

## Introduction to Bioremediation

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**B**ioremediation is a process that uses mainly microorganisms, plants, or microbial or plant enzymes to detoxify contaminants in the soil and other environments (Gouma, Fragoeiro, & Magan, 2014). A process to heal the Earth from our pollution. A pressing topic is biodegrading plastic. As we all know, plastic is a material that is extremely difficult to degrade. Yet we produce 400 million tons of them each year (BBC News, 2020). So scientists have been trying different bioremediation processes in their hope to find a solution.

So how does bioremediation work? Organisms use a redox reaction to biodegrade pollutants into non or less reactive substances. By adding or removing electrons from the molecules of the pollutant (United States Environmental Protection Agency, 2013).

An example of practical bioremediation is the treatment of sewage water using algae. Wastewater contains carbon, nitrogen, phosphorus and other heavy metals. (RATHOD, 2014). Some minerals such as K, Ca, Mg may be hard to separate using chemical and physical methods but to algae, these are essential nutrients. Therefore, algae are able to consume and separate these minerals from the wastewater.

Bioremediation can be the process that enables us to prevent our Earth from ending up like that in Wall-E. It can be a cheap method to help biodegrade pollutants. Or at least transform them into less reactive forms. However, bioremediation cannot biodegrade everything. With a combination of civil and bioengineering, the future of bioremediation is limitless.

### Bibliography

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