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Sources of Polycyclic Aromatic Hydrocarbons in Street Dust from the Chang-Zhu-Tan Region, Hunan, China

PDF (Size: 433KB) PP. 1331-1340 DOI: 10.4236/jep.2011.210153

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ABSTRACT

Street dusts collected from 20 sites as well as three special dust samples collected from chimney of coal-fired plant, smelter and refinery of nonferrous metals and automobile exhaust, respectively, in the Chang-Zhu-Tan (Changsha, Zhuzhou and Xiangtan) urban region, Hunan, China, in May to August 2009, were investigated for sources of polycyclic aromatic hydrocarbons (PAHs). The ΣPAHs16 levels were in the range of 3515 - 24488 ng/g, with a mean of 8760 ng/g. The sources of PAH inputs to street dusts were determined by isomer ratios, principal components analysis and REE geochemical analysis. The isomer ratios suggested a rather uniform mixture of coal combustion and petroleum PAH sources. Factor analysis indicated that the main sources of 16 PAHs were coal combustion/vehicle exhaust and coking/ petroleum. Rare earth elements (REE) and Factor score analysis further indicated the possible dust sources were from background soil, coal or coking combustion, nonferrous metal factories, traffic exhaust.

KEYWORDS

Street Dust, Polycyclic Aromatic Hydrocarbons, Rare Earth Element, Sources of Pollution

Cite this paper

Y. Long, G. Chi, H. Qing, T. Dai and Q. Wu, "Sources of Polycyclic Aromatic Hydrocarbons in Street Dust from the Chang-Zhu-Tan Region, Hunan, China," *Journal of Environmental Protection*, Vol. 2 No. 10, 2011, pp. 1331-1340. doi: 10.4236/jep.2011.210153.

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