

Pesticides in karst groundwater, Yucatan, Mexico, impacts to the water and public health

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Evidence

Monitoring studies in water and biomonitoring in blood of Mayan women with cancer show very high concentrations of organochlorine pesticides.

Poverty indicators in rural Mayan areas, low educational levels, low risk perception regarding the use of highly toxic pesticides in agriculture (Polanco et al., 2015), lack of training on agroecological techniques, and a karstic soil system highly vulnerable to contamination are the main factors that affect to groundwater contamination and the public health with high levels of heptachlor, DDT, lindane, endosulfan, aldrin, dieldrin, endrin, exceeding the permitted maximum limits by the mexican official norm and international norm.

Health statistics show that the prevalence and mortality rates from cancer in Mayan women in Yucatan have been above the national average for more than 10 years.

Method

Solid Phase Extraction was performed on C18 cartridges and analyzed by Gas Chromatography with Electron Capture Detector.

Results

Monitoring results in water of sinkholes of high detected levels of pesticides show these evidence such as 3.2 ppm of endrin, 10.86 ppm of δ -lindane, 5.23 ppm of γ -lindane, 6.53 ppm of α -lindane, 13.61 and 12.54 ppm of heptachlore (Polanco et al., 2018).

Some results of the biomonitoring of organochlorine pesticides detected in blood of maya women with cancer were endosulfan I (7.35 mg/mL), aldrin (3.69 mg/mL), 4,40 DDD (2.33 mg/mL), 1.39 and 1.46 mg/mL of d-HCH (Polanco et al., 2017).

Currently, our research group designs intervention programs for disease prevention and sustainable agriculture.

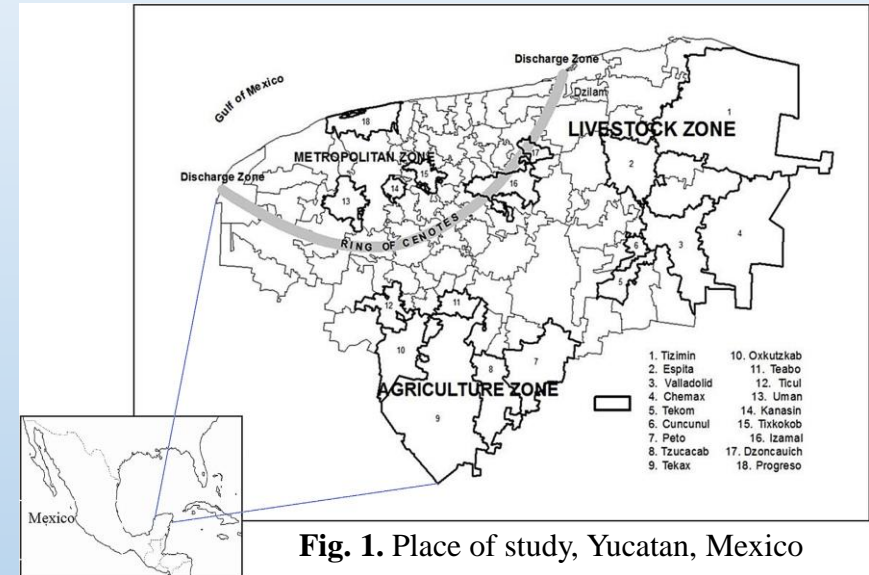


Fig. 1. Place of study, Yucatan, Mexico

References

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