4717.7840 FOR CANCER.

Subpart 1. **Scope.** This part establishes the methods for determining a health risk limit for cancer.

Subp. 2. **Equation for cancer for chemicals other than chemicals for which a lifetime adjustment factor has been derived or nonlinear carcinogens.** The equation for deriving the health risk limit for cancer for chemicals other than chemicals identified in subpart 3, or nonlinear carcinogens is:

$$cHRL = \frac{(1x10^{-5}) \times 1{,}000}{[(SFxADAF_{<2}xIR_{<2}xD_{<2})+(SFxADAF_{2\ to\ <16}xIR_{2\ to\ <16}xD_{2\ to\ <16})+(SFxADAF_{16+}xIR_{16+}xD_{16+})]/70\ years}$$

Where:

A. cHRL is the cancer health risk limit expressed as µg/L.

B. $(1x10^{-5})$ is the additional cancer risk level.

C. Units 1,000 are as described in part 4717.7830, subpart 2.

D. SF or slope factor is expressed in units of cancer incidence per mg/kg-day. The SFs utilized for each chemical are listed in part 4717.7860.

E. ADAF is the age-dependent adjustment factor as defined in part 4717.7820, subpart 3. The ADAFs utilized for each chemical are listed in part 4717.7860.

F. $IR_{duration}$ is the intake rate for a given duration as defined in part 4717.7820, subpart 14. The IRs utilized for each chemical are listed in part 4717.7860.

G. D is the duration corresponding to the three age groups birth up to two years of age (two-year duration), two up to 16 years of age (14-year duration), and 16 up to 70 years of age (54-year duration) as defined in part 4717.7820, subpart 9, item B.

H. 70 years is the standard lifetime duration utilized by the United States Environmental Protection Agency in the characterization of lifetime cancer risk.

Subp. 3. **Equation for cancer for chemicals for which a lifetime adjustment factor has been derived.** The Department of Health may depart from the default equation presented in subpart 2 when an adjustment factor is based on chemical-specific information. The equation for deriving the health risk limit for cancer for these chemicals is:

$$cHRL = \frac{(1x10^{-5}) \times 1{,}000}{[SFxAF_{lifetime} \times IR_{lifetime}]}$$

Where:

A. Units or values for cHRL, ($1x10^{-5}$), 1,000, and SF are as described in part 4717.7840, subpart 2.

B. $AF_{lifetime}$ is the lifetime adjustment factor utilized to adjust the adult exposure-based SF for lifetime exposure based on chemical-specific data. The $AF_{lifetime}$ utilized is described in part 4717.7860.

C. $IR_{lifetime}$ is the 95th percentile water intake rate representative of a lifetime period.

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