A SURVEY OF 24 HOUR VARIATIONS OF BTEX CONCENTRATION IN THE AMBIENT AIR OF TEHRAN

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BACKGROUND AND OBJECTIVE: The BTEX chemicals (Benzene, Toluene, Ethyl benzene, and Xylene) are volatile monoaromatic hydrocarbons. Motor vehicles and fuels are examples for major sources of these environmental pollutants emission. They have harmful health effects. To reduce their health influences, monitoring their concentrations and controlling these pollutants in ambient air is indispensable. The aim of this study was to survey 24 hour variations of BTEX concentration in the ambient air of Tehran, Iran.

METHODS: In this cross sectional study, round-the clock concentration variations of these compounds in the atmosphere of Tehran metropolitan city were surveyed. Two air quality monitoring stations, Aghdasieh and Ray, in two different locations in the city were applied. Twenty four hour sampling was carried out by an online sampler on a monthly basis.

FINDINGS: The mean concentration of benzene (63.24±11.19 ppb), ethyl benzene (38.23±9.08) and xylene (14.13±3.29), in Ray was higher than Aghdasieh (16.57±5.86, 5.08±1.67 and 5.96±1.89, respectively) and the mean concentration of toluene in Aghdasieh (9.11±1.16) was higher than Ray (7.6±1.78). The results showed correlations among the concentrations of pollutants in each station in most cases and between two stations (p<0.05).

CONCLUSION: According to the results, despite of the different concentrations of pollutants for two studied stations; a similar trend of daily concentration changes was seen in the stations. This similar trend can be useful in 24 h concentrations prediction of BTEX in ambient air for different places.

Keyword(s): BENZENE, TOLUENE, ETHYL BENZENE, XYLENE, AIR POLLUTION, VOLATILE ORGANIC COMPOUNDS