Chemosphere, vol. 92 (11), 2013, pages 1430-1435

Volatile aromatic hydrocarbons (VAHs) in residential indoor air in Brisbane, Australia

Abstract

Volatile aromatic hydrocarbons (VAHs: benzene, toluene, ethylbenzene, mp-xylene, o-xylene, styrene, naphthalene) in residential indoor air in Brisbane, Australia were measured in 32 houses. The total VAHs (TVAHs) levels ranged between 2 and 137μg/m3 and were lower than the most of the houses in the literature data. The VAHs were believed to originate from heat insulation systems, building material products as well motor vehicles but naphthalene and styrene originated from other sources. Internal garages had concentrations which are higher than the indoor air by 25-50% due to the presence of motor vehicles and may be a major source of indoor VAHs. However indoor concentrations are higher than that in the outdoor ambient air. The age of the house was found to be negatively related to VAHs concentrations in the houses with the half-life of TVAH at approximately 13years. The concentration levels of benzene, toluene, ethylbenzene and styrene are well below the guideline values set by agencies from Hong Kong, Japan, Germany and the WHO while the concentration level of naphthalene in one house exceeded the guideline value from Germany.

Keywords

Houses; Indoor air quality; Residential air; Volatile aromatic hydrocarbons