



“Gheorghe Asachi” Technical University of Iasi, Romania



CHARACTERIZATION OF SOIL HEAVY METAL CONTAMINATION AND POTENTIAL ECOLOGICAL RISK IN THE URBAN–RURAL TRANSITION ZONE OF TAIYUAN CITY, CHINA

Jinchang Li^{1,2}, Yong Liu^{2*}, Yonggang Yang², Zuodong Qin²

¹*Academy of Disaster Reduction and Emergency Management, Beijing Normal University, Beijing 100875, China*

²*Institute of Loess Plateau, Shanxi University, Taiyuan 030006, China*

Abstract

Soil in industrial cities and their surrounding regions sustains high levels of contamination due to the intense industrialization and urbanization. Taiyuan, a city in northern China, and its surrounding regions are a hotspot for the development of heavy industry. To assess the environmental quality, we collected surface soil samples from Taiyuan’s urban–rural transition zone. We determined concentrations of Cr, Cu, Pb, Zn, As, Cd, and Hg. The primary inputs of Cr and As were pedogenic sources, whereas the other elements had mainly anthropogenic sources. Hg may be more strongly influenced by human activities than the other elements. With a high “toxic-response” factor and high concentrations, Hg and Cd have more serious environmental influences than the other heavy metals. Because of their proximity to sources of these metals, urban areas have a higher potential ecological risk than rural areas.

Key words: anthropogenic sources, ecological risk, GIS, pedogenic sources, surface soil

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* Author to whom all correspondence should be addressed: e-mail: yongliucn@126.com