4717.8550 PROCEDURE FOR DETERMINING CANCER INDEX FOR SIMULTANEOUS EXPOSURE TO MULTIPLE CARCINOGENS.

Subpart 1. **Cancer index.** To evaluate simultaneous exposure for multiple carcinogens, a cancer index must be calculated using the procedure in this part.

Subp. 2. **Carcinogenic HRVs.** For health risk values (HRVs) that have cancer endpoints, items A to C apply.

A. A cancer index is determined for chemicals or defined mixtures of chemicals with an inhalation endpoint of cancer using the following equation:

$$\text{Cancer index} = \frac{E_{C1}}{HRV_{C1}} + \frac{E_{C2}}{HRV_{C2}} + \ldots\ldots + \frac{E_{Cn}}{HRV_{Cn}}$$

Where:

(1) E_{Cn} represents the measured or modeled ambient air concentration as expressed in units of micrograms per cubic meter ($\mu g/m^3$) of the first, second, through the n^{th} carcinogen; and

(2) HRV_{Cn} represents the chronic HRV of the first, second, through n^{th} carcinogen as expressed in units of micrograms per cubic meter ($\mu g/m^3$).

B. A cancer index of one is equivalent to a cumulative HRV. A cancer index greater than one exceeds the cumulative HRV.

Subp. 3. **Carcinogenic MHRVs.** For mixtures of multimedia health risk values (MHRVs) that have cancer endpoints, items A to C apply.

A. A cancer index is determined for chemicals or defined mixtures of chemicals with an endpoint of cancer using the following equation:

$$\text{Cancer index} = \frac{D_{C1}}{MHRV_{C1}} + \frac{D_{C2}}{MHRV_{C2}} + \ldots\ldots + \frac{D_{Cn}}{MHRV_{Cn}}$$

Where:

(1) $D_{Cn_{th}}$ represents the calculated lifetime averaged daily dose of the first, second, through the n^{th} carcinogen as expressed in units of micrograms per kilogram of body weight per day (µg/kg-d); and

(2) $MHRV_{Cn}$ represents the MHRV of the first, second, through the n^{th} carcinogen as expressed in units of micrograms per kilogram of body weight per day (µg/kg-d).

B. A cancer index of one is equivalent to a cumulative MHRV. A cancer index greater than one exceeds the cumulative MHRV.

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