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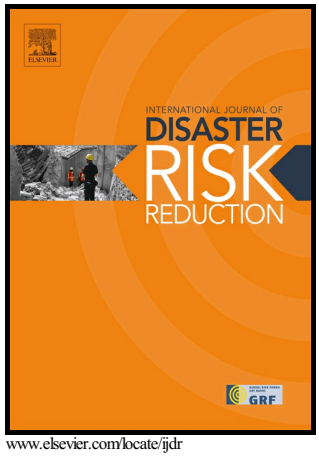

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Chemical Accident Hazard Assessment by Spatial Analysis of Chemical Factories and Accident Records in South Korea

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Abstract

This study identified the potential chemical accident occurrence in Korea by analyzing the spatial distribution of chemical factories and accidents. The number of chemical factories and accidents in 25-km^2 grids were used as the attribute value for spatial analysis. First, semi-variograms were conducted to examine spatial distribution patterns and to identify spatial autocorrelation of chemical factories and accidents. Semi-variograms explained that the spatial distribution of chemical factories and accidents were spatially autocorrelated. Second, the results of the semi-variograms were used in Ordinary Kriging to estimate chemical hazard levels. The level values were extracted from the Ordinary Kriging result and their spatial similarity was examined by juxtaposing the two values with respect to their location. Six peaks were identified in both the factory hazard and accident hazard estimation result, and the peaks correlated with major cities in Korea. Third, the estimated two hazard levels were classified with geometrical interval and could be classified into four quadrants: Low Factory