

An Approach to Calculating Childhood Body Burdens of Dibenzodioxins and Dibenzofurans Which Accounts for Age-Dependent Biological Half Lives

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Introduction

Substantial debate continues regarding the appropriate noncancer reference dose assumptions to use when conducting a risk assessment of dioxin. Much of this concern is centered on limited research and speculation regarding noncancer health effects in infants, young children and the fetus (in utero). For example, the intake of dioxin due to breast feeding may exceed the background dietary dose in adults by an order or magnitude or more during certain time periods within the first 6-12 months after birth. Also, estimates of upper bound soil ingestion and dermal contact with dioxins among young children (ages 0-7) can readily exceed the chronic tolerable daily intake levels (1 to 4 pg/kg-day) proposed by some U.S. and international regulatory/advisory groups^{1,2,3,4}. Despite trends showing decreasing body burdens of dioxins in developed countries over the past two decades⁵, some researchers suspect that total dietary intake of dioxin-like compounds in many children and adults may already exceed this tolerable intake range without considering any specific local sources like dioxins in residential soils^{6,7}.