Integrating multivariate and geostatistical analyses for assessing the socio-environmental vulnerability of children in the vicinity of a contaminated site

Burgos, Soledad

Madrid, Miguel A.

Maldonado, Ana

Medina, Felipe

Iglesias, Verónica

© 2018, © 2018 Informa UK Limited, trading as Taylor & Francis Group. Vulnerability assessments are commonly based on complex indices that may be inappropriate for characterizing risks in small groups of people exposed to environmental hazards. The aim was to present a multivariate and geostatistical approach to explore human health risks at the individual, household and community level. First, biological and socioeconomic characteristics from 179 children were used in a cluster analysis to find groups and identify vulnerability profiles. Then, both the exposure of children to arsenic and lead in soils and their accessibility to community resources were assessed using a geospatial analysis. The results identified three vulnerability profiles among children that were not in agreement with the environmental exposure and deficit of community resources. The proposed approach helps optimize strategies to manage both environmental and social risks based on the vulnerability of the exposed po