

## CONTROLE DA POLUIÇÃO DAS ÁGUAS SUBTERRÂNEAS NA REGIÃO DO VALE DO RIO PARAÍBA

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### ABSTRACT

The region under study totalizing 13,600 km<sup>2</sup> consists of the area drained by the Paraíba River in the State of São Paulo till the boundary of Rio de Janeiro State.

This region was selected for the first specific study of ground water pollution control due to its high industrialization trend, high demographical increase rate and large use of ground water. The study area includes some 310 wells in operation, corresponding to a production of up to  $30 \times 10^6 \text{ m}^3/\text{year}$  of ground water. During the years 1976 and 1977, physical chemical water analyses were realized on samples of some 50% of the wells in the region, and conclusions were reached that groundwater quality can be considered very good. The pollution sources were classified to point sources and nonpoint sources. Nonpoint sources are defined as sources releasing low pollutant loads per unit of area, but using large areas of discharge.

Examples of a nonpoint source pollution are case of uncollected domestic sewage or pollution originated from agropecuary activity. Point sources of pollution are defined as sources discharging high pollution loads at limited areas. Infiltration of industrial effluents, domestic sewage treatment plants and landfills are examples of this type of pollution sources. After conducting a survey of the pollution sources, and studying the effect of purification capacity in the unsaturated layer of the soil, the effects of pollutants degradation in soil were determined and the transient time of liquid pollutants passing through the unsaturated layer until reaching the aquifer was established. Taking into consideration the transient time (T), the existence of pollution sources (P) and ground water exploration (E), the program TPE was defined. This program uses superposition of the three above mentioned criteria to establish degrees of pollution danger and identifies the areas wich are critical from the point view of ground water pollution. The results obtained after operation the TPE program show that only 9% of the study area can be considered critical in terms of ground water pollution. For these areas, protective technical measures were recommended such as monitoring of pollution loads and ground water quality, construction and expansion of sewage systems and transfer of domestic sewage treatment plants, sanitary landfills and industrial sludge deposition sites to areas wich are classified as areas of low ground water pollution danger.

### CONSIDERAÇÕES GERAIS

A expansão acentuada dos centros urbanos e industriais no Estado de São Paulo vem acarretando uma crescente demanda de água, o que contribui para uma exploração desorganizada das diferentes fontes dos recursos hídricos. Tal expansão originou uma série de novos problemas relacionados ao abastecimento de água, além de provocar aumento considerável nos níveis de poluição dos recursos hídricos superficiais.

Considerando-se que a exploração das águas subterrâneas constituir-se-á proximamente um importante fator para o abastecimento dos grandes centros de consumo, a preservação da qualidade dessas águas é um imperativo que se impõe a fim de que o desenvolvimento do Estado não seja prejudicado.

