

The Combined Approach When Assessing and Mapping Groundwater Vulnerability to Contamination

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ABSTRACT

In early 1980' s, the Italian scientific community, together with a number of institutional decision-makers, realized how urgent it was to protect natural and environmental resources. They agreed that an adequate level of scientifically organized knowledge allows the accurate planning and development of environment systems through the management and direction of the effective development process, but without stopping it. Since the special VAZAR1 project was first set up in 1984, as part of the GNDCI-CNR2 scientific context it has been the cardinal center point of Research National Program " Aquifer Vulnerability Assessment" . The problem of groundwater contamination was examined in this program for the very first time in Italy in an organic and extensive manner as a key for forecasting and prevention purposes. The Italian approaches to assessing and mapping groundwater vulnerability to contamination are essentially based on two main methodologies: 1) the GNDCI Basic Method [1,2] a HCS type approach that can be used for any type of Italian hydrogeologic situation, even where there is a limited number of data. A unified legend and symbols are also defined for each hydrogeologic level. 2) The SINTACS method [2,3], a PCSM developed for use prevalently in areas with a good data base coverage. The methodological approaches described in this paper now make up the Italian standard which has been dealt with in the recent very important Italian Law (152/993) and which are now ratified in the national guidelines [4] produced by ANPA, the Italian National Agency for Environment Protection. The methods, besides Italy [5] have been applied in several other Countries [6– 10] and others.

KEYWORDS

Groundwater Vulnerability, Contamination, GIS, SINTACS R5, Basic Method

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