



HYDROCARBON POLLUTED SINKHOLES IN CANCÚN URBAN AREA

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Introduction. Cancun city is located in Mexican southern state of Quintana Roo. The soil of Quintana Roo is karst with high porosity. Underground caverns were formed; these caverns are the main source of fresh water (sinkholes) (1). Recent studies detected the presence of aliphatic and polycyclic aromatic hydrocarbons (PAHs) in freshwater bodies of Quintana Roo (2). However, scarce information is available specifically about Cancún.

The aim of this work is to detect the presence of hydrocarbons, aliphatic (AlfH) and polyaromatics (PAH) in freshwater bodies in Cancun urban area.

Method. Two sinkholes in the urban area of Cancun were sampled (Talleres Av. and Chac-Mool Av). Liquid-liquid extractions (volume 1:1) of the samples were carried out with hexane. A Flame Ionization Detector Chromatograph was used for sample analysis. The obtained chromatograms were analyzed with the Varian Star matching software. Afterwards, the chromatograms were compared to the standard chromatogram hexane and standard chromatograms of various hydrocarbons (Phenantrene, Naphthalene, Octane, Decane, Benzo(e)pyrene, Anthracene, eicosane and toluene) at known concentrations.

Results. PAHs like Phenantrene and Naphthalene were detected in the sample of the sinkhole located in Talleres Av. (Figure 1) while AlfH like hexadecane was detected in Chac-Mool Av. Sample (chromatogram no showed). Table 1 shows hydrocarbon concentrations

Table 1 Hydrocarbons detected in the samples of Talleres Av. and Chac-mool Av, Cancun Quintana Roo.

Sinkhole	Hydrocarbons detected
Talleres Av.	Phenantrene, Naphthalene
Chac-mool Av.	Hexadecane

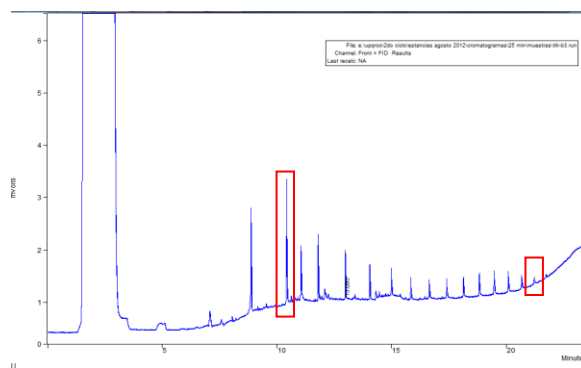


Figure 1. Chromatogram obtained from the sinkhole located in Talleres Av., Cancun Quintana Roo. Shows irregular peaks located at times assigned to phenantrene and naphthalene.

The given explanation to this phenomenon is the runoff of fuels from the streets near these water bodies (3).

Conclusions. AlfH as hexadecane and PAHs as Phenantrene and Naftalene were detected in freshwater bodies in Cancun urban area. Regulation to protect these water bodies is necessary due to the increase of vehicles in the recent years.

References.

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