TABLE C-1-9

TOTAL CANCER RISK: CARCINOGENS

Description

For carcinogens, cancer risks are added across all carcinogenic COPCs. See Appendix A for identification of carcinogens. Uncertainty associated with this equation includes the following:

Total Cancer Risk assumes that different carcinogens affect the same target organ to produce a cancer response, ignoring potential antagonistic or synergistic effects or disparate effects on different target organs.

Equation

$$Total\ Cancer\ Risk = \sum_{i} Cancer\ Risk_i$$

Variable	Description	Units	Value
Total Cancer Risk	Individual lifetime cancer risk through indirect exposure to all COPC carcinogens	unitless	
Cancer Risk$_i$	Individual lifetime cancer risk through indirect exposure to COPC carcinogen *i*	unitless	**Varies** This variable is COPC- and site-specific, and is calculated by using the equation in Table C-1-7. The value for this variable will vary for each exposure pathway. Uncertainties associated with this variable include the following: (1) Default factors for exposure frequency and exposure duration are assumed to represent the highest exposure that is reasonably expected to occur at a site. In practice, intakes are estimated by combining upper-bound (90th to 95th percentile) values for these exposure variables, but not for other parameters. This assumption is likely to overestimate intakes and the *Cancer Risk*$_i$. (2) Slope factors are used to estimate an upper-bound lifetime probability of an individual developing cancer as a result of exposure to a particular level of a potential carcinogen; and are accompanied by the weight of evidence classification to indicate the strength of the evidence that the agent is a human carcinogen. This classification has the potential to over- or underestimate risk. (3) Risk at low exposure levels is difficult to measure directly either by animal experiments or by epidemiological studies. The development of a cancer slope factor generally entails applying a model to the available data set and using the model to extrapolate from the relatively high doses administered to experimental animals (or the exposures noted in epidemiological studies) to lower exposure levels expected for human contact in the environment. This approach is likely to overestimate *CSF*. The uncertainties associated with this variable are COPC- and site-specific.