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"Gheorghe Asachi" Technical University of Iasi, Romania

CHEMICAL CHARACTERISTICS OF INHALABLE ATMOSPHERIC AEROSOLS IN URUMQI DURING WINTER

Talip Dilnur[1*], Tursun Yalkunjan[1], Manabu Igawa[2], Yimit Abulizi[1]

[1]College of Chemistry and Chemical Engineering Xinjiang University, Urumqi, Xinjiang, China 830046
[2]Faculty of Engineering, Kanagawa University, Yokohama, Japan 221-8686

Abstract

$PM_{10-2.5}$ and $PM_{2.5}$ samples were collected from December 2007 to January 2008 at six sampling sites in Urumqi Xinjiang, China. The concentrations of seven kinds of water-soluble ions—SO_4^{2-}, NO_3^-, Cl^-, NH_4^+, K^+, Na^+, and Ca^{2+}—were analyzed using ion chromatography. The concentrations of heavy metal elements, Cr, Co, Cd, Pb, and Hg were measured using inductively coupled plasma mass spectrometry (ICP-MS). The results indicated that, in $PM_{2.5}$ and $PM_{10-2.5}$, the average mass concentration of seven kinds of water-soluble ions were from 1.00 μg m^{-3} to 59.9 μg m^{-3} and 0.45 μg m^{-3} to 44.7 μg m^{-3}, of which SO_4^{2-} was the most abundant water-soluble ion, accounting for 30.2% and 26.5% of the total ion concentration in $PM_{2.5}$ and $PM_{10-2.5}$ respectively. High enrichment factor values (EF>50) were obtained for Cd, Pb, and Hg reflecting the importance of anthropogenic inputs.

Key words: air pollution, inhalable particulate matter, mull index, water-soluble ions

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[*] Author to whom all correspondence should be addressed: e-mail: dilnurt2000@yahoo.com.cn; Phone: 086-0991-8813938