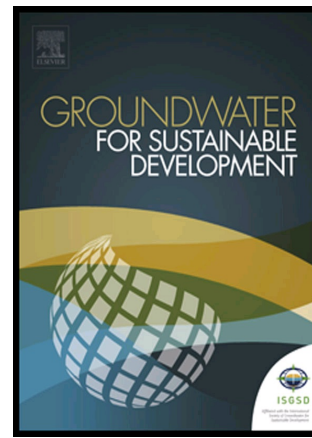


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## Impact of pesticides in karst groundwater. Review of recent trends in Yucatan, Mexico

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### ABSTRACT

The anthropogenic activities in karst aquifer increase the vulnerability for groundwater pollution by organochlorine pesticides (OCP). Recent research have been published about high level of OCP in water, as well as the bioaccumulation of OCP in blood of women with cancer and in breast milk. The use of banned OCP such as DDT, heptachlore, lindane, endosulfan, aldrin, are the main sources of pollution of groundwater in Yucatan, Mexico. In Yucatan, the water pollution is increased by 30% of deforestation, large zones of geological fracturing with high permeability, and high density of sinkholes (cenotes) in the karst soils. Diverse studies indicate Yucatan as a zone with high impact of water pollution (3.2 ppm of endrin, 10.86 ppm of  $\delta$ -lindane, 5.23 ppm of  $\gamma$ -lindane, 6.53 ppm of  $\alpha$ -lindane, 13.61 and 12.54 ppm of heptachlore). 30% of the population drink water from polluted wells and sinkholes. A study showed high levels of OCP in the blood of women with cervical uterine cancer: 7.352 ppm of endosulfan I, 3.695 ppm of aldrin, 2.336 ppm of 4,4' DDD, 1.434 ppm of heptachlore. Furthermore, recent research show high levels of pesticides in breast milk, indicating 18.436 ppm of heptachlore epoxide and 1.024 and 2.10 ppm of dieldrin. Social conditions such as poverty, low education level, lack of regulation and capacitation in the agricultural sector, as well as environmental vulnerabilities have a high impact on the karst groundwater and the public health. This review showed the evidence of the need of regulation of OCP, the promotion of public health and implementation of agroecological programs.

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