Status, source and ecological risk assessment of polycyclic aromatic hydrocarbons (PAHs) in soils from Tibet Plateau, China

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The transport of PAHs to remote areas and their fates have been great concerned in the past decade. Tibet Plateau which is far from modern industrial activities are regarded as an ideal studying site. According to land use and altitude, 70 topsoil samples were collected from the Tibet Plateau during July 2013. The soil samples were extracted by Soxhlet Method with dichloromethan and cleaned up by passing through a alumina/silica gel column (1:2). Fluorobiphenyl and terphenyl-d14 were used as internal standard for PAHs analysis by a system of gas chromatography (Agilent 6890) equipped with Mass Selective Detector (Agilent 5972B). The total PAHs concentrations ranged from 0.3 to 62.3 μg/g with an average 1.24 μg/g in dry weight. The agricultural and highway areas possessed higher concentrations of PAHs in the investigtion. The two and three-ring PAHs were the most abundant in the soils. Diagnostic ratios and principal component analysis indicated that traffic and combustion of coal or biomass were the dominant source of PAHs in the investgated soil. The ecological risk of the PAHs has been assessed by the toxic equivalency factors (TEFs), the results revealed that the PAHs may present a low ecosystem risk in particular areas.

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