half hundred years, every human being on Earth has shed a little bit of plastic. 5.5 crore jumbo jets would be needed to collect the current amount of plastic waste. This amount is constantly increasing. (UNEP)

Plastic material was created in 1907 by a chemist named Leo Hendrick. The inventor of the backlight material, this chemist is called the father of the plastics industry. A plastic material was created from synthetic components and its first patent was registered in 1909. Leo Hendrick registered about 100 patents, which included various plastic products. Leo Hendrick died in 1944, by which time the plastics industry had already developed well. (SHI)

Today huge amount of plastic adds to the pollution yet plastic production continues day and night. The total market including various plastic products was 450 billion dollars in 2022. Which will increase to 640 billion dollars by 2029. It is estimated that approximately 40 crore metric tons of plastic is produced every year. Also, 34-35 crore tonnes of plastic waste is also generated every year. Between 1950 and 2007, 920 million tons of plastic was produced. Half of that plastic was produced between 2004 and 2017. If the consumption of plastic continues at the current rate, then by 2050, the annual production of plastic will reach over 110 million tons. That is, as much production as was done in 50 years would be happening every year! (UNEP)

After World War II, the global plastics industry began to boom. At that time mankind was not so aware of the dire consequences of plastic. The consumption of light weight plastic products was increasing year by year across the world. In 1965, Swedish product designer Stan Gustaf Thulin created the plastic bag. The purchasing power of people in every country was increasing and as a result the circulation of plastic bags started to increase. It has become easier to store something in a plastic carry bag whenever and wherever you buy it. Over the decades, the consumption of plastic bags has increased so much that today five trillion plastic bags are produced annually in the world.

Only 9 percent of the total plastic volume is recycled. 22% of the plastic volume is not disposed of as it is not properly managed. About 50 percent of the total plastic remains scattered in the earth or ocean. Plastics are responsible for four percent of greenhouse gas emissions. After plastic caused such a stir, a wide-awake man has started looking for its alternatives.

The use of plastic materials which have been invented for only 150 years cannot be stopped overnight. Plastic is present in the production of every commodity. From mobiles to laptops, kitchen items, windows and doors to bathroom items, there is some or a lot of plastic in it. Everywhere we look around, we see the presence of plastic. In the absence of a strong alternative to plastic, mankind has started using biodegradable plastics. The new product which has started in the name of biodegradable plastic is being spread all over the world as an alternative to plastic. (UNEP)

The invention of bioplastics is not new. This material was identified as early as 1926. French microbiologist Maurice Lemoigne mentioned bioplastics in his research paper. (Bioplastics, 2018) But after 1960 more researches were started on it. Until then, no researchers paid much attention to it. In 1973, after obtaining its patent, American companies conducted experiments. Over the next twenty-five hundred years, a number of alternatives emerged. The awareness that plastic pollution has increased on earth has increased in the beginning of the 21st century. Bioplastic products were used in many countries as an alternative to plastic.

Bioplastic materials are obtained in various ways. In particular, the raw material of corn, wheat plants and sugarcane is useful in making bioplastics. Polylactic acid is obtained in it. It is called PLA in technical language and is made of polyhydroxyalkanoates which is known by the short name of PHA. PLA is used in food packaging and PHA is used in the form of medical devices. (Bioplastics, 2018)

It is widely believed that bioplastics do not harm the earth as they are completely biodegradable. More than one survey says that plastic packaging is still the first choice among people. Awareness of buying products with bioplastic packaging is not yet there. It will take time for the daily consumption of bioplastics to increase. Perhaps after a decade or so, people will be insisting on biodegradable plastics. Most importantly, a large amount of bioplastics actually decompose and end up in the soil by rotting. But even this plastic cannot be a permanent substitute for plastic. Even this type of plastic does not completely biodegrade, researchers say, shockingly.

A report published in Frontiers in Sustainability by researchers at Britain-based University College London claims that 60 percent of the various types of compostable plastic packaging are not destroyed. So called compostable materials also add to the pollution of the earth instead of being destroyed. The researchers, who collected samples for 24 months and conducted about 900 experiments, noted: 'Although compostable and biodegradable plastics are slowly gaining popularity in Europe and America, it has become necessary to check whether they will be an alternative to plastic or not harm the environment. Based on various samples, it is clear that only 40 percent of such quantity is destroyed, while 60 percent is not completely destroyed. It definitely causes damage to the environment, if not as much as plastic.'

Bioplastic packaging that has been certified 'home compostable' is expected to be mixed with other waste and decompose within a few days. When people see bioplastic packaging and buy a product, they simply throw the material in the garbage, but they have no idea that this plastic will also end up lying around. British researchers came to the conclusion that this type of plastic is not effective for ecosystem balance.

The global market for biodegradable plastics is $7.7 billion. From 2021 to 2026, the production of biodegradable plastics will increase at the rate of 24.9 percent and its global market will cross $23 billion in 2026-27. Given the speed at which this field is developing, scientific questions have been raised against it, and more research should be done on it. In fact, many countries have even demanded to ban it. The Australian government is likely to ban bioplastics soon. (UNEP)

Yesterday the world celebrated Earth Day. Its theme was Invest for our planet. To maintain the ecosystem, to contribute as much as human can to save the environment - that kind of investment has been talked about. Before reading the tag of bioplastic as an alternative to plastic, man gets satisfaction that he is not harming the earth, only if research is done in this direction and better bioplastics are developed, this huge market will make sense, otherwise a situation like that will be created everywhere.

Well, as it has become almost impossible to stop the use of plastic completely, new options have to be sought, and otherwise the monster called plastic will take over the globe!

- *How long does it take for any plastic product to decompose?*

A toothbrush takes the most 500 years to decompose among all plastic items. If we throw the toothbrush in the garbage, it will remain on the earth for 500 years. Similarly, plastic diapers also do not get destroyed for 500 years. Even if it is recycled, the plastic extracted from it in various ways will remain for five-six centuries in some form. A large plastic glass does not decompose for 450 years. Coffee pods perish in 30 years, but the life cycle of a coffee pod is 500 years. Plastic bottles are proving to be the most dangerous. (UNEP)

The cheap plastic bottles around the world last for 400 to 500 years. Bottled water, including cold drinks, is one of the biggest polluters on Earth. The plastic bags that are found in every store or fruit and vegetable shop take 20 years to decompose. Plastic bags cost a person only 12 minutes of work on an average!

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