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LA CARTOGRAFÍA DE RIESGO COMO INSTRUMENTO TÉCNICO PARA LA
REUBICACIÓN DE LA INDUSTRIA LADRILLERA DEL MUNICIPIO DE JUÁREZ, MÉXICO
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Abstract

The brick kiln industry in Ciudad Juárez, Chihuahua, has been rapidly expanding with urban growth since 1960. There are currently 312 brick kilns distributed around the urban area of the city, which represent an environmental problem due to their negative effects. The objective of this study was to determine the best places in the Municipality of Juárez to relocate the brick kiln industry in order to minimize environmental risk. Multicriteria Analysis (MCA) based on digital cartography and a Geographical Information System (GIS) were used. The factors selected for analysis included biophysical, social and economic aspects. In order to estimate the effects of brick kiln operation, a nine-level estimated risk scale was defined using hierarchical multicriteria analysis and the modified Delphi technique. The weighted factors were mapped in the GIS using the Spatial Analysis® extension. By superposing the maps, polygons showing the degree of population and ecosystem vulnerability were obtained. In general, the urban zone, the eastern slope of the Sierra Juárez, the dunes and the agricultural region in the Valle de Juárez near the city were found to be the most vulnerable zones for locating the brick kiln industry. Currently, 90.3 % of kilns are located in areas of medium to high vulnerability. Using the data obtained in this study, brick kilns in Ciudad Juárez can be relocated on the basis of reliable technical criteria, although the process will also have to comply with the respective regulations.

Keywords

Brick kilns, multi-criteria analysis, geographic information systems.

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