Proceedings International
Platinum Open Access Journal (ISSN 2668-6384)

Proceedings, Abstract
Volume 3, Issue 6, 2021, 55
https://doi.org/10.33263/Proceedings36.055

Environmental Monitoring Based Assessment and Associated Health Risk Characterization of Different Elements in Agricultural Soil Along the Middle Ganga Basin, India †

Nidhi Tyagi [1,*], Sudhakar Srivastava [1,*]

[1] Plant Stress Biology Laboratory, Institute of Environment & Sustainable Development (IESD), Banaras Hindu University (BHU), Varanasi, Uttar Pradesh-221005, India; nidhityagi1001@gmail.com (N.T.); sudhakar.srivastava@gmail.com (S.S.);
* Correspondence: nidhityagi1001@gmail.com (N.T.); sudhakar.srivastava@gmail.com (S.S.);
† Presented at Environmental Toxicology: Impact on Human Health (Environ Tox 2021)

Received: 5.11.2021; Revised: 18.11.2021; Accepted: 20.11.2021; Published: 30.11.2021

Abstract: In recent years, contamination of different elements in top agriculturalsoil has emerged as a serious problem all over the world, and it has concerns for human health due to elemental leaching in groundwater and in crop plants and food. In the present study, selected elements viz; arsenic (As), copper (Cu), and lead (Pb) in the soil samples (n=30) were assessed. The soil samples were collected from the Ghazipur region in the middle Ganga basin, Uttar Pradesh, India. The various physicochemical soil properties and X-ray fluorescence spectrometer (XRF) based total content metal concentration of As, Cu and Pb were measured. The mean concentrations of As, Cu, and Pb were found to be 13.28, 31.45, 22.3 mg kg^{-1} dw, respectively, and the physicochemical properties like pH, EC (µS cm^{-1}), ORP (mV), and organic matter (%) were found to be 8.51, 342.51, 154.74 and 1.25, respectively. Further various soil pollution indices viz; Pollution Load Index (PLI), Contamination Factor (CF), and Geo accumulation index (I_{geo}) were also calculated. Hazard quotient (HQ) was also performed, which was below the threshold value, which depends upon bioaccessible content and duration of exposure of elements. Therefore, the present study may assist similar kinds of associated work to show the multi-elemental interaction in the contaminated zone along the other river channel.

Keywords: middle Ganga basin; agricultural soil; soil indices; human health.

Funding

This research was funded by BHU-UGC, scheme no. CU-SC-31(B) 5013

Acknowledgments

I would like to thank, Plant Stress Biology Laboratory, Institute of Environment and Sustainable Development, Banaras Hindu University, Varanasi, Uttar Pradesh, for providing me workspace.

Conflicts of Interest

The authors declare no conflict of interest.