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Distribution, Sources and Fate of Polycyclic Aromatic Hydrocarbons in Air, Dust and Sediment of Central India

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Abstract

Polycyclic aromatic hydrocarbons (PAHs) are a group of > 100 carcinogenic compunds emitted during combustion of fuels and other materials. In this work, distribution, sources and fate of twelve PAHs: phenanthrene (Phe), anthracene (Ant), fluoranthene (Fla), pyrene (Pyr), benz[a]anthracene (Baa), chrysene (Cry), benzo[b]fluoranthene (Bbf), benzo[k]fluoranthene (Bkf), benzo[a]pyrene (Bap), dibenz[a,h]anthracene (Dba), benzo[ghi]perylene (Bgh) and indeno[1,2,3-cd]pyrene (Ind) in the air, road dust and sediment of the most industrilized area of central India are described. The PAHs contents in the ambient air (n = 24) during year 2007-08 were ranged from 0.04 – 0.17 µg/m3 with mean value of 0.09±0.02 µg/m3, respectively. The highest mass concentration was observed in the winter season, December – January. The concentration of the PAHs in the PM10, road dust (n = 8) and sediment (n = 10) of Raipur city was ranged from 238 – 467, 8.7 – 21.7 and 6.8 – 10.9 mg/kg with mean value of 342, 12.7 and 9.2 mg/kg. The vehicular emissions and coal/biomass comustion were apportioned as main sources for relase of the PAHs in the environment. The spatial (residential, commercial and industrial), seasonal (summer, rainy, autumn and winter) and temporal (2007-2015) variations of the PAHs in the environment of the central India are discussed.

Biography:

Khageshwar Singh Patel has completed his PhD from Pt. Ravishankar Shukla University, Raipur, India and postdoctoral studies from TU, Darmstadt, Germany. He is a Professor at the Amity University, Raipur. He has published more than 150 papers in reputed journals, and supervised 34 PhD students.

Speaker Publications:

1. "Polycyclic Aromatic Hydrocarbons: Need for Assessment of Health Risks in India? Study of An Urban-Industrial Location in India";Springer. /1999 / 287–319(1999)
2. "Simple and specific method for flow injection analysis determination of cationic surfactants in environmental and commodity samples"; Talanta / Vol 48,issue4,1999 923-931
3. "Development of surfactant assisted spectrophotometric method for determination of selenium in waste water samples"; Journal of Hazardous Materials,Volume 161, Issue 2-3,2009, 1245-1249.
4. "Groundwater hydrochemistry of Rajnandgaon district, Chhattisgarh, Central India", Groundwater for Sustainable Development, Vol 11, 100352
5. "Profiling of the Beneficial and Potentially Harmful Components of Trichodesma indicum Seed and Seed Oil Obtained by Ultrasound-Assisted Extraction"; AOCS/ Vol 96, issue 3,2019, Pages 249-259

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