

Arsenic in Modern Dust, Southern Nevada and Southern California

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Samples of dust deposited at many rural sites in southern Nevada and California are enriched in As, Cr, Ni, and Sb. In aerosol studies these elements are ascribed to mainly anthropogenic sources. However, modern dusts sampled above the bed of Owens (dry) Lake and elsewhere in Owens Valley, on the east side of the Sierra Nevada, are particularly enriched in As and Sb. Arsenic concentrations in samples of the <50- μ m mineral (non-salt) fraction of deposited dust commonly range from 10 to 40 ppm. A few samples containing soluble salt collected at Owens (dry) Lake yield As values as large as 100 ppm, suggesting that salts from the lake bed contribute a significant fraction of the total As content of dust samples. Based on (1) changes in concentrations of these elements as a function of distance and (2) local source-sediment composition, we interpret these data to indicate that the composition of dust samples is strongly influenced by Owens Valley. Owens (dry) Lake is probably the primary source of As in dusts, whereas zinc-lead mining wastes, in part redistributed into lake sediment, are the likely sources of more As, Sb, and perhaps Pb. Comparison of As and Sb contents of dust samples to those from different anthropogenic emission sources supports zinc-lead mining as a dust source. "Soil-dust" sources may locally and regionally contribute a significant proportion of metals in dust that have been previously attributed to anthropogenic emissions and, to a lesser extent, volcanic emissions.