

**THE POTENTIAL  
INHALATION HAZARD POSED  
BY DIOXIN-CONTAMINATED SOIL**

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**ABSTRACT**

Conservative models were used to estimate the airborne concentrations of 2,3,7,8 tetrachlorodibenzo-p-dioxin (TCDD) vapor and particulates originating from soil containing 100 ppb TCDD. The upper-bound estimates were 3.25 pg/m<sup>3</sup> of airborne TCDD vapor on-site and 0.51 pg/m<sup>3</sup> for TCDD vapor 100 meters downwind. The TCDD air concentration on-site due to suspended particulate is estimated to be 1.4 pg/m<sup>3</sup>, based on a TSP level of 0.07 mg/m<sup>3</sup>. Assuming 70 years of continuous exposure to these concentrations, the upper-bound cancer risks determined from the Jury model were estimated to be 9.4 x 10<sup>-6</sup> to 1.1 x 10<sup>-4</sup> and 1.5 x 10<sup>-6</sup> to 1.7 x 10<sup>-5</sup> for inhalation of on- and off-site vapor, respectively, and 4.1 x 10<sup>-6</sup> to 4.6 x 10<sup>-5</sup> for dust inhalation. Since few sites have average soil concentrations as high as 100 ppb TCDD, this worst-case analysis indicates that inhalation will rarely, if ever, be a significant route of exposure to TCDD-contaminated soil. Experimental results support this claim and point to much lower risk estimates (8.4 x 10<sup>-9</sup> to 9.9 x 10<sup>-8</sup>), suggesting that the parameters used in the Jury model are likely to overestimate the actual airborne levels of TCDD at contaminated sites.