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**Scientists From Granada Develop New Methodology For Landfill Management**

June 6, 2008

UGR News Scientists of the University of Granada (Spain) have designed a novel and versatile environmental diagnostic method of landfills which is able to adapt to different places of the world and contributes to quantify the environmental impact.

The doctoral thesis "Landfill environmental diagnosis methodology. Adaptation to computerization using fuzzy techniques and its application in Andalusian landfills" has been carried out by Encarnación Garrido Vegara, under the supervision of Professors Montserrat Zamorano Toro and Ángel Ramos Ridao (Department of Civil Engineering of the UGR). The work defines the pollution probability of the landfill according to the exploitation level, as well as to its location.

The tool has been applied and validated in landfills of Andalusia and has incorporated information of countries such as Chile, Venezuela and Colombia. "Its application to other countries with different legal frameworks and socioeconomic characteristics require the revision of those variables or environmental descriptors that may be directly affected. However, this adaptation is a relatively simple process".

The study produced a tool which "analyzes the relation between landfill dynamics and their influence on different elements in the environment. For this purpose, a set of environmental indexes are specified, which quantify the environmental impact of landfills (Environment-Landfill Interaction Index, Environmental Risk Index, Environmental Value Index, and Probability of Contamination Index). Such indexes permit to justify the election of Conditioning Plans or Closing Plans".

**Specific software**

Starting from the EVIAVE methodology, techniques from the Department of Computing Sciences and Artificial Intelligence have designed a software application that makes its implementation easier. This computer tool facilitates the application of EVIAVE, provides more complete information about environmental diagnosis of landfills and solves problems related to subjectivity and uncertainty that can arise when the method is applied by experts from different fields, according to Garrido Vegara.

This method has been developed within the social and legal context of the European Union and for non-hazardous waste landfills by the EU Directive 31/99/EEC, with the support of the Ministry of Education and Science, through the agreement "Design and implementation of methodologies for the assessment of the environmental impact in landfills and dumps".

The research work has given rise to different publications:  
—"Description of the methodology EVIAVE for environmental diagnosis of municipal waste landfills" (Journal of Sustainable Development and Planning);  
—"Environmental diagnosis methodology for municipal waste landfills as a tool for planning and decision-making process. Sustainable development and planning II" (Editorial: WIT PRESS, Lugar de publicación: Ashurst Lodge, Ashurst, Southampton, SO40 7AA, UK);

*SOURCE: Universidad de Granada*

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