

## **AN ASSESSMENT AND QUANTITATIVE UNCERTAINTY ANALYSIS OF THE HEALTH RISKS TO WORKERS EXPOSED TO CHROMIUM CONTAMINATED SOILS**

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*Paustenbach, Dennis J., Deborah M. Meyer, Patrick J. Sheehan, and Virginia Lau (1991). An assessment and quantitative uncertainty analysis of the health risks to workers exposed to chromium contaminated soils. Toxicol. Industrial Health.*

*Millions of tons of chromite-ore processing residue have been used as fill in various locations in Northern New Jersey and elsewhere in the United States. The primary toxicants in the residue are trivalent chromium [Cr(III)] and hexavalent chromium [Cr(VI)]. The hazard posed by Cr(III) is negligible due to its low acute and chronic toxicity. In contrast, Cr(VI) is considered a inhalation human carcinogen at high concentrations. Approximately 40 commercial and industrial properties in Northern New Jersey have been identified as containing chromite ore processing residue in the soil. One site, a partially-paved trucking terminal, was evaluated in this assessment. The arithmetic mean and geometric mean concentrations of total chromium in soil were 977 and 359 mg/kg, respectively. The data were log-normal distributed. The arithmetic mean and geometric mean concentrations of Cr(VI) in surface soil were 37.6 and 3.1 mg/kg, respectively. The data could not be fit to a standard distribution, likely due to the large number of samples with concentrations below the method detection limit (65%). Dose was calculated for each exposure route using a Monte Carlo statistical simulation.*

**Key words:** risk assessment, environmental toxicology, hexavalent chromium, uncertainty analysis, contaminated soil, exposure assessment.