Brief Report
Volume 8:03, 2022

Journal of Biodiversity, Bioprospecting and Development

ISSN: 2376-0214 Open Access

The Use of Microbiological Characteristics to Track Heavy Metal Soil Contamination

Marquina Pozo*

Department of Chemistry, University of Burgos, Plaza Misael Bannuelos, Spain

Introduction

In terms of inorganic contaminants, heavy metals including Cu, Ni, Cd, Zn, Cr, and Pb are by far the most significant. Once they get into the soil, they stay there for very long times-their half-lives can be thousands or even tens of thousands of years, depending on the metal. The only realistic way to get rid of the metals is to remove the soil itself, which is rarely an option. Animal manures, sewage sludge, air deposition, mining and smelter waste, and, in some cases, inorganic fertiliser are some of the sources of heavy metals that infiltrate soil. Even while sewage sludge contains beneficial amounts of organic matter, N, and P, it is frequently polluted with considerable amounts of heavy metals, which the organic matter in the sludge chelates. Metals are released as the sludge breaks down.

Description

Metal accumulation in agricultural soils is prohibited by mandatory European Union limitations. The restrictions are based on what is understood about how metals affect plant uptake and animal health. They don't consider the impact on significant microbial activities, organic matter, or soil N dynamics. This is due to the fact that the technologies required to explore how metals affect certain attributes were either still being developed or hadn't been put to the test when the initial limitations were established. The standing crop of microbial biomass and its activity have both been shown to be significantly impacted by heavy metals at concentrations around or below existing EC limits, according to recently established methodologies. These outcomes are demonstrated, as well as the applicability of soil measures for monitoring pollution.

There are several advantages to using microbiological characteristics as markers of soil contamination in theory. In many respects, microbes are the perfect soil pollution monitors due to their bulk, activity, and close proximity to the soil microenvironment. The results of stressors that naturally arise on microbial communities in soil and their actions, such as temperature changes, extremes in pH and water potential, physical soil disturbances, a reduction in gas exchange, a shortage of nutrients, and an increase in antagonists and competitors. Individually or together, any of these occurrences can significantly impact both the measure of the microbial community's size and activity.

The above example highlights the difficulties in field monitoring and understanding changes in soil microbial respiration, which is ostensibly an easy trait to assess. If a pollutant is also injected into the system, it will likely be very difficult to assess its impacts unless it has extremely dramatic consequences, such as the near complete death generated by an effective fumigant like chloroform or methyl bromide. It is intriguing that in this field experiment, sample variation increased when there was significant rain. The peak of microbiological activity would occur about then, making it extremely challenging to identify the impacts of pollution. These comprised the soil's physical and chemical characteristics, temperature, and meteorological information [1-5].

Conclusion

Because of the enormous natural variability seen in the field, it is not recommended to place a lot of weight in the identification of modest, temporary changes in microbial population size or microbial activity in the laboratory or field as a reaction to a real or perceived pollutant. Based on these standards, only situations approaching or surpassing a recovery time of 30 to 60 days should be deemed critical, whereas a 90% decline in activity followed by a rebound still falls within the range that is regarded as typical throughout the first 30 days at the very least. This theoretical foundation was first created to examine the impacts of pesticide side effects. But it seems sense to apply the same strategy to other soil contaminants.

Conflict of Interest

None.

References

1. Martín-López, Berta and Carlos Montes. "Restoring the human capacity for conserving biodiversity: A social-ecological approach." *Sustain Sci* 10 (2015): 699-706.
2. Alaniz, Alberto J., Jorge F. Pérez-Quezada, Mauricio Galleguillos, and Alexis E. Vásquez, et al. "Operationalizing the IUCN Red list of ecosystems in public policy." *Cons Lett* 12 (2019): e12665.
3. Kim, Gunwoo, Patrick A. Miller, and David J. Nowak. "Assessing urban vacant land ecosystem services: Urban vacant land as green infrastructure in the City of Roanoke, Virginia." *Urban For Urban Green* 14 (2015): 519-526.
4. Metzger, M.J.C, M.D.A. Rounsevell, Lilibeth Acosta-Michlik, and R. Leemans, et al. "The vulnerability of ecosystem services to land use change." *Agric Ecosyst Environ* 114 (2006): 69-85.
5. Barrios, Edmundo. "Soil biota, ecosystem services and land productivity." *Ecol Econ* 64 (2007): 269-285.

***Address for Correspondence:** Marquina Pozo, Department of Chemistry, University of Burgos, Plaza Misael Bannuelos, Spain, E-mail: marqupo3@gmail.com*

Date of Submission: 19 April, 2022, Manuscript No. ijbbd-22-73176; **Editor Assigned:** 21 April, 2022, PreQC No. P-73176; **Reviewed:** 25 April, 2022, QC No. Q-73176; **Revised:** 04 May, 2022; Manuscript No R-73176; **Published:** 09 May, 2022; DOI: 10.37421/2376-0214.2022.8.14

How to cite this article: Pozo, Marquina. "The Use of Microbiological Characteristics to Track Heavy Metal Soil Contamination." J Biodivers Biopros Dev 8 (2022):14.