

Road dust pollution in India

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Road deposited dusts are fugitive [1,2]. In the present work, the water soluble fraction of toxicants such as fluoride and other major ions (i.e. Cl⁻, NO₃⁻, SO₄²⁻, Na⁺, K⁺, Mg²⁺ and Ca²⁺) in the road dust of India is described to know the health hazards. Forty five road dust samples from various locations (i.e. Raipur, Bhilai, Korba, Tamnar, Nagpur, Kolkata, Mumbai and Delhi) of the country were collected in winter 2008 by using Eureka Forbes-Trendy Steel vacuum cleaner. A 2.0 g dust sample (< 0.5 mm) was extracted with deionized hot water (50 ml) and filtrate was analyzed by the ion selective electrode and ion chromatography.

Results and Discussion

The pH value of dust (n = 45) was ranged from 6.4 – 9.5 with mean value of 7.4±0.2. The concentration of i.e. NH₄⁺, NO₃⁻, F⁻, Cl⁻, SO₄²⁻, Na⁺, K⁺, Mg²⁺ and Ca²⁺ was ranged from 11–539, 48–1423, 75–895, 276–12718, 243–10580, 289–46484, 110–7716, 84–1771 and 595–15955 mg kg⁻¹ with mean value of 138±28, 572±114, 224±43, 3613±853, 2716±638, 4761±1913, 1529±386, 808±117 and 8163±1274 mg kg⁻¹, respectively. The dust of coal burning site of country like Korba and Raigargh was found to be slightly acidic. The whole dust was contaminated F⁻ at toxic levels with higher value near aluminum smelting plant i.e. Korba and coal burning sites i.e. Korba and Raipur. They were found to be saline in nature with the highest value at Dehli (90991 mg kg⁻¹) due to high Na⁺ level.

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[1] Schwarze *et al.* (2006) *Human Exper.Toxic.* **25**, 559-579.

[2] Anderson *et al.* (2001) *Occup. Environ. Med.* **58**, 504-510.

High-frequency late Glacial to mid-Holocene climate variability: Evidence from oxygen and carbon isotope values of marl lakes in Canada, Ireland and the United States

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A series of marl lake cores ranging in length from ~5-9 meters were recovered from lakes in Saskatchewan and Alberta Canada, New York State in the USA, and Contae Clare in western Ireland. These cores were sampled at high-resolution (1mm to 5mm spacing) to provide a detailed stable isotope record of climate and environmental variability from the late Glacial to the modern in Canada and the USA, and from late Glacial to mid-Holocene in western Ireland.

Major climatic excursions such as the Younger Dryas are most apparent in the Irish cores but are present in most cores, though with a decreasing expression as we move towards the west in North America. Carbon and oxygen isotope records in the highest resolution cores from Ireland display periodicities consistent with the North Atlantic Oscillation and longer multi-decadal climate modes. While the general trends in the New York State cores correspond to those of Ireland, early Holocene variability in New York may be strongly influenced by the drainage history of Lake Agassiz. Lakes in western Canada however, do not appear to exhibit variability related to Lake Agassiz dynamics.

Because oxygen isotope variability in marl conflates precipitation isotope values and temperature, we collected and identified temperature sensitive ostracod taxon from the Lough Monreagh core, Ireland, and measured their oxygen isotope values in order to place some limits on the range of possible water isotope values. Carbon isotope records of the marl lake cores provide insights into climate driven changes in the lake's rate of primary productivity, and the degree to which the surrounding landscape is densely or sparsely vegetated in watersheds dominated by carbonate bedrock.

By comparing carbon and oxygen isotope records of widely-spaced lakes through time, we can provide a better model of how atmospheric circulation and therefore moisture cycling has varied through the late Glacial and Holocene.