Your Name

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“Plastic-Eating Bacteria”

**Summary**

Christopher Johnson is a molecular biologist and is involved in research at the National Renewable Energy Laboratory. He works on plastics degradation. He talks with a woman in a party about his research, who is concerned about the environmental pollution caused by plastic materials. However, Johnson is quite hopeful about the future because he thinks he and his team would find an effective solution to the problem. Last year, they created an enzyme that could decompose plastics used in soap containers and water bottles. The team is hopeful for the future of their research as they plan to develop certain microorganisms that would degenerate plastics as their natural job. The recycling processes developed until now with the use of chemicals do not break down plastics to the micro-level, instead they only break down plastics into smaller pieces, which are used to make lower quality plastic again. The use of synthetic material began to substitute ivory gained from elephants. However, this innovation has made us suffer the hazardous consequences. An interesting thing to be noted is that humans produce more than three hundred million tons of plastic materials every year, which equals five times the weight of all people. More than nine million tons of plastic trash end up in the outer suburbs of populated areas and near the ocean. It is estimated that the high sea would abound in more plastic than fish. Johnson thinks that our civilization is not doing a good job to deal with this problem. The industries do not bother recycling waste materials due to lack of any economic incentive. He suggests that pollution and waste problem can be minimized to a substantial extent if industries begin converting those materials into useable and more valuable products. Johnson and his team work in Colorado and they have more colleagues in Florida, Brazil, and England. All work on their dream bio-based research project (“Plastic-Eating Bacteria”). The team members demonstrate distinguished expertise. Their activities include studying breakdown of cellulose by bacterial and fungal chemicals, mechanism of polymer-eating enzymes, engineering of cells that secrete polymer-eating enzymes, and similar other things. The research is being carried out extensively, and strong hope exists that the scientists would eventually succeed in finding an effective solution.

**Response**

The article is very interesting as it discusses a major concern of the corporate world of this age in a hopeful and amusing way. It indicates concern of a common woman about the serious issue of waste management. It depicts the confident thinking of a scientist about providing an adequate solution. The article describes in detail how appropriate research centers have been set up and the best brains employed to make progress in this field. It explores the scientific research to the degree that common people can understand the science behind the efforts made in the way of coping with waste management problems. The writer gives a description of many microorganisms, enzymes, and chemical reactions useful in the recycling of plastic materials. The article creates awareness in people of the important environmental issue of pollution. It highlights the opportunities available in the field of research. These opportunities can be utilized by other researchers as well. People get an insight into the severity of the problem, and avoid increasing pollution. The concepts of waste management, pollution hazards, engineering of useful degenerating chemicals and micro-organisms, the context of synthetic materials production, and future threats of environmental pollution have been discussed effectively.

**Vocabulary**

Environmental Pollution: Disruption of normal environmental processes due to contamination of earth systems.

Recycling: Converting waste materials into new usable materials.

Biodegradation: Decay of organic materials by microorganisms like bacteria.

Cellulose: A chemical found in plants’ cell walls, which keeps plants stiff.

Ideonella sakaiensis: A microorganism that releases a PETase enzyme capable of degrading plastic chemicals (Trivedi et al.).

Works Cited

“Plastic-Eating Bacteria: The Scientists Improving Our Recycling.” *Popular Science*, <https://www.popsci.com/plastic-eating-bacteria/>. Accessed 7 Dec. 2019.

Trivedi, Priya, et al. “Role of Microbes in Degradation of Synthetic Plastics and Manufacture of Bioplastics.” *Journal of Chemical and Pharmaceutical Research*, vol. 8, no. 3, 2016, pp. 211–16.