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Determination of Phenanthrene in Urban Runoff of Tehran, Capital of Iran

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Abstract:

In many big cities, surface runoff is collected by separate collection system and is then directed to receiving water bodies. Since it washes out the materials from the surface of different lands, is known as the source of pollution. Polycyclic aromatic hydrocarbons (PAHs) are one class of carcinogenic contaminants that are commonly found in storm water runoff. In this study, phenanthrene was measured in the surface runoff of south of Tehran, capital of Iran. After identifying three main drainage channels, three sampling stations were chosen, based of the fact that all urban surface runoffs completely passed through these points and taken samples were more expected as representative of all kinds of pollutants. Surface runoff flows in three main channels from north to south of Tehran. At each month two samples were taken from each station, afterwards concerning the USEPA method, 60 samples were extracted and analyzed with High Performance Liquid Chromatography device. Results show that the average concentration of PAH in the most polluted drainage was about 9.4 µg/l. The minimum and the maximum concentrations of PAH in all of the taken samples were zero and, 15.1 µg/l, respectively. In the rainy season, the concentration of phenanthrene was the highest, because the rain washed out the pollutant from the surface of the street. In addition, the concentration of phenanthrene in the middle drainage channel was more than two others, because this station received the runoff from city center whose traffic load was high.

Keywords:

PAH · Phenanthrene · Urban Runoff · Drainage

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