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11 INTAKE OF MEATS, DAIRY PRODUCTS AND FATS

11.1 INTRODUCTION

The American food supply is generally considered to be one of the safest in the world. Nevertheless, meats, dairy products, and fats may become contaminated with toxic chemicals by several pathways. These foods sources can become contaminated if animals are exposed to contaminated media (i.e., soil, water, or feed crops). To assess exposure through this pathway, information on meat, dairy, and fat ingestion rates are needed.

Children's exposure from contaminated meats, dairy products, and fats may differ from that of adults because of differences in the type and amounts of food eaten. Also, for many foods, the intake per unit body weight is greater for children than for adults. Common meats, dairy products, and fats eaten by children include non-fat milk solids, milk fat and solids, lean beef, and milk sugar (lactose) (Goldman, 1995).

A variety of terms may be used to define intake of meats, dairy products, and fats (e.g., consumer-only intake, per capita intake, total meat, dairy product, or fat intake, as-consumed intake, dry weight intake). As described in Chapter 9, Intake of Fruits and Vegetables, consumer-only intake is defined as the quantity of meats, dairy products, or fats consumed by children during the survey period averaged across only the children who consumed these food items during the survey period. Per capita intake rates are generated by averaging consumer-only intakes over the entire population of children. In general, per capita intake rates are appropriate for use in exposure assessment for which average dose estimates for children are of interest because they represent both children who ate the foods during the survey period and children who may eat the food items at some time, but did not consume them during the survey period. Per capita intake, therefore, represents an average across the entire population of interest, but does so at the expense of underestimating consumption for the subset of the population that consume the food in question. Total intake refers to the sum of all meats, diary products, or fats consumed in a day.

Intake rates may be expressed on the basis of the as-consumed weight (e.g., cooked or prepared) or on the uncooked or unprepared weight. As-consumed intake rates are based on the weight of the food in the form that it is consumed and should be used in assessments where the basis for the contaminant concentrations in foods is also indexed to the as-consumed weight. The food ingestion values provided in this chapter are expressed as as-consumed intake rates because this is the fashion in which data were reported by survey respondents. This is of importance because concentration data to be used in the dose equation are often measured in uncooked food samples. It should be recognized that cooking can either increase or decrease food weight. Similarly, cooking can increase the mass of contaminant in food (due to formation reactions, or absorption from cooking oils or water) or decrease the mass of contaminant in food (due to vaporization, fat loss or leaching). The combined effects of changes in weight and changes in contaminant mass can result in either an increase or decrease in contaminant concentration in cooked food. Therefore, if the as-consumed ingestion rate and the uncooked concentration are used in the dose equation, dose may be under-estimated or over-estimated. Ideally, after-cooking food concentrations should be combined with the as-consumed intake rates. In the absence of data, it is reasonable to assume that no change in contaminant concentration occurs after cooking. It is important for the assessor to be aware of these issues and choose intake rate data that best match the concentration data that are being used. For more information on cooking losses and conversions necessary to account for such losses, the reader is referred to Chapter 13 of this handbook.

Sometimes contaminant concentrations in food are reported on a dry weight basis. When these data are used in an exposure assessment, it is recommended that dry-weight intake rates also be used. Dry-weight food concentrations and intake rates are based on the weight of the food consumed after the moisture content has been removed. Similarly, when contaminant concentrations in food are reported on a lipid weight basis, lipid weight intake rates should be used. For information on converting the intake rates presented in this chapter to dry weight or lipid weight intake rates, the reader is referred to Sections 11.5 and 11.6 of this chapter.

The purpose of this chapter is to provide intake data for meats, diary products, and fats among children. The recommendations for ingestion rates of meats, dairy products, and fats are provided in the next section, along with a summary of the confidence ratings for these recommendations. The recommended values are

based on the key studies identified by U.S. EPA for this factor. Following the recommendations, the key studies on ingestion of meats, dairy products, and fats are summarized. Relevant data on ingestion of meats, dairy products, and fats are also provided. These studies are presented to provide the reader with added perspective on the current state-of-knowledge pertaining to ingestion of meats, dairy products, and fats among children.

11.2 RECOMMENDATIONS

Tables 11-1 presents a summary of the recommended values for per capita and consumers-only intake of meats, diary products, and fats, on an as-consumed basis. Confidence ratings for the meats, dairy products, and fat intake recommendations for general population children are provided in Table 11-2.

U.S. EPA analyses of data from the 1994-96 and 1998 Continuing Survey if Food Intake among Individuals (CSFII) were used in selecting recommended intake rates for general population children. The U.S. EPA analysis of meat and dairy products was conducted using age groups that differed slightly from U.S. EPA's *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants* (U.S. EPA, 2005). However, for the purposes of the recommendations presented here, data were placed in the standardized age categories closest to those used in the analysis. The U.S. EPA analysis of fat intake data from the CSFII used the age groups recommended by U.S. EPA (2005). The CSFII data on which the recommendations for meats, dairy products, and fats are based are short-term survey data and may not necessarily reflect the long-term distribution of average daily intake rates. However, for these broad categories of food (i.e., total meats and diary products), because they are eaten on a daily basis throughout the year with minimal seasonality, the short term distribution may be a reasonable approximation of the long-term distribution, although it will display somewhat increased variability. This implies that the upper percentiles shown here will tend to overestimate the corresponding percentiles of the true long-term distribution. It should be noted that because these recommendations are based on 1994-96 and 1998 CSFII data, they may not reflect the most recent changes that may have occurred in consumption patterns.

Table 11-1. Recommended Values for Intake of Meats, Dairy Products, and Fats, As Consumed

Age Group	Per Capita		Consumers Only		Multiple Percentiles	Source
	Mean	95th Percentile	Mean	95th Percentile		
	g/kg-day	g/kg-day	g/kg-day	g/kg-day		
Total Meats[a]						
Birth to 1 year	1.2	6.7	3.0	9.2	See Tables 11-3 and 11-4	U.S. EPA Analysis of CSFII, 1994-96 and 1998.
1 to <2 years	4.1	9.8	4.2	9.8		
2 to <3 years	4.1	9.8	4.2	9.8		
3 to <6 years	4.1	9.4	4.2	9.4		
6 to <11 years	2.9	6.5	2.9	6.5		
11 to <16 years	2.1	4.8	2.1	4.8		
16 to <21 years	2.1	4.8	2.1	4.8		
Total Dairy Products[a]						
Birth to 1 year	13	49	16	58	See Tables 11-3 and 11-4	U.S. EPA Analysis of CSFII, 1994-96 and 1998.
1 to <2 years	37	88	37	88		
2 to <3 years	37	88	37	88		
3 to <6 years	23	49	23	49		
6 to <11 years	14	32	14	32		
11 to <16 years	5.6	16	5.6	16		
16 to <21 years	5.6	16	5.6	16		
Individual Meat and Dairy Products - See Tables 11-5 and 11-6						
Total Fats						
Birth to <1 month	5.2	16	7.8	16	See Tables 11-20 and 11-24	U.S. EPA Analysis of CSFII, 1994-96 and 1998.
1 to <3 months	4.5	11	6.0	12		
3 to <6 months	4.1	8.2	4.4	8.3		
6 to <12 months	3.7	7.0	3.7	7.0		
1 to <2 years	4.0	7.1	4.0	7.1		
2 to <3 years	3.6	6.4	3.6	6.4		
3 to <6 years	3.4	5.8	3.4	5.8		
6 to <11 years	2.6	4.2	2.6	4.2		
11 to <16 years	1.6	3.0	1.6	3.0		
16 to <21 years	1.3	2.7	1.3	2.7		

[a] Analysis was conducted using slightly different age groups than those recommended in *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants* (U.S. EPA. 2005). Data were placed in the standardized age categories closest to those used in the analysis.

Table 11-2. Confidence in Recommendations for Intake of Meats, Diary Products, and Fats

General Assessment Factors	Rationale	Rating
Soundness		High
Adequacy of Approach	The survey methodology and data analysis was adequate. The survey sampled approximately 11,000 children. An analysis of primary data was conducted.	
Minimal (or Defined) Bias	No physical measurements were taken. The method relied on recent recall of meats and diary products eaten.	
Applicability and Utility		Medium
Exposure Factor of Interest	The key studies were directly relevant to meat, dairy, and fat intake.	
Representativeness	The data were demographically representative of the U.S. population (based on stratified random sample).	
Currency	Data were collected between 1994 and 1998.	
Data Collection Period	Data were collected for two non-consecutive days.	
Clarity and Completeness		High
Accessibility	The CSFII data are publicly available.	
Reproducibility	The methodology used was clearly described; enough information was included to reproduce the results.	
Quality Assurance	Quality assurance of the CSFII data was good; quality control of the secondary data analysis was not well described.	
Variability and Uncertainty		Medium
Variability in Population	Full distributions were provided for total meats, total diary products, and total fats. Means were provided for individuals meats and diary products.	
Uncertainty	Data collection was based on recall of consumption for a 2-day period; the accuracy of using these data to estimate long-term intake (especially at the upper percentiles) is uncertain. However, use of short-term data to estimate chronic ingestion can be assumed for broad categories of foods such as total meats, total diary products, and total fats. Uncertainty is likely to be greater for individual meats and diary products.	

Table 11-2. Confidence in Recommendations for Intake of Meats, Diary Products, and Fats (continued)

General Assessment Factors	Rationale	Rating
Evaluation and Review		Medium
Peer Review	The USDA CSFII survey received a high level of peer review. The U.S. EPA analysis of these data has not been peer reviewed outside the Agency.	
Number and Agreement of Studies	There was 1 key study for intake of meat and diary products and 1 key for fat intake. Both were based on the 1994-96, 1998 CSFII.	
Overall Rating		**High** confidence in the averages; **Low** confidence in the long-term upper percentiles

11.3 INTAKE STUDIES

The primary source of recent information on consumption rates of meat and diary products among children is the U.S. Department of Agriculture's (USDA) CSFII. Data from the 1994-96 CSFII and the 1998 Children's supplement to the 1994-96 CSFII have been used in various studies to generate children's consumer-only and per capita intake rates for both individual meats and diary products and total meats and diary products. The CSFII is a series of surveys designed to measure the kinds and amounts of foods eaten by Americans. The CSFII 1994-96 was conducted between January 1994 and January 1997 with a target population of non-institutionalized individuals in all 50 states and Washington, D.C. In each of the 3 survey years, data were collected for a nationally representative sample of individuals of all ages. The CSFII 1998 was conducted between December 1997 and December 1998 and surveyed children 9 years of age and younger. It used the same sample design as the CSFII 1994-96 and was intended to be merged with CSFII 1994-96 to increase the sample size for children. The merged surveys are designated as CSFII 1994-96, 1998. Additional information on these surveys can be obtained at http://www.ars.usda.gov/Services/docs.htm?docid=14531.

The CSFII 1994-96, 1998 collected dietary intake data through in-person interviews on 2 non-consecutive days. The data were based on 24-hour recall. A total of 21,662 individuals provided data for the first day; of those individuals, 20,607 provided data for a second day. Over 11,000 of the sample persons represented children up to 18 years of age. The 2-day response rate for the 1994-1996 CSFII was approximately 76 percent. The 2-day response rate for CSFII 1998 was 82 percent.

The CSFII 1994-96, 98 surveys were based on a complex multistage area probability sample design. The sampling frame was organized using 1990 U.S. population census estimates, and the stratification plan took into account geographic location, degree of urbanization, and socioeconomic characteristics. Several sets of sampling weights are available for use with the intake data. By using appropriate weights data for all fours years of the surveys can be combined. USDA recommends that all 4 years be combined in order to provide an adequate sample size for children.

11.3.1 Key Meat and Diary Intake Study

11.3.1.1 *U.S. EPA Analysis of CSFII 1994-96, 1998*

For many years, the U.S. EPA' Office of Pesticide Programs (OPP) has used food consumption data collected by the U.S. Department of Agriculture (USDA) for its dietary risk assessments. Most recently, OPP, in cooperation with USDA's Agricultural Research Service (ARS), used data from the 1994-96, 1998 CSFII to develop the Food Commodity Intake Database (FCID). CSFII data on the foods people reported eating were converted to the quantities of agricultural commodities eaten. "Agricultural commodity" is a term used by U.S. EPA to mean animal (or plant) parts consumed by humans as food; when such items are raw or unprocessed, they are referred to as "raw agricultural commodities." For example, a beef stew may contain the commodities beef, carrots, and potatoes. FCID contains approximately 553 unique commodity names and 8-digit codes. The FCID commodity names and codes were selected and defined by U.S. EPA and were based on the U.S. EPA Food Commodity Vocabulary (http://www.epa.gov/pesticides/foodfeed/).

The meats and diary items/groups selected for the U.S. EPA analysis included total meats and total diary products, and individual meats and diary such as beef, pork, poultry, and eggs. Appendix 11A presents the food codes and definitions used to determine the various meats and dairy products used in the analysis. Intake rates for these food items/groups represent intake of all forms of the product (e.g., both home produced and commercially produced). Children who provided data for two days of the survey were included in the intake estimates. Individuals who did not provide information on body weight or for whom identifying information was unavailable were excluded from the analysis. Two-day average intake rates were calculated for all individuals in the database for each of the food items/groups. These average daily intake rates were divided by each individual's reported body weight to generate intake rates in units of grams per kilogram of body weight per day (g/kg-day). The data were weighted according to the four-year, two-day sample weights provided in the 1994-96, 1998 CSFII to adjust the data for the sample population to reflect the national population.

Summary statistics were generated on both a per capita and a consumer only basis. For per capita intake, both users and non-users of the food item were

included in the analysis. Consumer only intake rates were calculated using data for only those individuals who ate the food item of interest during the survey period. Intake data from the CSFII are based on as-consumed (i.e., cooked or prepared) forms of the food items/groups. Summary statistics, including: number of observations, percentage of the population consuming the meat or dairy products being analyzed, mean intake rate, and standard error of the mean intake rate were calculated for total meats, total dairy products, and selected individual meats and dairy products. Percentiles of the intake rate distribution (i.e., 1st, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 99th, and 100th percentile were also provided for total meats and dairy products. Data were provided for the following age groups of children: birth to <1 year, 1 to <2 years, 3 to <5 years, 6 to <12 years, and 13 to <19 years. Because these data were developed for use in U.S. EPA's pesticide registration program, the age groups used are slightly different than those recommended in U.S. EPA's Guida*nce on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants* (U.S. EPA, 2005).

Tables 11-3 presents as-consumed per capita intake data for total meats and dairy products in g/kg-day; as-consumed consumer-only intake data for total meats and dairy products in g/kg-day are provided in Table 11-4. Table 11-5 provides per capita intake data for certain individual meats and dairy products and Table 11-6 provides consumer only intake data for these individual meats and dairy products.

It should be noted that the distribution of average daily intake rates generated using short-term data (e.g., 2-day) do not necessarily reflect the long-term distribution of average daily intake rates. The distributions generated from short-term and long-term data will differ to the extent that each individual's intake varies from day to day; the distributions will be similar to the extent that individuals' intakes are constant from day to day. However, for broad categories of foods (e.g., total meats and dairy products) that are eaten on a daily basis throughout the year, the short-term distribution may be a reasonable approximation of the true long-term distribution, although it will show somewhat more variability. In this chapter, distributions are provided only for broad categories of meats and dairy products (i.e., total meats and dairy products). Because of the increased variability of the short-term distribution, the short-term upper percentiles shown here may overestimate the corresponding percentiles of the long-term distribution. For individual foods, only the mean, standard error, and percent consuming are provided.

The strengths of U.S. EPA's analysis are that it provides distributions of intake rates for various age groups of children, normalized by body weight. The analysis uses the 1994-96, 1998 CSFII data set which was designed to be representative of the U.S. population. The data set includes four years of intake data combined, and is based on a two-day survey period. As discussed above, short-term dietary data may not accurately reflect long-term eating patterns and may under-represent infrequent consumers of a given food. This is particularly true for the tails (extremes) of the distribution of food intake. Also, the analysis was conducted using slightly different age groups that those recommended in U.S. EPA's *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants* (U.S. EPA, 2005). However, given the similarities in the age groups used, the data should provide suitable intake estimates for the age groups of interest**.**

11.3.2 Relevant Meat and Dairy Intake Studies

11.3.2.1 *USDA, 1999a - Food and Nutrient Intakes by Children 1994-96, 1998, Table Set 17*

USDA (1999a) calculated national probability estimates of food and nutrient intake by children based on all 4 years of the CSFII (1994-96 and 1998) for children age 9 years and under and on CSFII 1994-96 only for individuals age 10 years and over. Sample weights were used to adjust for non-response, to match the sample to the U.S. population in terms of demographic characteristics, and to equalize intakes over the 4 quarters of the year and the 7 days of the week. A total of 503 breast-fed children were excluded from the estimates, but both consumers and non-consumers were included in the analysis.

USDA (1999a) provided data on the mean per capita quantities (grams) of various food products/groups consumed per individual for one day, and the percent of individuals consuming those foods in one day of the survey. Tables 11-7 and 11-8 present data on the mean quantities (grams) of meat and eggs consumed per individual for one day, and the percentage of survey individuals consuming meats and eggs on that survey day. Tables 11-9 and 11-10 present similar data for dairy products. Data on mean intakes or mean percentages are based on respondents' day-1 intakes.

The advantage of the USDA (1999a) study is that it uses the 1994-96, 98 CSFII data set, which includes four years of intake data, combined, and includes the supplemental data on children. These data are expected to be generally representative of the U.S. population and they include data on a wide variety of meats and diary products. The data set is one of a series of USDA data sets that are publicly available. One limitation of this data set is that it is based on one-day, and short-term dietary data may not accurately reflect long-term eating patterns. Other limitations of this study are that it only provides mean values of food intake rates, consumption is not normalized by body weight, and presentation of results is not consistent with U.S. EPA's recommended age groups.

11.3.2.2 *Smiciklas-Wright et al., 2002 - Foods Commonly Eaten in the United States: Quantities Consumed per Eating Occasion and in a Day, 1994-1996*

Using data gathered in the 1994-96 USDA CSFII, Smiciklas-Wright et al. (2002) calculated distributions for the quantities of meat, poultry, and dairy products consumed per eating occasion by members of the U.S. population (i.e., serving sizes). The estimates of serving size are based on data obtained from 14,262 respondents, ages 2 and above, who provided 2 days of dietary intake information. A total of 4,939 of these respondents were children, ages 2 to 19 years of age. Only dietary intake data from users of the specified food were used in the analysis (i.e., consumers only data).

Table 11-11 presents serving size data for meats and dairy products. These data are presented on an as-consumed basis (grams) and represent the quantity of meats and dairy products consumed per eating occasion. These estimates may be useful for assessing acute exposures to contaminants in specific foods, or other assessments where the amount consumed per eating occasion is necessary. Only the mean and standard deviation serving size data and percent of the population consuming the food during the 2-day survey period are presented in this handbook. Percentiles of serving sizes of the foods consumed by these age groups of the U.S. population can be found in Smiciklas-Wright et al. (2002).

The advantages of using these data are that they were derived from the USDA CSFII and are representative of the U.S. population. The analysis conducted by Smiciklas-Wright et al. (2002) accounted for individual foods consumed as ingredients of mixed foods. Mixed foods were disaggregated via recipe files so that the individual ingredients could be grouped together with similar foods that were reported separately. Thus, weights of foods consumed as ingredients were combined with weights of foods reported separately to provide a more thorough representation of consumption. However, it should be noted that since the recipes for the mixed foods consumed were not provided by the respondents, standard recipes were used. As a result, the estimates of quantity consumed for some food types are based on assumptions about the types and quantities of ingredients consumed as part of mixed foods. This study used data from the 1994 to 1996 CSFII; data from the 1998 children's supplement were not included.

11.3.2.3 *Fox et al., 2004 - Feeding Infants and Toddlers Study: What Foods Are Infants and Toddlers Eating*

Fox et al. (2004) used data from the Feeding Infants and Toddlers study (FITS) to assess food consumption patterns in infants and toddlers. The FITS was sponsored by Gerber Products Company and was conducted to obtain current information on food and nutrient intakes of children, ages 4 to 24 months old, in the 50 states and the District of Columbia. The FITS is described in detail in Devaney et al. (2004). FITS was based on a random sample of 3,022 infants and toddlers for which dietary intake data were collected by telephone from their parents or caregivers between March and July 2002. An initial recruitment and household interview was conducted, followed by an interview to obtain information on intake based on 24-hour recall. The interview also addressed growth, development and feeding patterns. A second dietary recall interview was conducted for a subset of 703 randomly selected respondents. The study over-sampled children in the 4 to 6 and 9 to 11 months age groups; sample weights were adjusted for non-response, over-sampling, and under-coverage of some subgroups. The response rate for the FITS was 73 percent for the recruitment interview. Of the recruited households, there was a response rate of 94 percent for the dietary recall interviews (Devaney et al., 2004). The characteristics of the FITS study population is shown in Table 11-12.

Fox et al. (2004) analyzed the first set of 24-hour recall data collected from all study participants. For this analysis, children were grouped into six age

categories: 4 to 6 months, 7 to 8 months, 9 to 11 months, 12 to 14 months, 15 to 18 months, and 19 to 24 months. Table 11-13 provides the percentage of infants and toddlers consuming milk, meats or other protein sources at least once in a day. The percentage of children consuming any type of meat or protein source ranged from 14.2 percent for 4 to 6 month olds to 97.2 percent for 19 to 24 month olds (Table 11-13).

The advantages of this study were that the study population represented the U.S. population and the sample size was large. One limitation of the analysis done by Fox et al. (2004) was that only frequency data were provided; no information on actual intake rates was included. In addition, Devaney et al. (2004) noted several limitations associated with the FITS data. For the FITS, a commercial list of infants and toddlers was used to obtain the sample used in the study. Since many of the households could not be located and did not have children in the target population, a lower response rate than would have occurred in a true national sample was obtained (Devaney et al., 2004). In addition, the sample was likely from a higher socioeconomic status when compared with all U.S. infants in this age group (4 to 24 months old) and the use of a telephone survey may have omitted lower-income households without telephones (Devaney et al., 2004).

11.3.2.4 *Ponza et al., 2004 - Nutrient Food Intakes and Food Choices of Infants and Toddlers Participating in WIC*

Ponza et al. (2004) conducted a study using selected data from FITS to assess feeding patterns, food choices and nutrient intake of infants and toddlers participating in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Ponza et al. (2004) evaluated FITS data for the following age groups: 4 to 6 months (N = 862), 7 to 11 months(N = 1159) and 12 to 24 months (N= 996). The total sample size described by WIC participant and non-participant is shown in Table 11-14.

The foods consumed were analyzed by tabulating the percentage of infants who consumed specific foods/food groups per day (Ponza et al., 2004). Weighted data were used in all of the analyses used in the study (Ponza et al., 2004). Table 11-14 presents the demographic data for WIC participants and non-participants. Table 11-15 provides the food choices for infants and toddlers. In general, there was little difference in food choices among WIC participants and non-participants, except for consumption of yogurt by infants 7 to 11 months of age and toddlers 12 to 24 months of age (Table 11-15). Non-participants, 7 to 24 months of age, were more likely to eat yogurt than WIC participants (Ponza et al., 2004).

An advantage of this study is that it had a relatively the large sample size and was representative of the U.S. general population of infants and children. A limitation of the study is that intake values for foods were not provided. Other limitations are one associated with the FITS data and are described previously in Section 11.3.2.3.

11.3.2.5 *Mennella et al., 2006 - Feeding Infants and Toddlers Study: The Types of Foods Fed to Hispanic Infants and Toddlers*

Mennella et al. (2006) investigated the types of food and beverages consumed by Hispanic infants and toddlers in comparison to the non-Hispanic infants and toddlers in the United States. The FITS 2002 data for children between 4 and 24 months old were used for the study. The data represent a random sample of 371 Hispanic and 2,367 non-Hispanic infants and toddlers (Menella et al., 2006). Menella et al. (2006) grouped the infants as follows: 4 to 5 months (N = 84 Hispanic; 538 non-Hispanic), 6 to 11 months (N = 163 Hispanic and 1,228 non-Hispanic), and 12 to 24 months (N = 124 Hispanic and 871 non-Hispanic) of age.

Table 11-16 provides the percentages of Hispanic and non-Hispanic infants and toddlers consuming milk, meats or other protein sources on a given day. In most instances the percentages consuming the different types of meats and protein sources were similar (Mennella et al., 2006).

The advantage of the study is that it provides information on food preferences for Hispanic and non-Hispanic infants and toddlers. A limitation is that the study did not provide food intake data, but provided frequency of use data instead. Other limitations are those noted previously in Section 11.3.2.3 for the FITS data.

11.3.2.6 ***Fox et al., 2006 - Average Portion of Foods Commonly Eaten by Infants and Toddlers in the United States***

Fox et al. (2006) estimated average portion sizes consumed per eating occasion by children 4 to 24 months of age who participated in the FITS. The FITS is a cross-sectional study designed to collect and analyze data on feeding practices, food consumption, and usual nutrient intake of U.S. infants and toddlers and is described in Section 11.3.2.3 this chapter. It included a stratified random sample of 3,022 children between 4 and 24 months of age.

Using the 24-hour recall data, Fox et al. (2006) derived average portion sizes for six major food groups, including meats and other protein sources. Average portion sizes for select individual foods within these major groups were also estimated. For this analysis, children were grouped into six age categories: 4 to 5 months, 6 to 8 months, 9 to 11 months, 12 to 14 months, 15 to 18 months, and 19 to 24 months. Tables 11-17 and 11-18 present the average portion sizes of meats and dairy products for infants and toddlers, respectively.

11.4 FAT INTAKE

11.4.1 Key Fat Intake Study

11.4.1.1 ***U.S. EPA, 2007 - Analysis of Fat Intake Based on the U.S. Department of Agriculture's 1994–96, 1998 Continuing Survey of Food Intakes by Individuals (CSFII)***

U.S. EPA conducted an analysis to evaluate the dietary intake of fats by individuals in the United States using data from the USDA's 1994–1996, 1998 CSFII (USDA, 2000). Intakes of CSFII foods were converted to U.S. EPA food commodity codes using data provided in U.S. EPA's FCID (U.S. EPA, 2000). The FCID contains a "translation file" that was used to break down the USDA CSFII food codes into 548 U.S. EPA commodity codes. The method used to translate USDA food codes into U.S. EPA commodity codes is discussed in detail in U.S. EPA (2000).

Each of the 548 U.S. EPA commodity codes was assigned a value between 0 and 1 that indicated the mass fraction of fat in that food item. For many sources of fat, a commodity code existed solely for the nutrient fat portion of the food. For example, beef is represented in the FCID database by ten different commodity codes; several of these codes specifically exclude fat, and one code is described as "nutrient fat only." In these cases, the fat fraction could be expressed as 0 or 1, as appropriate. Most animal food products and food oils were broken down in this way. The fat contents of other foods in the U.S. EPA commodity code list were determined using the USDA Nutrient Database for Standard Reference, Release 13 (USDA, 1999b). For each food item in the U.S. EPA code list, the best available match in the USDA Nutrient database was used. If multiple values were available for different varieties of the same food item (e.g., green, white and red grapes), a mean value was calculated. If multiple values were available for different cooking methods (i.e, fried vs. dry cooked), the method least likely to introduce other substances, such as oil or butter, was preferred. In some cases, not all of the items that fall under a given food commodity code could be assigned a fat content. For example, the food commodity code list identified "turkey, meat byproducts" as including gizzard, heart, neck and tail. Fat contents could be determined only for the gizzard and heart. Because the relative amounts of the different items in the food commodity code was unknown, the mean fat content of these two items was assumed to be the best approximation of the fat content for the food code as a whole.

The analysis was based on approximately 11,000 CSFII child respondents who had provided body weights and who had completed both days of the two-day survey process. These individuals were grouped according to various age categories. The mean, standard error, and a range of percentiles of fat intake were calculated for 12 food categories (i.e., all fats, animal fats, meat and meat products, beef, pork, poultry, organ meats, milk and dairy products, fish, oils, and nuts/seeds/beans/legumes/tubers) and 98 demographic cohorts. Fat intake was calculated as a two-day average consumption across both survey days in units of grams per day and grams per kilogram of body weight per day for the whole survey population and for consumers only. A secondary objective of the study was to evaluate fat consumption patterns of individuals who consume high levels of animal fats. The entire data analysis was repeated for a subset of individuals who were identified as high consumers of animal fats. The selection of the high-consumption group was done for each age category individually, rather than on the whole population, because fat intake on a per-body-weight basis is heavily skewed towards young children, and an analysis across the entire American population was desired. For infants, the "less

than one year old" group was used instead of the smaller infant groups (<1 month, 1 to <3 months, etc.). Within each of the age categories, individuals that ranked at or above the 90th percentile of consumption of all animal fats on a per-unit body weight basis were identified. Because of the sample weighting factors, the high consumer group was not necessarily 10 percent of each age group. The selected individuals made up a survey population of 1,175 children. Fat intake of individuals in this group was calculated in g/day and g/kg-day for the whole population (i.e., per capita) and for consumers only.

The analysis presented in U.S. EPA (2007) was conducted before U.S. EPA published the guidance entitled *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants* (U.S. EPA, 2005). Therefore, the age groups used for children in U.S. EPA (2007) were not entirely consistent with the age groups recommended in the 2005 guidance. A re-analysis of the some of the data was conducted for this chapter to conform with U.S. EPA's recommended age groups for children. The results of this re-analysis are presented in Tables 11-19 through 11-26 for individuals less than 21 years of age. Only intake rates of all fats are provided in these tables; the reader is referred to U.S. EPA (2007) for fat intake rates from individual food sources. Tables 11-19 and 11-20 present intake rates of all fats for the whole population (i.e., per capita) in g/day and g/kg-day, respectively. Table 11-21 and 11-22 present intake rates of all fats for consumers only in g/day and g/kg-day, respectively. Fat intake rates of all fats for the top decile of animal fat consumers from the consumers only group are presented in Table 11-23 in g/day and in Table 11-24 in g/kg-day (per capita total fat intake rates for the top decile of animal fat consumers are not provided because they are the same as those for consumers only).

11.4.2 Relevant Fat Intake Studies

11.4.2.1 *Cresanta et al., 1988; Nicklas et al., 1993; and Frank et al., 1986 - Bogalusa Heart Study*

Cresanta et al. (1988), Nicklas et al. (1993), and Frank et al. (1986) analyzed dietary fat intake data as part of the Bogalusa heart study. The Bogalusa study, an epidemiologic investigation of cardiovascular risk-factor variables and environmental determinants, collected dietary data on subjects residing in Bogalusa, LA, beginning in 1973. Among other research, the study collected fat intake data for children, adolescents, and young adults. Researchers examined various cohorts of subjects, including (1) six cohorts of 10-year olds, (2) two cohorts of 13-year olds, (3) one cohort of subjects from 6 months to 4 years of age, and (4) one cohort of subjects from 10 to 17 years of age (Nicklas, 1995). To collect the data, interviewers used the 24-hour dietary recall method. According to Nicklas (1995), "the diets of children in the Bogalusa study are similar to those reported in national studies of children." Thus, these data are useful in evaluating the variability of fat intake among the general population. Data for 6-month old to 17-year old individuals collected during 1973 to 1982 are presented in Tables 11-25 and 11-26 (Frank et al., 1986). Data are presented for total fats, animal fats, vegetable fats, and fish fats in units of g/day (Table 11-25) and g/kg/day (Table 11-26).

11.4.2.2 *CDC, 1994 - Dietary Fat and Total Food-energy Intake: Third National Health and Nutrition Examination Survey, Phase 1, 1988-91*

The Centers for Disease Control and Prevention (CDC, 1994) used data from NHANES III to calculate daily total food energy intake (TFEI), total dietary fat intake, and saturated fat intake for the U.S. population during 1988 to 1991. The sample population comprised 20,277 individuals ages 2 months and above, of which 14,801 respondents (73 percent response rate) provided dietary information based on a 24-hour recall. Of these, 6,870 were children between the ages of 2 months and 19 years. TFEI was defined as "all nutrients (i.e., protein, fat, carbohydrate, and alcohol) derived from consumption of foods and beverages (excluding plain drinking water) measured in kilocalories (kcal)." Total dietary fat intake was defined as "all fat (i.e., saturated and unsaturated) derived from consumption of foods and beverages measured in grams" (CDC, 1994).

The authors estimated and provided data on the mean daily TFEI and the mean percentages of TFEI from total dietary fat grouped by age and gender. The overall mean daily TFEI for the total population was 2,095 kcal, of which 34 percent (712 kcal or 82 g) was from total dietary fat. Based on this information, the mean daily fat intake was calculated for the various age groups and genders (see Appendix 11B for detailed calculation). Table 11-27 presents the grams of fat per day obtained from the daily consumption of foods and

beverages grouped by age and gender for the U.S. population, based on this calculation.

11.5 CONVERSION BETWEEN WET AND DRY WEIGHT INTAKE RATES

The intake rates presented in this chapter are reported in units of wet weight (i.e., as-consumed or uncooked weight of meats and dairy products consumed per day or per eating occasion). However, data on the concentration of contaminants in meats and dairy products may be reported in units of either wet or dry weight.(e.g., mg contaminant per gram-dry-weight of meats and dairy products.) It is essential that exposure assessors be aware of this difference so that they may ensure consistency between the units used for intake rates and those used for concentration data (i.e., if the contaminant concentration is measured in dry weight of meats and dairy products, then the dry weight units should be used for their intake values).

If necessary, wet weight (e.g., as consumed) intake rates may be converted to dry weight intake rates using the moisture content percentages presented in Table 11-28 and the following equation:

$$IR_{dw} = IR_{ww}\left[\frac{100-W}{100}\right] \qquad \text{(Eqn. 11-1)}$$

where:

IR_{dw} = dry weight intake rate;
IR_{ww} = wet weight intake rate; and
W = percent water content

Alternatively, dry weight residue levels in meat and diary products may be converted to wet weight residue levels for use with wet weight (e.g., as-consumed) intake rates as follows:

$$C_{ww} = C_{dw}\left[\frac{100-W}{100}\right] \qquad \text{(Eqn. 11-2)}$$

where:

C_{ww} = wet weight intake rate;
C_{dw} = dry weight intake rate; and
W = percent water content.

The moisture content data presented in Table 11-28 are for selected meats and dairy products taken from USDA (2007).

11.6 CONVERSION BETWEEN WET WEIGHT AND LIPID WEIGHT INTAKE RATES

In some cases, the residue levels of contaminants in meat and dairy products may be reported as the concentration of contaminant per gram of fat. This may be particularly true for lipophilic compounds. When using these residue levels, the assessor should ensure consistency in the exposure assessment calculations by using consumption rates that are based on the amount of lipids consumed for the meat or dairy product of interest.

If necessary, wet weight (e.g., as-consumed) intake rates may be converted to lipid weight intake rates using the fat content percentages presented in Table 11-28 and the following equation:

$$IR_{lw} = IR_{ww}\left[\frac{L}{100}\right] \qquad \text{(Eqn. 11-3)}$$

where:

IR_{lw} = lipid weight intake rate;
IR_{ww} = wet weight intake rate; and
L = percent lipid (fat) content.

Alternately, wet weight residue levels in meat and dairy products may be estimated by multiplying the levels based on fat by the fraction of fat per product as follows:

$$C_{ww} = C_{lw}\left[\frac{L}{100}\right] \qquad \text{(Eqn. 11-4)}$$

where:

C_{ww} = wet weight intake rate;
C_{lw} = lipid weight intake rate; and
L = percent lipid (fat) content.

The resulting residue levels may then be used in conjunction with wet weight (e.g., as-consumed) consumption rates. The total fat content data presented in Table 11-28 are for selected meat and dairy products taken from USDA, 2007.

11.7 REFERENCES FOR CHAPTER 11

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Table 11-3. Per Capita Intake of Total Meat and Dairy Products (g/kg-day as consumed)

Age Group	N	Percent Consuming	Mean	SE	Percentiles									
					1st	5th	10th	25th	50th	75th	90th	95th	99th	100th
Total Meat														
Birth to 1 year	1,486	40.0	1.2	0.1	0.0	0.0	0.0	0.0	0.0	1.6	4.2	6.7	10.7	29.6
1 to 2 years	2,096	97.3	4.1	0.1	0.0	0.2	0.8	1.9	3.6	5.7	8.0	9.8	14.1	20.6
3 to 5 years	4,391	98.8	4.1	0.05	0.0	0.6	1.2	2.2	3.6	5.4	7.7	9.4	12.7	23.4
6 to 12 years	2,089	98.7	2.9	0.05	0.0	0.4	0.8	1.5	2.5	3.8	5.4	6.5	9.6	18.0
13 to 19 years	1,222	98.8	2.1	0.05	0.0	0.2	0.5	1.0	1.9	2.7	3.8	4.8	7.1	30.3
Total Dairy														
Birth to 1 year	1,486	79.5	12.6	0.9	0.0	0.0	0.0	1.0	8.0	14.1	24.1	48.7	127	186
1 to 2 years	2,096	99.8	36.7	0.7	0.4	3.9	7.7	17.4	31.3	49.8	72.1	88.3	126	223
3 to 5 years	4,391	100.0	23.3	0.3	1.1	4.2	7.0	13.0	20.8	30.9	42.0	49.4	67.7	198
6 to 12 years	2,089	100.0	13.6	0.4	0.3	1.8	3.5	6.7	11.7	18.5	26.0	31.5	42.7	80.6
13 to 19 years	1,222	99.8	5.6	0.2	0.01	0.2	0.5	1.5	4.2	8.1	12.5	15.5	25.4	32.7

N = Sample size.
SE = Standard error.

Source: Based on unpublished U.S. EPA analysis of 1994-96, 1998 CSFII.

Table 11-4. Consumer Only Intake of Total Meat and Dairy Products (g/(kg-day as consumed)

Age Group	N	Mean	SE	Percentiles									
				1st	5th	10th	25th	50th	75th	90th	95th	99th	100th
Total Meat													
Birth to 1 year	575	3.0	0.2	0.01	0.1	0.3	1.0	2.2	4.2	7.4	9.2	12.9	29.6
1 to 2 years	2,044	4.2	0.1	0.04	0.6	1.0	2.1	3.6	5.7	8.1	9.8	14.1	20.6
3 to 5 years	4,334	4.2	0.1	0.04	0.8	1.2	2.2	3.6	5.5	7.7	9.4	12.7	23.4
6 to 12 years	2,065	2.9	0.1	0.1	0.5	0.9	1.5	2.5	3.9	5.4	6.5	9.6	18.0
13 to 19 years	1,208	2.1	0.1	0.02	0.3	0.6	1.1	1.9	2.8	3.8	4.8	7.1	30.3
Total Dairy													
Birth to 1 year	1,192	15.9	1.0	0.03	0.8	1.9	5.8	10.2	16.0	27.7	57.5	141.8	185.6
1 to 2 years	2,093	36.8	0.7	0.4	4.2	7.8	17.4	31.3	49.8	72.1	88.3	126.2	223.2
3 to 5 years	4,390	23.3	0.3	1.1	4.2	7.0	13.0	20.8	30.9	42.0	49.4	67.7	198.4
6 to 12 years	2,089	13.6	0.4	0.3	1.8	3.5	6.7	11.7	18.5	26.0	31.5	42.7	80.6
13 to 19 years	1,221	5.6	0.2	0.01	0.3	0.5	1.5	4.2	8.1	12.5	15.5	25.4	32.7

N = Sample size.
SE = Standard error.

Source: Based on unpublished U.S. EPA analysis of 1994-96, 1998 CSFII.

Table 11-5. Per Capita Intake of Individual Meats and Dairy Products (g/kg-day as consumed)

Age Group	N	Beef			Pork			Poultry			Eggs		
		Percent Consuming	Mean	SE	Percent Consuming	Mean	SE	Percent Consuming	Mean	SE	Percent Consuming	Mean	SE
Birth to 1 year	1,486	25.3	0.41	0.04	17.7	0.15	0.02	30.1	0.66	0.05	27.9	0.30	0.04
1 to 2 years	2,096	85.5	1.7	0.06	69.7	0.72	0.03	73.7	1.7	0.05	92.3	1.3	0.04
3 to 5 years	4,391	90.8	1.8	0.04	79.8	0.84	0.02	73.0	1.5	0.03	95.1	0.91	0.03
6 to 12 years	2,089	92.7	1.3	0.04	82.4	0.59	0.03	67.1	0.93	0.03	95.8	0.51	0.02
13 to 19 years	1,222	91.1	1.0	0.05	81.5	0.40	0.03	65.5	0.68	0.03	95.4	0.33	0.02

N = Sample size.
SE = Standard error.

Source: Based on unpublished U.S. EPA analysis of 1994-96, 1998 CSFII.

Table 11-6. Consumer Only Intake of Individual Meats and Dairy Products (g/kg-day as consumed)

Age Group	N	Beef		N	Pork		N	Poultry		N	Eggs	
		Mean	SE		Mean	SE		Mean	SE		Mean	SE
Birth to 1 year	361	1.6	0.2	248	0.83	0.08	434	2.2	0.1	402	1.1	0.1
1 to 2 years	1,795	2.0	0.06	1,488	1.0	0.04	1,552	2.2	0.06	1,936	1.4	0.04
3 to 5 years	3,964	1.9	0.04	3,491	1.1	0.03	3,210	2.0	0.04	4,171	0.96	0.03
6 to 12 years	1,932	1.4	0.04	1,731	0.72	0.03	1,421	1.4	0.04	2,001	0.53	0.02
13 to 19 years	1,118	1.1	0.05	1,002	0.50	0.03	808	1.0	0.04	1,167	0.34	0.02

N = Sample size.
SE = Standard error.

Source: Based on unpublished U.S. EPA analysis of 1994-96, 1998 CSFII.

Table 11-7. Mean Quantities of Meat and Eggs consumed Daily by Sex and Age, Per Capita (g/day)

Age Group	Sample Size	Total	Beef	Pork	Lamb, veal, game	Organ meats	Frankfurters, sausages, luncheon meats	Poultry		Eggs	Mixtures, mainly meat/ poultry/ fish
								Total	Chicken		
Males and Females											
Under 1 year	1,126	24	1[a]	-[a,b]	-[a,b]	-[a,b]	2	3	2	3	16
1 year	1,016	80	5	2	-[a,b]	-[a,b]	13	12	12	13	43
2 years	1,102	94	7	6	-[a,b]	-[a,b]	18	17	16	18	41
1 to 2 years	2,118	87	6	4	-[a,b]	-[a,b]	15	15	14	16	42
3 years	1,831	101	8	6	-[a,b]	-[a,b]	19	19	18	13	43
4 years	1,859	115	10	6	-[a,b]	-[a,b]	22	20	19	13	49
5 years	884	121	14	6	-[a,b]	-[a,b]	22	22	19	13	51
3 to 5 years	4,574	112	11	6	-[b]	-[a,b]	21	21	19	13	47
5 years and under	7,818	93	8	5	-[b]	-[a,b]	17	16	15	13	42
Males											
6 to 9 years	787	151	18	7	-[a,b]	-[a,b]	24	23	21	11	71
6 to 11 years	1,031	154	19	7	-[a,b]	-[a,b]	24	22	20	12	72
12 to 19 years	737	250	30	12	1[a]	0	28	31	26	22	134
Females											
6 to 9 years	704	121	17	4	-[a,b]	-[a,b]	18	19	16	10	55
6 to 11 years	969	130	18	5	-[a,b]	-[a,b]	19	20	17	11	60
12 to 19 years	732	158	21	5	-[a,b]	-[a,b]	15	21	19	13	85
Males and Females											
9 years and under	9,309	110	12	5	-[b]	-[a,b]	19	18	17	12	50
19 years and under	11,287	152	18	7	-[a,b]	-[a,b]	20	22	19	14	76

[a] Estimate is not statistically reliable due to small sample size reporting intake.
[b] Value less than 0.5, but greater than 0.
Note: Consumption amounts shown are representative of the first day of each participant's survey response.

Source: USDA, 1999a.

Table 11-8. Percentage of Individuals Consuming Meats and Eggs, by Sex and Age (%)

Age Group	Sample Size	Total	Beef	Pork	Lamb, veal, game	Organ meats	Frankfurters, sausages, luncheon meats	Poultry		Eggs	Mixtures, mainly meat/ poultry/ fish
								Total	Chicken		
Males and Females											
Under 1 year	1,126	26.0	2.1	1.1 [a]	0.2 [a]	0.2 [a]	6.1	6.3	5.0	6.7	13.7
1 year	1,016	77.4	11.9	7.3	0.8 [a]	0.2 [a]	26.3	24.0	23.1	22.8	32.2
2 years	1,102	85.2	16.2	14.9	0.8 [a]	0.2 [a]	33.2	27.6	25.6	27.3	31.4
1 to 2 years	2,118	81.4	14.1	11.2	0.8 [a]	0.2 [a]	29.9	25.8	24.4	25.1	31.8
3 years	1,831	86.2	13.8	13.3	0.5 [a]	[a,b]	36.4	28.3	26.0	19.8	29.2
4 years	1,859	86.2	16.1	13.8	0.5 [a]	0.2 [a]	37.0	27.4	25.1	16.9	30.5
5 years	884	87.1	18.2	13.2	0.6 [a]	0.2 [a]	35.1	27.7	24.8	16.4	30.8
3 to 5 years	4,574	86.5	16.0	13.4	0.5	0.2 [a]	36.1	27.8	25.3	17.7	30.2
5 years and under	7,818	77.5	13.7	11.2	0.6	0.2 [a]	30.4	24.5	22.6	18.9	28.8
Males											
6 to 9 years	787	87.4	20.1	11.9	0.4 [a]	0.1[a]	37.4	24.8	22.3	15.1	36.2
6 to 11 years	1,031	87.8	22.0	12.2	0.4 [a]	0.2[a]	36.2	22.9	20.5	15.6	35.7
12 to 19 years	737	86.8	24.2	15.8	0.6 [a]	0.0	31.8	20.6	17.6	17.0	38.3
Females											
6 to 9 years	704	84.6	19.4	9.2	0.4 [a]	0.2 [a]	33.5	23.1	20.2	13.4	32.4
6 to 11 years	969	86.5	20.2	10.0	0.4 [a]	0.1 [a]	33.1	22.9	19.8	13.3	32.8
12 to 19 years	732	80.1	22.0	11.2	0.1 [a]	0.1 [a]	24.6	21.6	18.9	15.0	34.0
Males and Females											
9 years and under	9,309	80.9	16.1	10.9	0.5	0.2 [a]	24.3	24.3	22.0	17.1	31.0
19 years and under	11,287	82.8	19.6	12.1	0.4	0.1 [a]	22.7	22.7	20.1	16.4	33.3

[a] Estimate is not statistically reliable due to small sample size reporting intake.

Note: Percentages shown are representative of the first day of each participant's survey response.

Source: USDA, 1999a.

Table 11-9. Mean Quantities of Dairy Products Consumed Daily by Sex and Age, Per Capita (g/day)

Age Group	Sample Size	Total Milk and Milk Products	Milk, Milk Drinks, Yogurt						Milk Desserts	Cheese
			Total	Fluid Milk				Yogurt		
				Total	Whole	Lowfat	Skim			
Males and Females										
Under 1 year	1,126	762	757	61	49	11	[a,b]	4	3	1
1 year	1,016	546	526	475	347	115	5[a]	14	11	9
2 years	1,102	405	377	344	181	141	17	10	16	11
1 to 2 years	2,118	474	450	408	262	128	11	12	14	10
3 years	1,831	419	384	347	166	150	26	10	22	12
4 years	1,859	407	369	328	147	149	27	10	23	14
5 years	884	417	376	330	137	159	25	9	25	14
3 to 5 years	4,574	414	376	335	150	153	26	10	23	13
5 years and under	7,818	477	447	327	177	127	18	10	18	11
Males										
6 to 9 years	787	450	405	343	127	176	29	6	31	13
6 to 11 years	1,031	450	402	335	121	172	33	6	35	12
12 to 19 years	737	409	358	303	99	158	40	**3[a]**	29	19
Females										
6 to 9 years	704	380	337	288	105	146	26	4	29	13
6 to 11 years	969	382	336	283	108	136	29	4	30	14
12 to 19 years	732	269	220	190	66	92	30	**4[a]**	29	14
Males and Females										
9 years and under	9,309	453	417	323	153	141	22	8	23	12
19 years and under	11,287	405	362	291	121	135	29	6	27	14

[a] Estimate is not statistically reliable due to small sample size reporting intake.
[b] Value less than 0.5, but greater than 0.
Note: Consumption amounts shown are representative of the first day of each participant's survey response.

Source: USDA, 1999a.

Table 11-10. Percentage of Individuals Consuming Dairy Products, by Sex and Age (%)

Age Group	Sample Size	Total Milk and Milk Products	Milk, milk drinks, yogurt						Milk Desserts	Cheese
			Total	Fluid Milk				Yogurt		
				Total	Whole	Lowfat	Skim			
Males and Females										
Under 1 year	1,126	85.4	84.6	11.1	8.3	2.4	0.2[a]	3.1	4.5	6.0
1 year	1,016	95.3	92.7	87.7	61.7	26.5	1.5[a]	10.0	13.9	29.7
2 years	1,102	91.6	87.3	84.3	44.8	36.3	5.2	6.8	17.5	32.6
1 to 2 years	2,118	93.4	90.0	86.0	53.0	31.5	3.4	8.4	15.8	31.2
3 years	1,831	94.3	88.3	84.6	42.5	39.5	6.8	7.3	21.4	37.0
4 years	1,859	93.2	87.8	85.0	41.3	40.4	7.7	5.8	21.7	36.9
5 years	884	93.1	86.4	81.2	38.1	41.7	6.5	5.5	21.4	34.9
3 to 5 years	4,574	93.5	87.5	83.6	40.6	40.6	7.0	6.2	21.5	36.3
5 years and under	7,818	92.5	88.0	75.7	41.0	32.9	4.9	6.6	17.5	30.9
Males										
6 to 9 years	787	93.2	85.5	80.7	32.4	44.3	8.6	3.8	24.0	34.6
6 to 11 years	1,031	92.3	84.6	79.0	30.8	43.1	9.5	3.7	25.0	32.3
12 to 19 years	737	81.3	65.8	59.6	22.6	30.7	7.0	1.7[a]	13.6	37.1
Females										
6 to 9 years	704	90.2	82.5	77.5	31.5	40.8	8.1	2.9	24.1	30.9
6 to 11 years	969	90.2	81.5	76.0	33.2	37.8	8.4	3.0	22.4	31.9
12 to 19 years	732	75.4	54.0	49.7	17.5	23.9	9.5	2.2[a]	17.1	36.1
Males and Females										
9 years and under	9,309	92.2	86.4	77.1	37.4	36.8	6.3	5.3	20.1	31.7
19 years and under	11,287	86.7	75.6	68.1	30.1	33.1	7.5	3.8	18.6	33.5

[a] Estimate is not statistically reliable due to small sample size reporting intake.

Note: Percentages shown are representative of the first day of each participant's survey response.

Source: USDA, 1999a.

Table 11-11. Quantity (as consumed) of Meat and Dairy Products Consumed Per Eating Occasion and Percentage of Individuals Using These Foods in Two Days

	Quantity consumed per eating occasion (grams)											
	2 to 5 years old			6 to 11 years old			12 to 19 years old					
	Male and Female (N = 2,109)			Male and Female (N = 1,432)			Male (N = 696)			Female (N = 702)		
Food category	PC	Mean	SEM	PC	Mean	SEM	PC	Mean	SEM	PC	Mean	SEM
Meats												
Beef steaks	11.1	58	4	11.3	87	9	9.5	168	14	9.4	112	10
Beef roasts	5.2	49	5	4.8	67	7	5.1	233[a]	149[a]	5.5	97[a]	16[a]
Ground beef	59.5	31	1	63.7	41	1	73.4	66	3	61.5	52	3
Ham	6.9	35	4	8.5	40	4	11.6	68	7	9.9	40	5
Pork chops	11.0	48	3	10.1	62	4	11.6	100	8	8.5	72	7
Bacon	10.4	15	1	9.7	19	2	14.9	25	2	11.1	18	1
Pork breakfast sausage	5.3	33	2	6.0	32	3	6.3	40[a]	4[a]	3.3	40[a]	5[a]
Frankfurters and luncheon meats	51.7	49	1	50.9	57	2	46.7	76	3	38.5	57	3
Total chicken and turkey	63.8	46	1	53.8	62	2	58.4	100	4	54.1	71	2
Chicken	44.6	52	1	36.0	70	3	34.3	117	5	36.1	80	3
Turkey	5.1	63	7	5.7	66	5	8.2	117	14	5.8	60[a]	9[a]
Dairy Products												
Fluid milk (all)	92.5	196	3	89.2	241	4	72.3	337	8	64.4	262	8
Fluid milk consumed with cereal	68.1	149	4	64.7	202	5	44.4	276	10	42.7	222	8
Whole milk	50.0	202	3	39.5	244	7	30.0	333	13	22.4	258	7
Whole milk consumed with cereal	33.8	161	5	26.2	212	11	14.8	265	18	14.1	235	13
Lowfat milk	47.5	189	3	52.8	238	4	39.6	326	8	32.4	262	13
Lowfat milk consumed with cereal	31.5	136	4	32.7	198	4	24.3	277	12	21.1	227	12
Skim milk	7.8	171	9	11.1	225	9	9.7	375	38	13.5	255	14
Skim milk consumed with cereal	4.9	131	11	7.5	188	14	6.5	285[a]	23[a]	8.3	181	13
Cheese, other than cream or cottage	53.2	24	1	50.4	29	1	61.1	38	2	53.9	27	1
	18.4	92	3	21.1	135	4	14.2	221	12	15.2	187	14
Ice cream and ice milk	8.0	36	3	8.2	34	3	5.0	44[a]	9[a]	7.7	45	7
Boiled, poached, and baked eggs	17.3	48	1	14.0	58	2	14.9	83	5	13.5	59	3
Fried eggs	10.4	59	4	7.1	72	5	7.1	72	5	8.9	103	9
Scrambled eggs												

[a] Indicates a statistic that is potentially unreliable because of small sample size or large coefficient of variation.
PC = Percent consuming at least once in 2 days.
SEM = Standard error of the mean.

Source: Smiciklas-Wright et al., 2002 (based on 1994-1996 CSFII data).

Table 11-12. Characteristics of the FITS Sample Population

	Sample Size	Percentage of Sample
Gender		
Male	1,549	51.3
Female	1,473	48.7
Age of Child		
4 to 6 months	862	28.5
7 to 8 months	483	16.0
9 to 11 months	679	22.5
12 to 14 months	374	12.4
15 to 18 months	308	10.2
19 to 24 months	316	10.4
Child's Ethnicity		
Hispanic or Latino	367	12.1
Non-Hispanic or Latino	2,641	87.4
Missing	14	0.5
Child's Race		
White	2,417	80.0
Black	225	7.4
Other	380	12.6
Urbanicity		
Urban	1,389	46.0
Suburban	1,014	33.6
Rural	577	19.1
Missing	42	1.3
Household Income		
Under $10,000	48	1.6
$10,000 to $14,999	48	1.6
$15,000 to $24,999	221	7.3
$25,000 to $34,999	359	11.9
$35,000 to $49,999	723	23.9
$50,000 to $74,999	588	19.5
$75,000 to $99,999	311	10.3
$100,000 and Over	272	9.0
Missing	452	14.9
Receives WIC		
Yes	821	27.2
No	2,196	72.6
Missing	5	0.2
Sample Size (Unweighted)	3,022	100.0

WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

Source: Devaney et al., 2004.

Table 11-13. Percentage of Infants and Toddlers Consuming Meat or Other Protein Sources

Food Group/Food	Percentage of Infants and Toddlers Consuming at Least Once in a Day					
	4 to 6 months	7 to 8 months	9 to 11 months	12 to14 months	15 to18 months	19 to 24 months
Cow's Milk	0.8	2.9	20.3	84.8	88.3	87.7
Whole	0.5	2.4	15.1	68.8	71.1	58.8
Reduce-fat or non-fat	0.3	0.5	5.3	17.7	20.7	38.1
Unflavored	0.8	2.9	19.5	84.0	87.0	86.5
Flavored	0.0	0.0	0.9	1.8	4.4	5.6
Soy Milk	0.0	0.5	1.7	1.5	3.9	3.8
Any Meat or Protein Source	14.2	54.9	79.2	91.3	92.7	97.2
Baby Food Meat	1.7	4.0	3.1	1.1	0.0	0.0
Non-baby Food Meat	1.5	8.4	33.7	60.3	76.3	83.7
Other Protein Soources	2.7	9.7	36.1	59.2	66.8	68.9
Dried Beans and Peas, Vegetarian Meat	0.6	1.3	3.3	7.0	6.6	9.9
Eggs	0.7	2.9	7.3	17.0	25.0	25.2
Peanut Butter, Nuts, and Seeds	0.0	0.5	1.9	8.8	11.6	10.4
Cheese	0.4	2.1	18.5	34.0	39.1	41.1
Yogurt	1.2	4.1	15.7	14.9	20.2	15.3
Protein Sources in Mixed Dishes	11.0	43.3	46.2	30.1	25.5	20.5
Baby Food Dinners	9.5	39.8	33.5	10.2	2.4	1.3
Beans and Rice, Chilli, Other Bean Mixtures	0.0	0.0	0.9	1.2	2.1	2.0
Mixtures with Vegetables and/or Rice/Pasta	0.9	1.2	4.7	8.2	9.0	7.8
Soup[a]	0.9	3.4	10.1	12.5	13.8	11.5
Types of Meat[b]						
Beef	0.9	2.6	7.7	16.1	16.3	19.3
Chicken or Turkey	2.0	7.3	22.4	33.0	46.9	47.3
Fish and Shellfish	0.0	0.5	1.9	5.5	8.7	7.1
Hotdogs, Sausages, and Cold cuts	0.0	2.1	7.1	16.4	20.1	27.0
Pork/Ham	0.3	1.7	4.0	9.7	11.2	13.9
Other	0.3	0.6	2.5	2.8	2.1	3.9

[a] The amount of protein actually provided by soups varies. Soups could not be sorted reliably into different food groups because all soups were assigned the same two-digit food code and many food descriptions lacked detail about major soup ingredients.

[b] Includes baby food and non-baby food sources.

Source: Fox et al., 2004.

Table 11-14. Characteristics of WIC Participants and Non-participants[a] (Percentages)

	Infants 4 to 6 months		Infants 7 to 11 months		Toddlers 12 to 24 months	
	WIC Participant	Non-participant	WIC Participant	Non-participant	WIC Participant	Non-participant
Gender						
Male	55	54	55	51	57	52
Female	45	46	45	49	43	48
Child's Ethnicity		**		**		**
Hispanic or Latino	20	11	24	8	22	10
Non-Hispanic or Latino	80	89	76	92	78	89
Child's Race		**		**		**
White	69	84	63	86	67	84
Black	15	4	17	5	13	5
Other	22	11	20	9	20	11
Child In Day Care				**		*
Yes	39	38	34	46	43	53
No	61	62	66	54	57	47
Age of Mother		**		**		**
14 to 19 years	18	1	13	1	9	1
20 to 24 years	33	13	38	11	33	14
25 to 29 years	29	29	23	30	29	26
30 to 34 years	9	33	15	36	18	34
35 years or Older	9	23	11	21	11	26
Missing	2	2	1	1	0	1
Mother's Education		**		**		**
11th Grade or Less	23	2	15	2	17	3
Completed High School	35	19	42	20	42	19
Some Postsecondary	33	26	32	27	31	28
Completed College	7	53	9	51	9	48
Missing	2	1	2	0	1	2
Parent's Marital Status		**		**		**
Married	49	93	57	93	58	88
Not Married	50	7	42	7	41	11
Missing	1	1	1	0	1	1
Mother or Female Guardian Works				**		*
Yes	46	51	45	60	55	61
No	53	48	54	40	45	38
Missing	1	1	1	0	0	1
Urbanicity		**		**		**
Urban	34	55	37	50	35	48
Suburban	36	31	31	34	35	35
Rural	28	13	30	15	28	16
Missing	2	1	2	1	2	2
Sample Size (Unweighted)	265	597	351	808	205	791

[a] X^2 test were conducted to test for statistical significance in the differences between WIC participants and non-participants within each age group for each variable. The results of X^2 test are listed next to the variable under the column labeled non-participants for each of the three age groups. * $P<0.05$; ** $P>0.01$; non-participants significantly different from WIC participants on the variable.

WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

Source: Ponza et al., 2004.

Table 11-15. Food Choices for Infants and Toddlers by WIC Participation Status

	Infants 4 to 6 months		Infants 7 to 11 months		Toddlers 12 to 24 months	
	WIC Participant	Non-participant	WIC Participant	Non-participant	WIC Participant	Non-participant
Cow's Milk	1.0	0.6	11.4	13.2	92.3	85.8*
Meat or Other Protein Sources						
Baby Food Meat	0.9	2.0	3.3	3.6	0.0	0.3
Non-Baby Meat	3.7	0.5**	25.0	22.0	77.7	75.1
Eggs	0.9	0.6	8.5	4.2**	24.1	23.0
Peanut Butter, Nuts, Seeds	0.0	0.0	1.4	1.3	12.9	9.8
Cheese	0.0	0.6	9.0	12.5	38.5	38.8
Yogurt	0.8	1.4	5.5	13.3**	9.3	18.9**
Sample Size (unweighted)	265	597	351	808	205	791

* = P<0.05; non-participants significantly different from WIC participants.
** = P<0.01; non-participants significantly different from WIC participants.
WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

Source: Ponza et al., 2004.

Table 11-16. Percentage of Hispanic and Non-Hispanic Infants and Toddlers Consuming Different Types of Milk, Meats or Other Protein Sources on A Given Day

	Age 4 to 5 months		Age 6 to 11months		Age 12 to 24 months	
	Hispanic (N=84)	Non-Hispanic (N=538)	Hispanic (N=163)	Non-Hispanic (N=1,228)	Hispanic (N=124)	Non-Hispanic (N=871)
Milk						
Fed Any Cow's or Goat Milk	-	-	7.5†	11.3	85.6	87.7
Fed Cow's Milk						
Whole	-	-	5.6†	8.3	61.7	66.3
Reduced Fat or Non-fat	-	-	2.2†	3.0	29.0	27.0
Meat or Other Protein Sources						
Any Meat or Protein Source[a]	9.7†	5.3	71.6	62.0	90.3	94.7
Non-Baby Food Meat	-	-	22.5	19.2	72.3	76.0
Other Protein Sources	1.4†	-	26.5	21.2	70.1	65.3
Beans and Peas	1.4†	-	5.8†	1.8	19.1*	6.5
Eggs	-	-	9.5	4.2	26.4	22.5
Cheese	-	-	11.2	9.4	29.3	40.2
Yogurt	-	-	7.7	9.8	15.7	17.0
Protein Sources in Mixed Dishes	7.5†	4.4	44.8	41.6	33.3	22.7
Baby Food dinners	6.9†	3.9	24.7*	35.3	3.5†	3.9
Soup[b]	-	-	16.3**	5.1	23.4*	10.7
Types of Meat[a]						
Beef	-	-	5.0†	4.6	25.2	16.0
Chicken and Turkey	-	-	11.2	11.9	46.5	43.6
Hotdogs, Sausages, and Cold Cuts	-	-	7.2†	3.4	14.8	23.3
Pork/Ham	-	-	3.8†	1.7	11.7	12.1

[a] Includes baby food and non-baby food sources.

[b] The amount of protein actually provided by soups varies. Soups could not be sorted reliably into different food groups because many food descriptions lacked detail about major soup ingredients.

\- = Less than 1 percent of the group consumed this food on a given day.

* = Significantly different from non-Hispanic at the $P<0.05$.

** = Significantly different from non-Hispanic at the $P>0.01$.

† = Statistic is potentially unreliable because of a high coefficient of variation.

N = Sample size.

Source: Mennella et al., 2006.

Table 11-17. Average Portion Sizes Per Eating Occasion of Meats and Dairy Products Commonly Consumed by Infants from the 2002 Feeding Infants and Toddlers Study

Food group	Reference Unit	4 to 5 months (N=624)	6 to 8 months (N=708)	9 to 11 months (N=687)
		Mean± SEM		
Non-baby food meats	ounce	-	0.9±0.16	0.8±0.05
Cheese	ounce	-	-	0.7±0.05
Scrambled eggs	cup	-	-	0.2±0.02
Yogurt	ounce	-	-	3.1±0.20
Baby food dinners	ounce	2.9±0.24	3.3±0.09	3.8±0.11

\- = Cell size was too small to generate a reliable estimate.
N = Number of respondents.
SEM = Standard error of the mean.

Source: Fox et al., 2006.

Table 11-18. Average Portion Sizes Per Eating Occasion of Meats and Dairy Products Commonly Consumed by Toddlers from the 2002 Feeding Infants and Toddlers Study

Food Group	Reference unit	12 to 14 months (N=371)	15 to 18 months (N=312)	19 to 24 months (N=320)
		Mean ± SEM		
Milk				
Milk	fluid ounce	5.6±0.14	5.9±0.14	6.2±0.17
Milk, as a beverage	fluid ounce	5.7±0.14	6.1±0.14	6.4±0.17
Milk, on cereal	fluid ounce	3.4±0.37	2.7±0.26	3.6±0.29
Meats and other protein sources				
All meats	ounce	1.2±0.06	1.3±0.08	1.3±0.07
Beef	ounce	0.8±0.08	1.2±0.15	1.2±0.14
Chicken or turkey, plain	ounce	1.3±0.10	1.3±0.16	1.3±0.10
Hot dogs, luncheon meats, sausages	ounce	1.3±0.13	1.5±0.13	1.5±0.12
Chicken, breaded[a]	ounce	1.5±0.14	1.5±0.13	1.8±0.12
	nugget	2.4±0.22	2.4±0.21	2.8±0.19
Scrambled eggs	cup	0.2±0.02	0.3±0.03	0.3±0.02
Peanut butter	tablespoon	0.7±0.08	0.7±0.09	0.9±0.13
Yogurt	ounce	3.4±0.19	3.8±0.26	3.8±0.28
Cheese	ounce	0.8±0.05	0.8±0.05	0.7±0.04

[a] Not included in total for all meats because weight includes breading.
N = Number of respondents.
SEM = Standard error of the mean.

Source: Fox et al., 2006.

Table 11-19. Total Fat Intake (Per capita; g/day)

Age Group[a]	N	Mean	SE	Percentiles					
				10th	25th	50th	75th	95th	100th
Birth to <1 year									
all	1,422	29	18	0.03	19	31	40	59	107
female	728	28	17	0.03	18	30	39	57	92
male	694	30	18	0.04	20	32	40	61	107
Birth to <1 month									
all	88	17	16	0	0	19	32	52	64
female	50	19	15	0	0	18	29	39	52
male	38	15	18	0	0	19	31	43	64
1 to <3 months									
all	245	22	18	0	0	27	34	47	75
female	110	20	16	0	0	24	33	45	50
male	135	23	19	0	0	28	34	55	75
3 to <6 months									
all	411	28	17	0.10	20	31	39	52	107
female	223	27	17	0.02	16	29	38	51	74
male	188	30	18	0.15	22	31	39	50	107
6 to <12 months	678	33	17	8.5	25	34	43	62	100
all									
female	345	32	17	5.1	24	33	43	62	92
male	333	34	16	11	25	34	44	62	100
1 to <2 years									
all	1,002	46	19	24	33	43	55	79	159
female	499	45	18	25	33	43	54	77	116
male	503	46	20	23	32	44	56	80	159
2 to <3 years									
all	994	51	21	27	37	48	60	87	197
female	494	49	20	24	35	46	59	83	127
male	500	52	21	29	39	50	61	89	197
3 to <6 years									
all	4,112	59	22	34	44	56	70	99	218
female	2,018	56	21	33	43	54	68	96	194
male	2,094	61	23	35	45	59	72	103	218
6 to <11 years									
all	1,553	68	24	41	50	66	81	111	179
female	742	64	22	38	48	61	77	101	156
male	811	72	25	43	55	70	86	115	179
11 to <16 years									
all	975	80	38	42	56	74	97	145	342
female	493	69	29	37	49	65	82	123	259
male	482	91	42	50	64	84	111	163	342
16 to <21 years									
all	743	85	47	37	54	76	108	168	463
female	372	79	39	35	49	75	96	154	317
male	371	92	53	41	57	77	114	186	463

[a] Age groups are based on U.S. EPA (2005) *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants*.

N = Sample size.

SE = Standard error.

Source: Based on U.S. EPA, 2007.

Table 11-20. Total Fat Intake (Per capita; g/kg-day)

Age Group[a]	N	Mean	SE	Percentiles					
				10th	25th	50th	75th	95th	100th
Birth to <1 year									
all	1,422	4.0	2.8	0.01	2.3	4.1	5.6	8.9	20
female	728	4.1	2.8	0.01	2.4	4.3	5.8	8.7	18
male	694	4.0	2.8	0.01	2.3	4.0	5.5	9.2	20
Birth to <1 month									
all	88	5.2	4.9	0	0	5.7	9.1	16	20
female	50	5.9	4.6	0	0	6.2	8.4	13	16
male	38	4.3	5.3	0	0	4.7	9.7	18	20
1 to <3 months									
all	245	4.5	3.8	0	0	4.9	6.8	11	18
female	110	4.3	3.6	0	0	4.8	6.5	11	14
male	135	4.7	3.9	0	0	4.9	7.0	10	18
3 to <6 months									
all	411	4.1	2.7	0.01	2.4	4.3	5.7	8.2	18
female	223	4.2	2.8	0.00	2.3	4.5	6.0	8.2	18
male	188	4.1	2.5	0.02	2.6	4.1	5.5	8.2	16
6 to <12 months									
all	678	3.7	1.8	1.0	2.7	3.8	4.8	7.0	11
female	345	3.7	1.9	0.66	2.8	3.8	5.0	7.0	9.8
male	333	3.6	1.7	1.3	2.6	3.7	4.6	6.8	11
1 to <2 years									
all	1,002	4.0	1.7	2.1	2.8	3.7	4.7	7.1	12
female	499	4.1	1.6	2.2	3.0	3.7	5.0	6.9	9.7
male	503	3.9	1.7	1.9	2.6	3.6	4.5	7.2	12
2 to <3 years									
all	994	3.6	1.5	1.9	2.6	3.4	4.4	6.4	12
female	494	3.7	1.6	1.8	2.4	3.4	4.4	6.6	10
male	500	3.6	1.5	2.0	2.6	3.4	4.3	6.1	12
3 to <6 years									
all	4,112	3.4	1.3	1.9	2.4	3.2	4.0	5.8	11
female	2,018	3.4	1.3	1.8	2.4	3.1	4.0	5.8	11
male	2,094	3.5	1.4	1.9	2.4	3.2	4.1	5.8	11
6 to <11 years									
all	1,553	2.6	1.1	1.3	1.7	2.3	3.0	4.2	9.9
female	742	2.4	1.0	1.3	1.6	2.2	2.8	4.0	7.7
male	811	2.7	1.1	1.4	1.8	2.4	3.1	4.4	9.9
11 to <16 years									
all	975	1.6	0.80	0.77	1.1	1.4	2.0	3.0	5.7
female	493	1.4	0.69	0.67	0.91	1.3	1.7	2.6	5.0
male	482	1.8	0.86	0.88	1.2	1.6	2.1	3.3	5.7
16 to <21 years									
all	743	1.3	0.66	0.54	0.81	1.2	1.6	2.7	6.0
female	372	1.1	0.56	0.48	0.75	1.1	1.4	2.1	4.4
male	371	1.4	0.73	0.63	0.85	1.2	1.7	2.9	6.0

[a] Age groups are based on U.S. EPA (2005) *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants*.
N = Sample size.
SE = Standard error.

Source: Based on U.S. EPA, 2007.

Table 11-21. Total Fat Intake (Consumers Only; g/day)

Age Group[a]	N	Mean	SE	Percentiles					
				10th	25th	50th	75th	95th	100th
Birth to <1 year									
all	1,301	31	16	7.0	24	32	41	61	107
female	664	30	16	5.1	24	32	40	58	92
male	637	32	16	9.0	25	33	41	62	107
Birth to <1 month									
all	59	26	13	6.7	17	27	32	52	64
female	37	26	11	7.8	17	25	32	39	52
male	22	25	17	-	-	-	-	-	64
1 to <3 months									
all	182	29	14	5.8	24	31	35	53	75
female	79	28	12	4.3	21	30	35	46	50
male	103	31	16	8.5	27	31	38	59	75
3 to <6 months									
all	384	30	16	2.5	24	32	40	54	107
female	205	29	16	1.2	24	31	39	52	72
male	179	31	17	4.6	25	33	39	53	107
6 to <12 months									
all	676	33	16	8.9	25	34	43	62	100
female	343	32	17	6.2	24	34	43	62	92
male	333	34	16	11	25	34	44	62	100
1 to <2 year									
all	1,002	46	19	24	33	43	55	79	159
female	499	45	18	25	33	43	54	77	116
male	503	46	20	23	32	44	56	80	159
2 to <3 years									
all	994	51	21	27	37	48	60	87	197
female	494	49	20	24	35	46	59	83	127
male	500	52	21	29	39	50	61	89	197
3 to <6 years									
all	4,112	59	22	34	44	56	70	99	218
female	2,018	56	21	33	43	54	68	96	194
male	2,094	61	23	35	45	59	72	103	218
6 to <11 years									
all	1,553	68	24	41	50	66	81	111	179
female	742	64	22	38	48	61	77	101	156
male	811	72	25	43	55	70	86	115	179
11 to <16 years									
all	975	80	38	42	56	74	97	145	342
female	493	69	29	37	49	65	82	123	259
male	482	91	42	50	64	84	111	163	342
16 to <21 years									
all	743	85	47	37	54	76	108	168	463
female	372	79	39	35	49	75	96	154	317
male	371	92	53	41	57	77	114	186	463

[a] Age groups are based on U.S. EPA (2005) *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants*.
- = Percentiles were not calculated for sample sizes less than 30.
N = Sample size.
SE = Standard error.

Source: Based on U.S. EPA, 2007.

Table 11-22. Total Fat Intake (Consumers Only; g/kg-day)

Age Group[a]	N	Mean	SE	Percentiles					
				10th	25th	50th	75th	95th	100th
Birth to <1 year									
all	1,301	4.4	2.6	0.94	2.9	4.3	5.8	9.2	20
female	664	4.5	2.6	0.67	3.1	4.5	6.0	8.9	18
male	637	4.3	2.6	1.2	2.8	4.1	5.6	9.3	20
Birth to <1 month									
all	59	7.8	4.1	1.4	5.4	8.0	9.7	16	20
female	37	8.0	3.5	2.0	5.3	7.7	9.1	13	16
male	22	7.4	4.9	-	-	-	-	-	20
1 to <3 months									
all	182	6.0	3.1	1.0	4.1	6.0	7.8	12	18
female	79	5.9	2.9	0.80	4.3	6.0	7.7	12	14
male	103	6.1	3.3	1.8	4.1	6.0	7.8	12	18
3 to <6 months									
all	384	4.4	2.5	0.35	3.1	4.5	5.8	8.3	18
female	205	4.5	2.6	0.14	3.1	4.7	6.1	8.2	18
male	179	4.3	2.4	0.57	3.1	4.2	5.6	8.8	16
6 to <12 months									
all	676	3.7	1.8	1.0	2.7	3.8	4.8	7.0	11
female	343	3.7	1.9	0.75	2.8	3.8	5.0	7.0	9.8
male	333	3.6	1.7	1.3	2.6	3.7	4.6	6.8	11
1 to <2 years									
all	1,002	4.0	1.7	2.1	2.8	3.7	4.7	7.1	12
female	499	4.1	1.6	2.2	3.0	3.7	5.0	6.9	9.7
male	503	3.9	1.7	1.9	2.6	3.6	4.5	7.2	12
2 to <3 years									
all	994	3.6	1.5	1.9	2.6	3.4	4.4	6.4	12
female	494	3.7	1.6	1.8	2.4	3.4	4.4	6.6	10
male	500	3.6	1.5	2.0	2.6	3.4	4.3	6.1	12
3 to <6 years									
all	4,112	3.4	1.3	1.9	2.4	3.2	4.0	5.8	11
female	2,018	3.4	1.3	1.8	2.4	3.1	4.0	5.8	11
male	2,094	3.5	1.4	1.9	2.4	3.2	4.1	5.8	11
6 to <11 years									
all	1,553	2.6	1.1	1.3	1.7	2.3	3.0	4.2	9.9
female	742	2.4	1.0	1.3	1.6	2.2	2.8	4.0	7.7
male	811	2.7	1.1	1.4	1.8	2.4	3.1	4.4	9.9
11 to <16 years									
all	975	1.6	0.80	0.77	1.1	1.4	2.0	3.0	5.7
female	493	1.4	0.69	0.67	0.91	1.3	1.7	2.6	5.0
male	482	1.8	0.86	0.88	1.2	1.6	2.1	3.3	5.7
16 to <21 years									
all	743	1.3	0.66	0.54	0.81	1.2	1.6	2.7	6.0
female	372	1.1	0.56	0.48	0.75	1.1	1.4	2.1	4.4
male	371	1.4	0.73	0.63	0.85	1.2	1.7	2.9	6.0

[a] Age groups are based on U.S. EPA (2005) *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants*.
- = Percentiles were not calculated for sample sizes less than 30.
N = Sample size.
SE = Standard error.

Source: Based on U.S. EPA, 2007.

Table 11-23. Total Fat Intake - Top 10% of Animal Fat Consumers (Consumers Only; g/day)

Age Group[a]	N	Mean	SE	Percentiles					
				10th	25th	50th	75th	95th	100th
Birth to <1 year									
all	140	45	16	28	35	45	54	77	100
female	70	45	15	26	35	45	54	69	92
male	70	45	17	28	34	44	53	79	100
1 to <2 years									
all	109	75	20	52	61	74	85	108	159
female	54	68	16	52	57	70	78	89	114
male	55	81	22	54	67	78	90	125	159
2 to <3 years									
all	103	79	20	55	64	74	85	116	133
female	58	77	16	55	65	74	79	109	116
male	45	81	24	52	61	73	90	121	133
3 to <6 years									
all	461	88	25	62	72	84	102	135	218
female	217	84	24	59	68	80	95	130	194
male	244	92	25	66	76	90	103	136	218
6 to <11 years									
all	198	94	25	66	77	88	105	140	178
female	71	88	21	58	70	86	100	123	156
male	127	97	27	69	78	91	112	168	178
11 to <16 years									
all	96	133	53	85	95	121	154	223	342
16 to <21 years									
all	68	167	64	98	122	154	189	278	463
11-20 years									
all	165	146	60	90	105	139	168	254	463
female	53	117	30	81	92	111	140	162	195
male	112	160	65	94	117	151	191	276	463

[a] Age groups are based on U.S. EPA (2005) *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants.*

N = Sample size.

SE = Standard error.

Source: Based on U.S. EPA, 2007.

Table 11-24. Total Fat Intake - Top 10% of Animal Fat Consumers (Consumers Only; g/kg-day)

Age Group[a]	N	Mean	SE	Percentiles					
				10th	25th	50th	75th	95th	100th
Birth to <1 year									
all	140	4.7	1.7	2.8	3.7	4.6	6.0	7.7	11
female	70	4.8	1.6	2.7	3.7	4.7	6.0	7.7	9.5
male	70	4.6	1.7	2.8	3.6	4.4	5.8	7.5	11
1 to <2 years									
all	109	6.9	1.5	5.1	5.7	6.8	7.7	9.5	12
female	54	6.6	1.2	5.1	5.7	6.7	7.4	9.3	9.7
male	55	7.1	1.6	5.1	5.8	6.9	8.0	9.4	12
2 to <3 years									
all	103	6.1	1.3	4.6	5.2	5.8	6.7	8.3	9.5
female	58	6.2	1.2	4.6	5.2	5.9	6.8	7.9	9.5
male	45	6.1	1.3	4.5	5.2	5.6	6.6	8.4	9.5
3 to <6 years									
all	461	5.6	1.3	4.2	4.7	5.3	6.2	8.3	11
female	217	5.5	1.3	4.2	4.5	5.3	6.0	7.8	11
male	244	5.7	1.3	4.2	4.8	5.3	6.2	8.4	11
6 to <11 years									
all	198	4.2	1.1	3.0	3.4	3.8	4.6	6.0	9.9
female	71	4.2	1.1	2.9	3.3	3.8	4.8	5.8	7.7
male	127	4.2	1.1	3.0	3.4	3.8	4.5	6.3	9.9
11 to <16 years									
all	96	3.0	0.85	2.0	2.4	2.8	3.3	4.6	5.7
16 to <21 years									
all	68	2.5	0.74	1.7	2.0	2.4	2.9	3.7	6.0
11-20 years									
all	165	2.8	0.84	1.9	2.1	2.7	3.1	4.4	6.0
female	53	2.6	0.65	1.7	2.0	2.3	2.7	3.4	4.6
male	112	2.9	0.90	1.9	2.3	2.8	3.1	4.5	6.0

[a] Age groups are based on U.S. EPA (2005) *Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants.*

N = Sample size.

SE = Standard error.

Source: Based on U.S. EPA, 2007.

Table 11-25. Fat Intake Among Children Based on Data from the Bogalusa Heart Study, 1973-1982 (g/day)

Age	N	Mean	SD	Percentiles					Minimum	Maximum
				10th	25th	50th	75th	90th		
Total Fat Intake										
6 months	125	37.1	17.5	18.7	25.6	33.9	46.3	60.8	3.4	107.6
1 year	99	59.1	26.0	29.1	40.4	56.1	71.4	94.4	21.6	152.7
2 years	135	86.7	41.3	39.9	55.5	79.2	110.5	141.1	26.5	236.4
3 years	106	91.6	38.8	50.2	63.6	82.6	114.6	153.0	32.6	232.5
4 years	219	98.6	56.1	46.0	66.8	87.0	114.6	163.3	29.3	584.6
10 years	871	93.2	50.8	45.7	60.5	81.4	111.3	154.5	14.6	529.5
13 years	148	107.0	53.9	53.0	69.8	90.8	130.7	184.1	9.8	282.2
15 years	108	97.7	48.7	46.1	65.2	85.8	124.0	165.2	10.0	251.3
17 years	159	107.8	64.3	41.4	59.7	97.3	140.2	195.1	8.5	327.4
Total Animal Fat										
6 months	125	18.4	16.0	0.7	4.2	13.9	28.4	42.5	0.0	61.1
1year	99	36.5	20.0	15.2	23.1	33.0	45.9	65.3	0.0	127.1
2 years	135	49.5	28.3	20.1	28.9	42.1	66.0	81.4	10.0	153.4
3 years	106	50.1	29.4	21.3	29.1	42.9	64.4	88.9	14.1	182.6
4 years	219	50.8	31.7	21.4	28.1	42.6	66.4	92.6	5.9	242.2
10 years	871	54.1	39.6	20.3	30.6	45.0	64.6	97.5	0.0	412.3
13 years	148	56.2	39.8	19.8	28.5	44.8	72.8	109.4	4.7	209.6
15 years	108	53.8	35.1	15.9	28.3	44.7	67.9	105.8	0.6	182.1
17 years	159	64.4	48.5	15.2	30.7	51.6	86.6	128.8	2.6	230.3
Total Vegetable Fat Intake										
6 months	125	9.2	12.8	0.6	1.2	2.8	11.6	29.4	0.0	53.2
1 year	99	15.4	14.3	3.7	6.1	11.3	18.1	38.0	0.2	70.2
2 years	135	19.3	16.3	3.8	7.9	14.8	26.6	42.9	0.7	96.6
3 years	106	21.1	15.5	3.9	8.6	18.7	26.6	45.2	1.0	70.4
4 years	219	24.5	18.6	5.7	10.4	21.8	33.3	48.5	0.9	109.0
10 years	871	23.7	21.6	4.3	9.5	18.3	30.6	49.0	0.6	203.7
13 years	148	34.3	27.4	8.4	17.9	31.2	44.6	57.5	0.0	238.3
15 years	108	27.3	22.8	5.1	11.9	22.6	38.1	54.4	0.7	132.2
17 years	159	25.7	21.3	4.2	11.7	20.8	32.9	47.6	0.0	141.5

Table 11-25. Fat Intake Among Children Based on Data from the Bogalusa Heart Study, 1973-1982 (g/day) (continued)

Age	N	Mean	SD	Percentiles					Minimum	Maximum
				10th	25th	50th	75th	90th		
Total Fish Fat Intake										
6 months	125	0.05	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.9
1 year	99	0.05	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.9
2 years	135	0.04	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.9
3 years	106	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	4.5
4 years	219	2.3	31.1	0.0	0.0	0.0	0.0	0.0	0.0	459.2
10 years	871	0.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0	19.2
13 years	148	0.3	2.2	0.0	0.0	0.0	0.0	0.0	0.0	25.4
15 years	108	0.4	1.5	0.0	0.0	0.0	0.0	1.5	0.0	9.5
17 years	159	0.5	2.0	0.0	0.0	0.0	0.0	0.4	0.0	15.3

N = Sample size.
SD = Standard deviation.

Source: Frank et al., 1986.

Table 11-26. Fat Intake Among Children Based on Data from the Bogalusa Heart Study, 1973-1982 (g/kg-day)

Age	N	Mean	SD	Percentiles					Minimum	Maximum
				10th	25th	50th	75th	90th		
Total Fat Intake										
6 months	125	4.9	2.3	2.4	3.3	4.7	6.2	8.0	0.4	13.2
1 year	99	6.1	2.8	3.0	4.1	5.7	7.5	9.5	2.3	16.4
2 years	132	7.0	3.3	3.4	4.5	6.2	8.6	11.9	2.1	18.7
3 years	106	6.4	2.7	3.6	4.6	5.5	8.2	9.9	2.2	16.7
4 years	218	6.1	3.7	2.9	4.0	5.2	7.0	10.0	2.0	38.2
10 years	861	2.7	1.5	1.2	1.7	2.4	3.3	4.5	0.3	13.9
13 years	147	2.3	1.3	1.0	1.5	2.0	2.8	3.8	0.2	10.2
15 years	105	1.7	0.8	0.8	1.2	1.5	2.1	3.1	0.2	4.7
17 years	149	1.8	1.0	0.7	0.9	1.6	2.2	3.1	0.2	6.2
Total Animal Fat										
6 months	125	2.4	2.1	0.08	0.6	2.0	3.7	5.5	0.0	9.0
1 year	99	3.8	2.1	1.7	2.4	3.4	4.9	6.5	0.0	13.6
2 years	132	4.0	2.3	1.7	2.3	3.4	5.2	6.7	0.7	13.4
3 years	106	3.5	2.0	1.6	2.1	3.1	4.2	6.1	0.9	13.1
4 years	218	3.1	2.1	1.3	1.7	2.6	4.0	5.4	0.4	15.4
10 years	861	16	1.2	0.6	0.8	1.3	1.9	2.8	0.00	10.8
13 years	147	1.2	0.9	0.4	0.6	0.9	1.6	2.3	0.08	5.2
15 years	105	1.0	0.6	0.3	0.5	0.8	1.3	1.9	0.01	3.1
17 years	149	1.0	0.8	0.3	0.5	0.8	1.4	2.0	0.05	4.2
Total Vegetable Fat Intake										
6 months	125	1.2	1.8	0.08	0.2	0.4	1.6	4.1	0.0	8.2
1year	99	1.6	1.6	0.4	0.6	1.2	1.9	3.8	0.02	7.6
2 years	132	1.6	1.4	0.3	0.7	1.1	2.0	3.5	0.06	8.5
3 years	106	1.5	1.1	0.3	0.6	1.4	2.0	3.0	0.08	5.1
4 years	218	1.5	1.2	0.4	0.6	1.2	2.1	2.8	0.06	7.3
10 years	861	0.7	0.6	0.1	0.3	0.5	0.9	1.4	0.02	4.2
13 years	147	0.8	0.8	0.2	0.4	0.6	0.9	1.3	0.0	8.6
15 years	105	0.5	0.4	0.09	0.2	0.4	0.7	0.9	0.01	2.2
17 years	149	0.4	0.4	0.07	0.2	0.4	0.6	0.9	0.0	2.1

Table 11-26. Fat Intake Among Children Based on Data from the Bogalusa Heart Study, 1973-1982 (g/kg-day) (continued)

Age	N	Mean	SD	Percentiles					Minimum	Maximum
				10th	25th	50th	75th	90th		
Total Fish Fat Intake										
6 months	125	0.01	0.02	0.0	0.0	0.0	0.0	0.02	0.0	0.1
1 year	99	0.01	0.03	0.0	0.0	0.0	0.0	0.0	0.0	0.2
2 years	132	0.003	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.2
3 years	106	0.01	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.3
4 years	218	0.2	2.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0
10 years	861	0.01	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.6
13 years	147	0.01	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.4
15 years	105	0.01	0.03	0.0	0.0	0.0	0.0	0.04	0.0	0.2
17 years	149	0.01	0.03	0.0	0.0	0.0	0.0	0.008	0.0	0.2

N = Sample size.
SD = Standard deviation.

Source: Frank et al., 1986.

Table 11-27. Mean Total Daily Dietary Fat Intake (g/day) Grouped by Age and Gender[a]

Age Group	Total		Males		Females	
	N	Mean Fat Intake (g/day)	N	Mean Fat Intake (g/day)	N	Mean Fat Intake (g/day)
2 to 11months	871	37.5	439	38.3	432	36.8
1 to 2 years	1,231	50.0	601	51.6	630	48.4
3 to 5 year	1,647	60.4	744	62.3	803	57.7
6 to 11 years	1,745	74.2	868	79.4	877	69.0
12 to 16 years	711	85.2	338	98.1	373	71.3
16 to 19 years	785	100.5	308	123.2	397	77.5

[a] Total dietary fat intake includes all fat (i.e., saturated and unsaturated) derived from consumption of foods and beverages (excluding plain drinking water).

N = Sample size.

Source: Adapted from CDC, 1994.

Table 11-28. Mean Percent Moisture and Total Fat Content of Selected Meat and Dairy Products[a]

Product	Moisture Content (%)	Total Fat Content (%)	Comment
Meats			
Beef (composite of trimmed retail cuts; all grades)	70.62	6.16	Raw; lean only
	59.25	9.91	Cooked; lean only
	60.44	19.24	Raw; lean and fat, 1/4 in. fat trim
	51.43	21.54	Cooked; lean and fat, 1/4 in. fat trim
Pork (composite of trimmed retail cuts)	72.34	5.88	Raw; lean only
	60.31	9.66	Cooked; lean only
	65.11	14.95	Raw; lean and fat
	54.55	17.18	Cooked; lean and fat
Cured ham	63.46	12.90	Center slice, unheated; lean and fat
	55.93	8.32	Raw, center slice, country style; lean only
Cured bacon		45.04	Raw
		43.27	Cooked, baked
		41.78	Cooked, broiled
		40.30	Cooked, pan-fried
		37.27	Cooked, microwaved
Lamb (composite of trimmed retail cuts)	73.42	5.25	Raw; lean only
	61.96	9.52	Cooked; lean only
	60.70	21.59	Raw; lean and fat, 1/4 in. fat trim
	53.72	20.94	Cooked; lean and fat, 1/4 in. fat trim
Veal (composite of trimmed retail cuts)	75.91	2.87	Raw; lean only
	60.16	6.58	Cooked; lean only
	72.84	6.77	Raw; lean and fat, 1/4 in. fat trim
	57.08	11.39	Cooked; lean and fat, 1/4 in. fat trim
Rabbit (domesticated)	72.82	5.55	Raw
	60.61	8.05	Cooked, roasted
		8.41	Cooked, stewed
Chicken (broilers or fryers)	75.46	3.08	Raw; meat only
		6.71	Cooked, stewed; meat only
	63.79	7.41	Cooked, roasted; meat only
		9.12	Cooked, fried; meat only
	65.99	15.06	Raw; meat and skin
		12.56	Cooked, stewed; meat and skin
	59.45	13.60	Cooked, roasted; meat and skin
		14.92	Cooked, fried, flour; meat and skin
Duck (domesticated)	73.77	5.95	Raw; meat only
	64.22	11.20	Cooked, roasted; meat only
	48.50	39.34	Raw; meat and skin
	51.84	28.35	Cooked, roasted; meat and skin
Turkey (all classes)	74.16	2.86	Raw; meat only
	64.88	4.97	Cooked, roasted; meat only
	70.40	8.02	Raw; meat and skin
	61.70	9.73	Cooked, roasted; meat and skin
	71.97	8.26	Raw; ground
	59.42	13.15	Cooked; ground

Table 11-28. Mean Percent Moisture and Total Fat Content of Selected Meat and Dairy Products[a] (continued)

Product		Moisture Content (%)	Total Fat Content (%)	Comment
		Dairy		
Milk				
	Whole	88.32	3.25	3.25% milkfat
	Human	87.50	4.38	Whole, mature, fluid
	Lowfat (1%)	89.81	0.97	Fluid, with added non-fat milk solids and vitamin A
	Reduced fat (2%)	88.86	1.92	Fluid, with added non-fat milk solids and vitamin A
	Skim or fat free	90.38	0.25	Fluid, with added non-fat milk solids and vitamin A
Cream				
	Half and half	80.57	11.50	Fluid
	Light (coffee cream or table cream)	73.75	19.31	Fluid
	Heavy-whipping	57.71	37.00	Fluid
	Sour	70.95	20.96	Cultured
	Sour, reduced fat	80.14	12.00	Cultured
Butter		15.87	81.11	Salted
Cheese				
	American	39.16	31.25	Pasteurized
	Cheddar	36.75	33.14	
	Swiss	37.12	27.80	
	Cream	53.75	34.87	
	Parmesan	29.16; 20.84	25.83; 28.61	Hard; grated
	Cottage, lowfat	82.48; 79.31	1.02; 1.93	1% fat; 2% fat
	Colby	38.20	32.11	
	Blue	42.41	28.74	
	Provolone	40.95	26.62	
	Mozzarella	50.01; 53.78	22.35; 15.92	Whole milk; Skim milk
Yogurt		85.07; 87.90	1.55; 3.25	Plain, lowfat; Plain, with fat
Eggs		75.84	9.94	Chicken, whole raw, fresh

[a] Based on the water and lipid content in 100 grams, edible portion. Total Fat Content = saturated, monosaturated and polyunsaturated. For additional information, consult the USDA nutrient database.

Source: USDA, 2007.

APPENDIX 11A

CODES AND DEFINITIONS USED TO DETERMINE THE VARIOUS MEATS AND DAIRY PRODUCTS USED IN THE U.S. EPA ANALYSIS OF CSFII DATA IN FCID

Table 11A-1 Food Codes and Definitions Used in Analysis of the 1994-96, 1998 USDA CSFII Data

Food Category	EPA Food Commodity Codes			
Total Meats	21000440	Beef, meat	21000480	Beef, kidney
	21000441	Beef, meat-babyfood	21000490	Beef, liver
	21000450	Beef, meat, dried	21000491	Beef, liver-babyfood
	21000460	Beef, meat byproducts	23001690	Goat, meat
	21000461	Beef, meat byproducts-babyfood	23001700	Goat, meat byproducts
	21000470	Beef, fat	23001710	Goat, fat
	21000471	Beef, fat-babyfood	23001720	Goat, kidney
	23001730	Goat, liver	40000950	Chicken, meat byproducts
	24001890	Horse, meat	40000951	Chicken, meat byproducts-babyfood
	25002900	Pork, meat	40000960	Chicken, fat
	25002901	Pork, meat-babyfood	40000961	Chicken, fat-babyfood
	25002910	Pork, skin	40000970	Chicken, skin
	25002920	Pork, meat byproducts	40000971	Chicken, skin-babyfood
	25002921	Pork, meat byproducts-babyfood	50003820	Turkey, meat
	25002930	Pork, fat	50003821	Turkey, meat-babyfood
	25002931	Pork, fat-babyfood	50003830	Turkey, liver
	25002940	Pork, kidney	50003831	Turkey, liver-babyfood
	25002950	Pork, liver	50003840	Turkey, meat byproducts
	26003390	Sheep, meat	50003841	Turkey, meat byproducts-babyfood
	26003391	Sheep, meat-babyfood	50003850	Turkey, fat
	26003400	Sheep, meat byproducts	50003851	Turkey, fat-babyfood
	26003410	Sheep, fat	50003860	Turkey, skin
	26003411	Sheep, fat-babyfood	50003861	Turkey, skin-babyfood
	26003420	Sheep, kidney	60003010	Poultry, other, meat
	26003430	Sheep, liver	60003020	Poultry, other, liver
	28002210	Meat, game	60003030	Poultry, other, meat byproducts
	29003120	Rabbit, meat	60003040	Poultry, other, fat
	40000930	Chicken, meat	60003050	Poultry, other, skin
	40000931	Chicken, meat-babyfood		
	40000940	Chicken, liver		
Total Dairy	27002220	Milk, fat	27022241	Milk, water-babyfood/infant formula
	27002221	Milk, fat - baby food/infant formula	27032251	Milk, sugar (lactose)-baby food/infant formula
	27012230	Milk, non-fat solids		
	27012231	Milk, non-fat solids-baby food/infant formula		
	27022240	Milk, water		

Table 11A-1 Food Codes and Definitions Used in Analysis of the 1994-96, 1998 USDA CSFII Data (continued)

Food Category	EPA Food Commodity Codes			
Beef	21000440	Beef, meat	21000470	Beef, fat
	21000441	Beef, meat-babyfood	21000471	Beef, fat-babyfood
	21000450	Beef, meat, dried	21000480	Beef, kidney
	21000460	Beef, meat byproducts	21000490	Beef, liver
	21000461	Beef, meat byproducts-babyfood	21000491	Beef, liver-babyfood
Eggs	70001450	Egg, whole	70001461	Egg, white (solids)-babyfood
	70001451	Egg, whole-babyfood	70001470	Egg, yolk
	70001460	Egg, white	70001471	Egg, yolk-babyfood
Pork	25002900	Pork, meat	25002930	Pork, fat
	25002901	Pork, meat-babyfood	25002931	Pork, fat-babyfood
	25002910	Pork, skin	25002940	Pork, kidney
	25002920	Pork, meat byproducts	25002950	Pork, liver
	25002921	Pork, meat byproducts-babyfood		
Poultry	40000930	Chicken, meat	50003831	Turkey, liver-babyfood
	40000931	Chicken, meat-babyfood	50003840	Turkey, meat byproducts
	40000940	Chicken, liver	50003841	Turkey, meat byproducts-babyfood
	40000950	Chicken, meat byproducts	50003850	Turkey, fat
	40000951	Chicken, meat byproducts-babyfood	50003851	Turkey, fat-babyfood
	40000960	Chicken, fat	50003860	Turkey, skin
	40000961	Chicken, fat-babyfood	50003861	Turkey, skin-babyfood
	40000970	Chicken, skin	60003010	Poultry, other, meat
	40000971	Chicken, skin-babyfood	60003020	Poultry, other, liver
	50003820	Turkey, meat	60003030	Poultry, other, meat byproducts
	50003821	Turkey, meat-babyfood	60003040	Poultry, other, fat
	50003830	Turkey, liver	60003050	Poultry, other, skin

APPENDIX 11B

SAMPLE CALCULATION OF MEAN DAILY FAT INTAKE BASED ON CDC (1994) DATA

Sample Calculation of Mean Daily Fat Intake Based on CDC (1994) Data

CDC (1994) provided data on the mean daily total food energy intake (TFEI) and the mean percentages of TFEI from total dietary fat grouped by age and gender. The overall mean daily TFEI was 2,095 kcal for the total population and 34 percent (or 82 g) of their TFEI was from total dietary fat (CDC, 1994). Based on this information, the amount of fat per kcal was calculated as shown in the following example.

$$0.34 \times 2{,}095 \ \frac{\text{kcal}}{\text{day}} \times X \ \frac{\text{g-fat}}{\text{day}} = 82 \ \frac{\text{g-fat}}{\text{day}}$$

$$\therefore \ X = 0.12 \ \frac{\text{g-fat}}{\text{kcal}}$$

where 0.34 is the fraction of fat intake, 2,095 is the total food intake, and X is the conversion factor from kcal/day to g-fat/day.

Using the conversion factor shown above (i.e., 0.12 g-fat/kcal) and the information on the mean daily TFEI and percentage of TFEI for the various age/gender groups, the daily fat intake was calculated for these groups. An example of obtaining the grams of fat from the daily TFEI (1,591 kcal/day) for children ages 3-5 years and their percent TFEI from total dietary fat (33 percent) is as follows:

$$1{,}591 \ \frac{\text{kcal}}{\text{day}} \times 0.33 \times 0.12 \ \frac{\text{g-fat}}{\text{kcal}} = 63 \ \frac{\text{g-fat}}{\text{day}}$$