

An Overview on Polychlorinated Biphenyls Pollutants

Suman Bagale*

Department of Agriculture and Animal Science, Tribhuvan University, Nepal

Abstract

Our environment has become a major reservoir of non-biodegradable wastages. Such wastages have been constantly accumulating in the soil, waters, and living organisms causing acute and long-term toxicity. Among such wastages, Polychlorinated Biphenyls (PCBs) have become a major contaminant. This review article focuses on the history, uses, and environmental impacts of PCBs. They were widely used in electrical appliances like transmitters, capacitors, and paint industries during the period between 1930s to 1940s. They revolutionized the industrial age, but their high persistence and long-term transport made them the biggest reservoirs of PCBs. These PCBs accumulate in the food chain through planktons and ultimately to human beings. PCBs are highly toxic and carcinogenic. To cope with bio-accumulative and toxicity, caused by PCBs, several studies have been carried out for the remediation of these wastages. Major remediation process includes chemical remediation, photo remediation, electrokinetic remediation, and bio-remediation. Several researches are ongoing to counteract PCBs and their harmful effects, making the environment healthier once again.

Keywords: Bioremediation, PCBs, Environmental pollution, Toxicity, Remediation techniques.

Introduction: Polychlorinated biphenyls (PCBs) are a class of synthetic organic compounds that have been widely used in various industrial applications since the 1930s. They are known for their high stability and resistance to degradation, which has led to their accumulation in the environment over time. PCBs are found in soil, water, and living organisms, posing significant health risks. This review discusses the history, uses, and environmental impacts of PCBs, along with various remediation strategies.

History: The production of PCBs began in the 1930s by Monsanto, followed by other companies like Bayer Ag, Orgsteklo, Prodelec, Kanegafuchi, and Orgsintez. The use of PCBs peaked in the 1940s and 1950s, particularly in electrical equipment and industrial processes. By the 1970s, the environmental and health concerns associated with PCBs led to strict regulations and a decline in their production and use.

Environmental Impact: PCBs are highly persistent in the environment and can travel long distances through air and water. They are known to bioaccumulate in the food chain, leading to higher concentrations in top predators. PCBs are also known to be carcinogenic and can cause various health problems, including reproductive issues and developmental delays in children.

Remediation: Several methods have been developed for the remediation of PCB-contaminated sites. These include chemical remediation (e.g., dechlorination), photo remediation (using UV light to break down PCBs), electrokinetic remediation (using electric fields to move PCBs out of the soil), and bio-remediation (using microorganisms to degrade PCBs).

Conclusion: PCBs remain a significant environmental and health concern. Continued research and monitoring are essential to understand their behavior in the environment and to develop effective remediation strategies. Stricter regulations and the use of safer alternatives are crucial to prevent future PCB contamination.

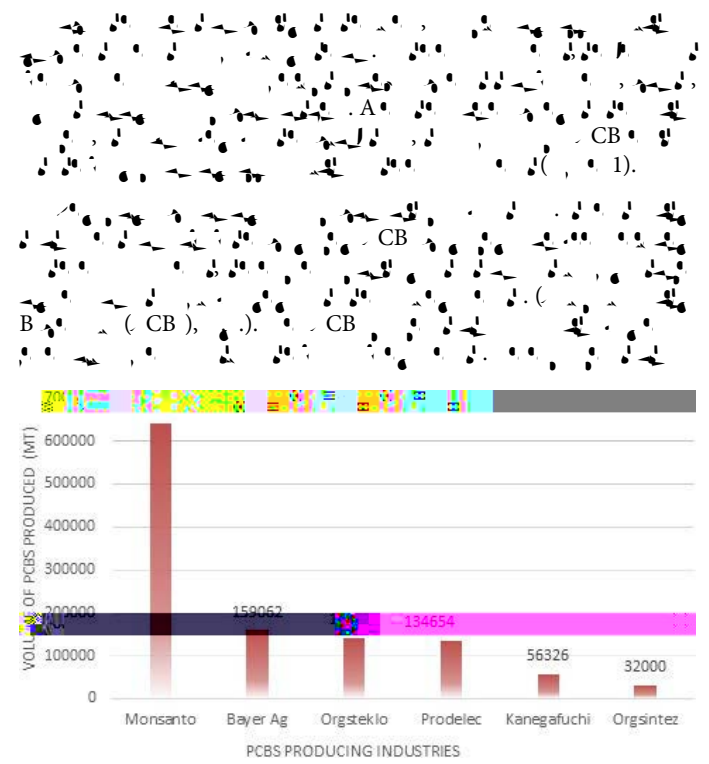


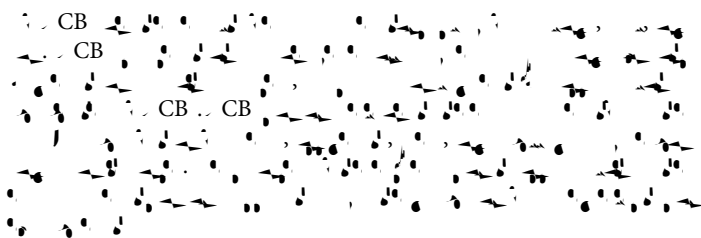
Figure 1: Top PCBs Producing Industries between 1930s-1980s

*Corresponding author: Suman Bagale, Department of Agriculture and Animal Science, Tribhuvan University, Nepal, E-mail: sumanbagale74@gmail.com

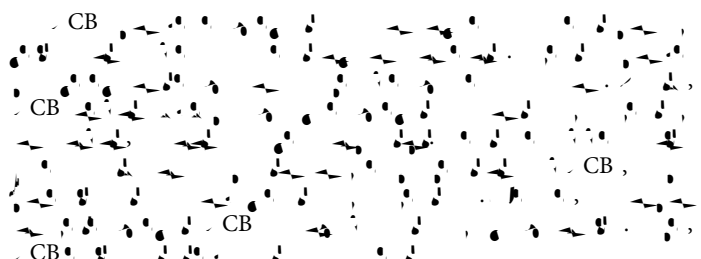
Received: 02-Aug-2022, Manuscript No. jbrbd-22-001; Editor assigned: 08-Aug-2022, PreQC No. jbrbd-22-001 (PQ); Reviewed: 17-Aug-2022, QC No. jbrbd-22-001; Revised: 22-Aug-2022, Manuscript No. jbrbd-22-001 (R); Published: 29-Aug-2022, DOI: 10.4172/2155-6199.1000523

Citation: Bagale S (2022) An Overview on Polychlorinated Biphenyls Pollutants. J Bioremediat Biodegrad, 13: 523.

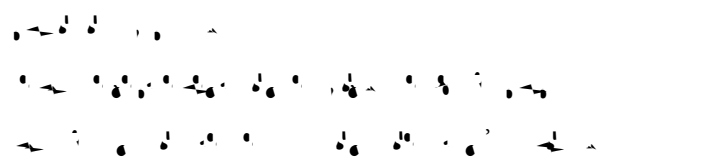
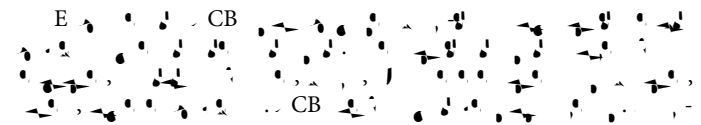
Copyright: © 2022 Bagale S. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.



R e PCB e e



T ce ec PCB



8. Qi Z, Chen T, Bai S, Yan M, Lu S, et al. (2014) Effect of particle size on the thermal desorption of PCBs from contaminated soil. Environ Sci Pollut Res 21: 4697-4704.
9. Singer A C, Jury W, Luepromchai E, Yahng CS, Crowley DE, et al. (2001) Contribution of earthworms to PCB bioremediation.