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 $\mu$g m$^{-3}$ to 59.9 $\mu$g m$^{-3}$ and 0.45 $\mu$g m$^{-3}$ to 44.7 $\mu$g 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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