

Heterocyclic Aromatics in Petroleum Coke, Snow, Lake Sediments, and Air Samples from the Athabasca Oil Sands Region

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© 2017 American Chemical Society. The aromatic fractions of snow, lake sediment, and air samples collected during 2011-2014 in the Athabasca oil sands region were analyzed using two-dimensional gas chromatography following a nontargeted approach. Commonly monitored aromatics (parent and alkylated-polycyclic aromatic hydrocarbons and dibenzothiophenes) were excluded from the analysis, focusing mainly on other heterocyclic aromatics. The unknowns detected were classified into isomeric groups and tentatively identified using mass spectral libraries. Relative concentrations of heterocyclic aromatics were estimated and were found to decrease with distance from a reference site near the center of the developments and with increasing depth of sediments. The same heterocyclic aromatics identified in snow, lake sediments, and air were observed in extracts of delayed petroleum coke, with similar distributions. This suggests that petroleum coke particles are a potential source of heterocyclic arom