TABLE C-1-5

COPC INTAKE FROM DRINKING WATER

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Description

This equation calculates the daily intake of COPC from drinking water. COPC intake from drinking water is calculated from the concentration of COPC dissolved in the water column of each surface water body or watershed identified as a drinking water source. The dissolved concentration is used for calculating COPC intake from drinking water because it is assumed the water is filtered prior to human consumption. The COPC concentration will vary for each water body. The consumption rate varies for children and adults.

Uncertainties associated with this equation include the following:

(1) The amount of drinking water intake is assumed to be constant and representative of the exposed population. This assumption may under- or overestimate I_{dw}.
(2) The standard assumptions regarding period exposed may not be representative of any actual exposure situation. This assumption may under- or overestimate I_{dw}.

Equation

$$I_{dw} = \frac{C_{dw} \cdot CR_{dw} \cdot F_{dw}}{BW}$$

Variable	Description	Units	Value
I_{dw}	Daily intake of COPC from drinking water	mg/kg-day	
C_{dw}	Dissolved phase water concentration	mg/L	**Varies** This variable is COPC- and site-specific, and is calculated by using the equation in Table B-4-24. Uncertainties associated with this variable include the following: All of the variables in the equation in Table B-4-24 are COPC- and site-specific. Therefore, the use of default values rather than site-specific values, for any or all of these variables, will contribute to the under- or overestimation of C_{wt}. The degree of uncertainty associated with the variables d_w and d_b is expected to be minimal because information for estimating a variable (d_w) is generally available and the probable range for a variable (d_b) is narrow. The uncertainty associated with the variables F_{water} and C_{wtot} is associated with estimates of *OC* content. Because OC content values can vary widely for different locations in the same medium, using default OC values may result in significant uncertainty in specific cases.

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Variable	Description	Units	Value
CR_{dw}	Rate of consumption of drinking water	L/day	**0.67 or 1.4** This variable is site-specific. U.S. EPA OSW recommends default values of 1.4 (adult) and 0.67 (child) in the absence of site-specific data. The recommendation for the average adult consumption rate of drinking water is based on information cited in U.S. EPA (1997). For the child receptor, U.S. EPA (1997) provides recommended drinking water intake rates for various age groups in Table 3-30. The child default drinking water intake was derived by using a time-weighted average for the age groups 0 to 6 years of age. The following uncertainty is associated with this variable: The average consumption rate of drinking water is based on the average intake observed from five studies. The number of studies conduct may underestimate or underestimate CR_{dw}.
F_{dw}	Fraction of drinking water that is contaminated	unitless	**1.0** This variable is site-specific. U.S. EPA OSW, consistent with U.S. EPA (1994), recommends assuming 1.0 for the fraction of drinking water that is contaminated. The following uncertainty is associated with this variable: Some receptors may consume a fraction of their drinking water from sources unimpacted by facility emissions. Therefore, this assumption will likely overestimate F_{dw}.
BW	Body weight	kg	**15 or 70** This variable is site-specific. U.S. EPA OSW recommends using default values of 70 (adults) and 15 (children) in the absence of site-specific information. These default values are consistent with U.S. EPA (1991; 1994). Uncertainties associated with this variable include: These body weights represent the avearge weight of an adult and child. However, depending on the receptor, the body weights may be higher or lower. These default values may overestimate or underestimate actual body weights. However, the degree of under- or overestimation is not expected to be significant.

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REFERENCES AND DISCUSSION

U.S. EPA. 1991. *Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors.* Office of Solid Waste and Emergency Response. OSWER Directive 9285.6-03. Washington, D.C. March 21.

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This document is the source for the drinking water consumption rates.