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1. Hazard from exposure to higher chlorodibenzodioxins

- a. The Centers for Disease Control accepts 1 pg/(kg body mass)/day of 2,3,7,8-TCDD as an acceptable daily intake.

(R.D. Kimbrough, H. Falk, P. Stehr and G. Fries,
J. Tox. Env. Health, 1984, 14, 47-93)

- b. EPA is said to have accepted that amount as an Acceptable Average Daily Intake for calculating water-quality numbers.

- c. Other chlorodibenzodioxins are known to be less toxic in acute doses and to be less active in various biological effect tests than 2,3,7,8-TCDD.

(See summary prepared by A. Peter, attached.)

- d. In particular, octachlorodibenzodioxin and 1,2,3,4,6,7,9-heptachlorodibenzodioxin are found to be practically nontoxic.

(See summary.)

- e. Background intake of 2,3,7,8-TCDD approximates 1 pg/kg/d. Intake of higher chloro congeners is probably >5 pg/kg/d (by inference from body burden estimations).

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2. Exposure of tetrathal employees

- a. Mean total chlorodibenzodioxin content of product (Samples #1-11) is 68 ppb (68 pg mg^{-1} of tetrathal).
- b. Mean content of tetra- through heptachlorodibenzodioxin in product is 47 ppb (47 pg/mg tetrathal).
- c. Because tetrathal is irritating, assume that dermal exposure can be neglected; thus inhalation affords the only significant route of exposure. Respiratory protection is worn; assume 90% protection and an inhalation volume of $10 \text{ m}^3/\text{shift}$, a mean dust level of $<2.9 \text{ mg tetrathal/m}^3 \text{ air}$ (see J. Wolfsburger memo attached) and complete absorption of all inhaled dust. Thus tetrathal intake is $0.1 \times 2.9 \times 10 = <2.9 \text{ mg/d}$.
- d. Intake of all chlorodibenzodioxins is:
 $<2.9 \text{ mg tetrathal/d} \times 68 \text{ pg CDD/mg tetrathal} = <197 \text{ pg/d}$.
- e. Intake of tetra- through heptachlorodibenzodioxins is:
 $<2.9 \text{ mg/d} \times 47 \text{ pg/mg} = <136 \text{ pg/d}$.
- f. Assuming 70 kg body mass, intake becomes:
 1. For all chlorodibenzodioxins, $<197/70 = <2.8 \text{ pg/kg/d}$.
 2. For $\text{Cl}_4\text{-Cl}_7$ dibenzodioxins, $<136/70 = <1.9 \text{ pg/kg/d}$.