

# Field Validation for Sampling and Analysis of Airborne Hexavalent Chromium

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**An impinger train sampling method was used to quantify airborne hexavalent chromium [Cr(VI)] levels at indoor and outdoor locations at 25 industrial sites in Hudson County, New Jersey, which have soils containing chromite ore processing residues. Indoor air samples were also collected at 15 residential sites distant from the residues in order to characterize "background" levels of airborne Cr(VI). A majority (28 of 44) of the mean indoor and outdoor Cr(VI) concentrations measured at the industrial sites were within the range of concentrations measured at the residential sites (0.38–3.3 ng/m<sup>3</sup>), which indicates that elevated levels of Cr(VI) in soils do not necessarily result in elevated levels of Cr(VI) in air. A validation study was performed to demonstrate the precision of the impinger train technique and to compare the impinger train results with data collected using other monitoring methods for Cr(VI). Using airborne Cr(VI) data from 24 sets of co-located replicate impinger train samplers, a coefficient of variation of 24.1 percent was obtained. These results indicate that the impinger train method is sufficiently reproducible to satisfy any health-related airborne Cr(VI) monitoring needs. Mean airborne Cr(VI) concentrations measured directly over areas of visible surface crystallization ("blush") were not significantly greater (at the 95% confidence level), than mean Cr(VI) concentrations measured in areas where surface blush was absent, despite the fact that Cr(VI) concentrations in the blush soils were over an order of magnitude higher than Cr(VI) concentrations in non-blush soils. These findings further indicate that elevated levels of Cr(VI) in soils do not necessarily result in elevated airborne Cr(VI) concentrations. Finley, B.; Fehling, K.; Falerios, M.; Paustenbach, D.: Field Validation for Sampling and Analysis of Airborne Hexavalent Chromium. *Appl. Occup. Environ. Hyg.* 8(3):191–200; 1993.**