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"Gheorghe Asachi" Technical University of Iasi, Romania

ENVIRONMENTAL RISK ASSESSMENT METHOD USING SPATIAL POINT SOURCE ACCUMULATION TECHNIQUE

Tianxin Li[1,2], Anni Zou[1*], Xing Chen Zhou[1,2], Lirontso Monaheng[1]

[1]School of Energy and Environmental Engineering, University of Science and Technology Beijing;
[2]Beijing Key Laboratory of Resource-oriented Treatment of Industrial Pollutants, Beijing, People's Republic of China

Abstract

In this study, we discuss a risk assessment method for spatial point source accumulation that is suitable for regional comprehensive prevention and control of environmental risks. The distribution types of spatial risk sources and other related data are collected and analyzed by adopting Fengtai District, Beijing as an example. On the basis of the spatial analysis algorithm, the environmental risk of region is comprehensively assessed from the perspective of risk-inducing factors, risk substances, and environmental sensitivity. The characterization methods of five types of environmental risk sources, namely, chemical substances, air pollutants, water pollutants, hazardous wastes, and accumulation, are proposed. The point-to-surface continuity of spatial expression is realized using spatial analysis technology of geographic information system. A model of environmental sensitivity of receptors is constructed considering social complexity and sensitivity. The relative comprehensive expression of risk value in space is realized using an overlay of layers and through spatial analysis algorithm. The comprehensive cumulative risk degree and type of spatial environment in assessment areas are obtained, and the risk control zoning is conducted accordingly. Eight levels of risk control zones are proposed as a basis of the follow-up of management departments to conduct risk control. In addition, the way identifies high risk areas, where monitoring and detailed analysis is required. This study provides a reference for similar research and evaluation work.

Keywords: ArcGIS spatial analysis technique, environmental risk, risk control zoning, spatial point source accumulation technique

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[*]Author to whom all correspondence should be addressed: e-mail: 634562934@qq.com; Phone: +8618811327005