

8. Body Weight

8.1 Introduction

Body weight is one of several physiological factors needed to calculate potential exposures. The average daily dose (ADD) is a dose that is typically normalized to the average body weight of the exposed population. If exposure occurs only during childhood years, the average child body weight during the exposure period should be used to estimate risk (U.S. EPA, 1989). Conversely, if adult exposures are being evaluated, an adult body weight value should be used. Chapter 8 of the *Exposure Factors Handbook* provides recommendations for body weight for the general U.S. population. These recommendations are highlighted here.

8.2 Recommended Exposure Factors

Data on body weight come from the U.S. EPA analysis of NHANES 1999-2006 data. The recommendations for body weight are summarized in Table 8-1. The recommended values represent mean body weights in kilograms for the age groups for children recommended by U.S. EPA in *Guidance for Monitoring and Assessing Childhood Exposures to Environmental Contaminants* (U.S. EPA, 2005) and for adults. If percentile data are needed, Tables 8-3 through 8-5 in the *Exposure Factors Handbook* can be used to select the appropriate data for percentiles or mean values. However, use of upper percentile body weight values is not routinely recommended for calculating ADDs because inclusion of an upper percentile value in the denominator of the ADD equation would be a non-conservative approach. The mean recommended value for adults (80 kg) is different from the 70 kg commonly assumed in U.S. EPA risk assessments. Assessors are encouraged to use values that most accurately reflect the exposed population. When using values other than 70 kg, however, exposure assessors should consider if the dose estimate will be used to estimate risk by combining it with a dose-response relationship that was derived assuming a body weight of 70 kg. If such an inconsistency exists, the assessor may need to adjust the dose-response relationship as described in the appendix to Chapter 1 of the *Exposure Factors Handbook*. Overall confidence in the body weight recommendations is high.



For more information about the key studies used to derive the recommended body weight values, refer to **Chapter 8 of the *Exposure Factors Handbook*** at <http://www.epa.gov/ncea/efh/pdfs/efh-chapter08.pdf>. Detailed information on the key body weight study is provided in Section 8.3 and relevant body weight studies are discussed in Section 8.4. Sections 8.5 and 8.6 present relevant studies on pregnant women and fetal weight.

Table 8-1. Recommended Values for Body Weight

Age Group	Mean ^a
	kg
Birth to <1 month	4.8
1 to <3 months	5.9
3 to <6 months	7.4
6 to <11 months	9.2
1 to <2 years	11.4
2 to <3 years	13.8
3 to <6 years	18.6
6 to <11 years	31.8
11 to <16 years	56.8
16 to <21 years	71.6
Adults	80.0

^a For multiple percentile values, see available Tables 8-3 through 8-5 in the *Exposure Factors Handbook*. Body weight data for males and females are presented separately in Tables 8-4 and 8-5.

Source: U.S. EPA analysis of NHANES 1999-2006 data.

