

Characterization of Acrylamide Intake from Certain Foods

March 2005



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California Environmental Protection Agency**

Preface

On January 1, 1990, acrylamide was listed as a chemical known to cause cancer under Proposition 65 (the Safe Drinking Water and Toxic Enforcement Act of 1986, Health and Safety Code Section 25249.5 *et seq.*) The No Significant Risk Level (NSRL) for acrylamide of 0.2 µg/day was also established in regulation in 1990 (Title 22, California Code of Regs. §12705(c))¹.

Acrylamide is a carcinogen, producing tumors at multiple sites in rats and mice. The general public is exposed primarily through cigarette smoke and certain foods that have been cooked at high-temperature. Occupational exposures occur mainly from its use as a polymerizing agent in grouts and cements, and to produce polyacrylamide. The ability of acrylamide to produce cancer in animals, and the applicability of animal findings to humans is well recognized by scientists in the United States and throughout the world. The World Health Organization recognizes “the presence of acrylamide in food as a major concern in humans based on the ability to induce cancer and heritable mutations in laboratory animals.” The International Agency for Research on Cancer and the U.S. Environmental Protection Agency consider acrylamide to be a probable human carcinogen. The National Toxicology Program considers acrylamide as “reasonably anticipated to be a human carcinogen.” The U.S. Food and Drug Administration (FDA) considers acrylamide to be a potential human carcinogen. The National Institute for Occupational Safety and Health considers acrylamide to be an occupational carcinogen.

Historically, toxicity concerns over acrylamide centered on worker health and safety, primarily for neurological, male reproductive and cancer effects. However, in 2002 it was discovered that acrylamide can form during the cooking of starchy foods at high temperatures. This unexpected discovery shifted the concern for health risks to the public from acrylamide in the diet. Since 2002, acrylamide has been discovered in many plant-based foods that have been baked or fried at high temperatures.

Cancer now occurs in nearly one out of every four individuals. While the underlying cause of many cancer cases is unclear, numerous epidemiological studies have shown that dietary factors affect an individual’s cancer risk. The World Health Organization has estimated that about 30 percent of cancer cases worldwide are associated with dietary factors. Characterization of carcinogens in the diet is complicated by the complex and varied nature of the food humans consume, and is far from complete. Some dietary factors that have been associated with increased cancer risk include high caloric intake and increased consumption of processed meats and red meat. Other dietary factors have been associated with decreased cancer risk; these include increased consumption of fruits and vegetables and increased consumption of dietary fiber. In addition, some specific carcinogenic compounds present in the diet have been identified, such as those formed during the high temperature cooking of meats (e.g., benzo[a]pyrene and PhIP). Acrylamide is yet another carcinogen recently recognized to be formed as a result of cooking at high temperatures, although in this case, formation occurs in certain plant-based foods. Given the typical daily intake of acrylamide from the diet, it is plausible that dietary acrylamide contributes to the rate of cancer observed in the population.

¹ Lifetime exposure at the no significant risk level is calculated to result in one excess cancer in an exposed population of 100,000 (Title 22, California Code of Regulations section 12703(b)).

OEHHA is proposing to amend Title 22, Cal. Code of Regs. §12705 to add a new subsection (subsection (e)), to establish an alternative no significant risk level for acrylamide in grain-based breads and cereals (that is, a specific regulatory level for acrylamide in these foods that is associated with a risk other than the standard risk of one excess case of cancer in an exposed population of 100,000, assuming lifetime exposure at the level in question.) The analysis presented in this document characterizes the intake of acrylamide from various food types. The analysis combines data produced by the FDA on acrylamide levels in U.S. foods with survey data generated by the U.S. Department of Agriculture and other organizations on food consumption rates. These data are used to estimate the average daily intake of acrylamide among individuals who consume a given food type. The purpose of this analysis is to assist the public and the regulated community in estimating average daily intake of acrylamide from specific foods, and to inform the development and content of regulations proposed by OEHHA with regard to the presence in certain foods of acrylamide.

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Summary

The Office of Environmental Health Hazard Assessment (OEHHA) has conducted an analysis to characterize the daily intake of acrylamide from certain foods, based on currently available data. The purpose of the analysis is to provide information to guide efforts to interpret the applicability of Proposition 65² to acrylamide in foods (OEHHA, 2004a). Foods selected for analysis were those for which data on acrylamide levels in food had been published by the U.S. Food and Drug Administration (FDA). Acrylamide intakes were calculated from these FDA data on food concentrations and from data on food consumption generated by the U.S. Department of Agriculture (USDA). Foods were generally grouped by common food categories used by USDA (e.g., crackers). However, in some cases specific foods were examined when acrylamide levels are generally high in that specific food (e.g., prune juice) but are generally low in other foods within the food category (i.e., fruit juices). The analysis is limited by the number of samples examined for acrylamide content, which for most foods were few, by the lack of longitudinal data on food consumption, and by the degree to which food products containing high levels of acrylamide have been recognized and sampled by the FDA. Further, the analyses did not take into account potential increased sensitivity to acrylamide carcinogenesis by infants and children.

Calculation of exposure to carcinogens in foods under Proposition 65 is to be based on the average rate of intake among users of the consumer product (Title 22, California Code of Regulations, §12721(d)(4)³). In addition, the average rate of intake is to be based on data for use of a general category of food product (§12721(d)(4)). Data were not available to OEHHA on food consumption by individuals over long periods of time. Therefore acrylamide intakes were calculated that would bracket or bound the average intake for consumers of the foods. The lower consumer intake bound was based on the consumption rate for eaters⁴ of a given food, averaged across the entire population (i.e., per capita consumption); actual intake among average consumers of the food is expected to fall above the lower bound. The upper bound for a given food was derived by assuming individual consumers ate the food everyday. Actual intake among average consumers of a given food is expected to fall below the upper bound for foods that are eaten on a sporadic basis, and close to the upper bound for foods commonly eaten on nearly a daily basis. For frequently and widely consumed foods (e.g., coffee, bread, and ready-to-eat cereal), the upper bound estimates are typically within a factor of two to four of the lower bound estimates, giving confidence to the characterization of consumer intake.

The upper and lower bound estimates of daily acrylamide intake were compared to the proposed Proposition 65 No Significant Risk Level (NSRL) for acrylamide of 1.0 µg per day, the level associated with one excess case of cancer in an exposed population of 100,000 (i.e., a 1×10^{-5} cancer risk). This analysis indicates that the average daily intakes of acrylamide for eaters of the following commonly eaten foods exceed the proposed NSRL of 1.0 µg per day: all fried potatoes tested, likely all potato chips tested, most coffee samples tested, many cookies, many ready-to-eat cereals, many breads, and toast. The lower bounds on the intake for each of

² Safe Drinking Water and Toxic Enforcement Act of 1986, California Health and Safety Code 25249.5 et seq.

³ All further references to regulation are to the California Code of Regulations, Title 22, unless otherwise noted.

⁴ The word “eaters” in this document is used generally to include eaters of solid foods and drinkers of liquid foods.

these foods exceed the NSRL⁵. Also, consumers of the following specialty foods such as Wheatena® (a cooked toasted wheat cereal), roasted grain-based coffee substitutes and prune juice are exposed in excess of the NSRL. In addition, daily intakes of acrylamide for eaters of any of the following individual foods may exceed the proposed NSRL of 1.0 µg per day: some crackers, corn and tortilla chips, popcorn, and canned black olives. There is less confidence in either the food consumption data or the acrylamide concentration data, or both, for these foods.

Background

Acrylamide has been listed as causing cancer under Proposition 65 since 1990. An NSRL of 0.2 µg/d was adopted in 1990 (§12705(c)), based on a cancer potency estimate of 4.5 (mg/kg-d)⁻¹ derived by the U.S. Environmental Protection Agency (U.S. EPA). OEHHA is currently proposing an NSRL of 1.0 µg per day for adoption in §12705(b) of the regulations (OEHHA, 2005).

Acrylamide was discovered in April 2002 to be commonly produced in many plant-based human foods as a by-product of high-temperature cooking. This document uses FDA data on acrylamide levels in certain foods and USDA data on food consumption to characterize average daily intakes of acrylamide among eaters of those foods.

Data sources

Data on acrylamide levels in foods

Since 2002, the FDA has surveyed foods for acrylamide, and has recently released data on acrylamide levels in U.S. foods collected as of mid-2002 through Oct. 1, 2003 (FDA, 2004a). Several hundred individual food samples were collected from a wide variety of food categories, comprising hundreds of samples in total. The FDA has reported these data in a document entitled *Exploratory Data on Acrylamide in Foods*. This document includes data that were published in earlier releases (i.e., on December 4, 2002 and March 12, 2003).

In 2003, the FDA added acrylamide to its ongoing Total Diet Study, which analyzes chemical concentrations in 286 core foods in the U.S. food supply, collected annually in four areas of the country. In the Total Diet Study, analyses are performed on a composite of three samples of each food collected for each of the four geographic areas. Since the analyses are conducted on composite, or “pooled”, samples, this study provides data on mean concentrations of acrylamide in typical foods, but not on the distribution of acrylamide levels in these foods. The concentration data for acrylamide were reported in 2004 (FDA, 2004b).

Data on food consumption

Where possible, OEHHA relied on food consumption estimates for specific foods or food categories as previously reported by USDA or FDA. For foods where USDA or FDA did not

⁵ Unless otherwise specified, the term NSRL refers in this document to the proposed NSRL for acrylamide of 1.0 µg per day.

provide consumption rate estimates, OEHHA obtained estimates directly from the USDA food consumption survey data. Data on daily intake of each specific food or food category were obtained from surveys by the USDA and the Market Research Corporation of America (MRCA). Three different USDA food consumption survey datasets were used: 1) the 1994-1996 Continuing Survey of Food Intakes by Individuals (CSFII 1994-1996), 2) “CSFII 1994-1996 & 1998”, which augments the 1994-1996 survey with data collected in 1998 on infants and children, and 3) CSFII 1989-1992. The MRCA survey is an older set of industry market basket survey information, collected from 1982 to 1987 on the same individuals over a longer period of time than the CSFII surveys. Consistency of findings across multiple surveys provides for greater confidence in the intake assessment.

The CSFII 1994-1996 data set is based on dietary surveys of 14,262 individuals, 4,253 of whom were children, and was conducted between 1994 and 1996 in the U.S. Each individual was asked to list the types and quantities of foods they ate on two different days; each day was separated by three or more days. The data from this survey are presented in the report *Foods Commonly Eaten in the United States* (www.barc.usda.gov/bhnrc/foodsurvey/) (Smiciklas-Wright *et al.*, 2002). This USDA report includes information on the proportion of individuals consuming a given food during one or more days surveyed, and the mean and distributional percentile intake of a given food consumed during a day. This information is presented by age of individual surveyed (i.e., age 2 and older, 2-5, 6-11, 12-19, 20-39, 40-59, and 60 years and older) and for the general population and consumers, weighted by age and other characteristics. OEHHA relied on the USDA report by Smiciklas-Wright *et al.* (2002) as the source of information for the CSFII 1994-1996 data set. The values reported in Smiciklas-Wright *et al.* (2002) represent age-specific intake of the amount of foods consumed, but were not adjusted for differences in body weight by age or gender.

The CSFII 1994-1996, 1998 data set consists of the CSFII 1994-1996 data, augmented by survey data of food intake for two separate days collected in 1998 from an additional 5,559 children aged birth to nine years. This data set is thus very similar to the CSFII 1994-1996 data, but improved the accuracy on food intake for infants and children due to the larger sample size for these age groups. OEHHA obtained food consumption estimates for the CSFII 1994-1996, 1998 from three separate sources: 1) those reported by Robie and DiNovi (2003) of the FDA and in the related exposure model spreadsheets provided to OEHHA by FDA (DiNovi, 2004); 2) those OEHHA obtained through use of a computer overlay program called DEEM (Novigen Sciences, Inc.), and 3) those OEHHA obtained from the USDA raw data set by application of the SAS computer program, when estimates from the first two sources were not available. Intake estimates calculated from this survey were age- and body weight-adjusted.

The CSFII 1989-1992 dataset consists of data obtained through a three-day recall of foods eaten by 15,192 individuals. As the source of information for the CSFII 1989-1992 data set, OEHHA relied on consumption estimates reported by Robie and DiNovi (2003) and in the related exposure model spreadsheets provided to OEHHA by FDA (DiNovi, 2004). Intake estimates calculated from this survey were age- and body weight-adjusted.

The MRCA 1982-1987 dataset consists of 14-day food frequency records from about 26,000 participants, which have been converted by an FDA contractor to estimates of food consumption

by application of data from the same time period on amounts consumed in the population (DiNovi, personal communication). Although somewhat dated, these data may provide better estimates of the average intake for foods that are less frequently eaten than the two- and three-day surveys conducted by the USDA. OEHHA relied on consumption estimates reported by Robie and DiNovi (2003) as the source of information for the MRCA 1982-1987 data set.

Estimation of daily intake of acrylamide among eaters of specific foods

Under Proposition 65, the calculation of exposure to carcinogens in foods is to be based on the average rate of intake among users of the consumer product (§12721(d)(4)). In addition, the average rate of intake is to be based on data for use of a general category of food product (§12721(d)(4)).

Estimates of mean acrylamide concentrations in various foods or food categories were based on data from the FDA's *Exploratory Data on Acrylamide in Foods* dataset (FDA, 2004a) and the 2003 Total Diet Study (FDA, 2004b). Test data were grouped by food categories, as defined by the USDA (Smiciklas-Wright *et al.*, 2002), where possible. For some foods, such as potato chips, many measurements are available. For others, only a few measurements exist. Since the *Exploratory Data on Acrylamide in Foods* dataset consists of measurements of acrylamide in individual food samples and the 2003 Total Diet Study dataset consists of measurements of acrylamide in composites of three food samples (FDA, 2004b), a weighted mean level of acrylamide was computed for individual food groups, based on the number of samples each data point represents.

Estimates of mean acrylamide concentration levels in various foods or food categories are used in the calculation of daily intake of acrylamide among eaters of specific foods, along with the range of acrylamide levels reported for that food. Where samples have been composited, that is multiple samples from the same type of food are combined and then analyzed (as was done in the Total Diet Study), the range of acrylamide levels reported for the composites can be less than the true range of acrylamide levels present in those individual samples.

One way to calculate the daily intake of acrylamide among eaters of a specific food is to multiply the mean acrylamide concentration by the age-adjusted average amount of that food eaten on the day the food is eaten and by the frequency at which that food is consumed over a lifetime. The lifetime average exposure of acrylamide from consumption of a given food would be expressed as:

$$ADI_{\text{life}} = [AA]_{\text{food } i} \times \text{Consumption amount}_{\text{food } i} \times \text{Frequency of eating food}_i \times 0.001$$

where ADI_{life} is the lifetime average daily intake of acrylamide from food_{*i*} (for each individual food, "i") in units $\mu\text{g}/\text{day}$, and $[AA]_{\text{food } i}$ is the mean concentration of acrylamide in food_{*i*} in $\mu\text{g}/\text{kg}\text{-food}$. The amount of food consumed, in units of grams of food per day, is the average over all age groups. The Smiciklas-Wright *et al.* (2002) publication provides data in this form for the CSFII 1994-1996 data set. Eating frequency is the fraction of days in the total number of days in a lifetime for which the consumer ate the food in question. Unfortunately, data on the frequency that a food is consumed over a lifetime are not available. To overcome this data deficiency, OEHHA calculated upper and lower bounds on acrylamide intake, where the true

ADI_{life} likely lies within the range. These upper and lower bounds are described below. The factor of 0.001 in the equation is to correct for the units used for concentration and consumption amount.

In the above approach, food consumption in amount units is averaged across individuals without regard to bodyweight. In risk assessment, calculation of cancer risk typically assumes that the same human dose in terms of amount per bodyweight per day (mg/kg-bw per day) produces the same risk level. Averaging exposure in amount levels without adjustment for bodyweight introduces error in the assessment. Food intakes obtained from the DEEM computer program and from Robie and DiNovi (2003) were developed by dividing an individual's consumption of a particular food by that individual's bodyweight. In this sense food intake information from these sources is more reliable for risk assessment than that from the Smiciklas-Wright *et al.* (2002) report. To express the consumption in a form appropriate for the equation above, the following conversion was applied:

$$\text{Consumption amount}_{\text{food } i} \text{ (in grams)} = \text{Consumption intake}_{\text{food } i} \text{ (in grams/kg-bw)} \times 70 \text{ kg}$$

In calculating the NSRL, a 70 kg bodyweight was assumed. Thus the above equation is consistent with the approach taken to derive the proposed NSRL.

In this analysis, OEHHA calculated daily intake of acrylamide from different foods or food categories using two metrics: 1) the population mean daily consumption (average exposure over eaters and non-eaters of the food, or "per capita" consumption), and 2) everyday food consumption, or "everyday eaters." Here, "eaters" refers to individuals that consumed the food on at least one of the days surveyed.

The population mean daily intake, provides a "lower bound" on the intake for eaters, since it averages daily intake data obtained from the two-, three-, or 14-day consumption surveys among eaters and non-eaters. The second metric, everyday eaters, gives an estimate of daily intake of acrylamide for eaters of that food, assuming that one consumes that food every day of life. Thus, use of this metric bounds on the upper end the lifetime average daily intake (ADI_{life}), especially for foods eaten on a sporadic basis. For foods eaten on nearly a daily basis, this metric may provide a reasonable estimate of lifetime average daily intake.

Thus, use of the two intake estimates (population mean versus everyday eaters) provides a reasonable range with which to examine lifetime acrylamide intake from different foods. If acrylamide intake based on the population mean exceeds the proposed NSRL, then that food may require warning under Proposition 65. If the proposed NSRL falls between the range of possible acrylamide intake based on the two food intake measures, additional scrutiny of that food should be undertaken. Table 1 provides the lower and upper bounds on acrylamide intake by consumers of various acrylamide-contaminated foods.

Table 1. Range of acrylamide intake estimates for various foods

Foods*	Total no. samples represented** (No. Composites)	Source of food intake estimates***	Food consumption		Mean ppb acrylamide	Range**** ppb acrylamide	Acrylamide intake	
			g food/d population "lower bound"	g food/d everyday eaters "upper bound"			ug/d population "lower bound"	ug/d everyday eaters "upper bound"
Almonds (fried or roasted)	4 (0)	DEEM, CSFII 94-96, 98	0.17	2.9	320	236-457	0.05	0.83
		Robie and DiNovi 2003, not stated		7	320	236-457		2.24
Bagels, untoasted	4 (0)	Robie and Howard, 2004, not stated		14	31	12-58	0.28	0.43
		Robie and DiNovi 2003, not stated			31	12-58		0.43
Biscuits	12 (4)	Smicklas et al. 2002 CSFII 1994-96	4	64	37	21-35	0.15	2.37
Bread, Total Yeast	60 (16)	Smicklas et al. 2002 CSFII 1994-96	6	79	31	ND-130	1.95	2.45
Whole Grain and "Wheat" White Bread	43 (12)	Smicklas et al. 2002 CSFII 1994-96	11	61	39	ND-130	0.43	2.38
	17 (4)	Smicklas et al. 2002 CSFII 1994-96	26	70	11	ND-36	0.29	0.77
"Soft breads" (all types)	60 (16)	Robie and DiNovi 2003, CSFII 89-92	34.3	50.4	31	ND-130	1.06	1.56
		Robie and DiNovi 2003, CSFII 94-96, 98	32.4	54.6	31	ND-130	1.00	1.69
		Robie and DiNovi 2003, MRCA 82-87	58.3	79.8	31	ND-130	1.81	2.47
Cake	18 (6)	Smicklas et al. 2002 CSFII 1994-96	9	100	10	ND-29	0.09	1.00
Cereal, Ready-to-Eat (not including babyfood)	104 (28)	Smicklas et al. 2002 CSFII 1994-96	16	56	86	11-266	1.38	4.82
		Robie and DiNovi 2003, CSFII 89-92	22.5	46.2	86	11-266	1.94	3.97
		Robie and DiNovi 2003, CSFII 94-96, 98	23.1	56.7	86	11-266	1.99	4.88
		Robie and DiNovi 2003, MRCA 82-87	45.5	58.8	86	11-266	3.91	5.06
Cereal, Wheatena (cooked)	3 (0)	One serving size (from label)		41	738	467-1057		30.26
Chicken nuggets/breaded	14 (4)	DiNovi and Howard, 2004			24	22-35	0.21	
Chile con Carne	12 (4)	DiNovi and Howard 2004, not stated			130	56-187	1.05	
Coffee (brewed)	20 (0)	Smicklas et al. 2002 CSFII 1994-96	255	616	7	3-13	1.79	4.31
		Robie and DiNovi 2003, CSFII 89-92	241.5	511.7	7	3-13	1.69	3.58
		Robie and DiNovi 2003, CSFII 94-96, 98	243.8	533.4	7	3-13	1.71	3.73
		Robie and DiNovi 2003, MRCA 82-87	193.2	336	7	3-13	1.35	2.35
Cookies	82 (24)	Smicklas et al. 2002 CSFII 1994-96	8	45	188	29-647	1.50	8.46
		Robie and DiNovi 2003, CSFII 89-92	9.6	33.6	188	29-647	1.80	6.32
		Robie and DiNovi 2003, CSFII 94-96, 98	12.6	41.3	188	29-647	2.37	7.76
		Robie and DiNovi 2003, MRCA 82-87	12.6	18.9	188	29-647	2.37	3.55
Corn Chips / Tortilla Chips	16 (4)	Smicklas et al. 2002 CSFII 1994-96	4	46	199	111-240	0.80	9.15
Crackers	52 (16)	Smicklas et al. 2002 CSFII 1994-96	3	28	167	13-620	0.50	4.68
		DiNovi 2004, CSFII 89-92		15	167	13-620		2.51
		DiNovi 2004, CSFII 94-96, 98	3.8	19	167	13-620	0.63	3.17
Doughnuts	15 (4)	DiNovi 2004, CSFII 89-92		42	18	ND-26		0.76
		DiNovi 2004, CSFII 94-96, 98	4	47	18	ND-26	0.07	0.85
French-Fried Potatoes (restaurant or home-baked)	52 (4)	Smicklas et al. 2002 CSFII 1994-96	13	83	413	117-1325	5.37	34.28
		Robie and DiNovi 2003, CSFII 89-92	8.1	42	413	117-1325	3.35	17.35
		Robie and DiNovi 2003, CSFII 94-96, 98	12.1	63.7	413	117-1325	5.00	26.31
		Robie and DiNovi 2003, MRCA 82-87	12	24.5	413	117-1325	4.96	10.12
Olives, canned	19 (4)	DEEM, CSFII 94-96, 98	0.67	10	414	123-1925	0.28	4.14
		One serving size (from can of olives)		16	414	123-1925		6.62
Pancakes and Waffles	12 (4)	Smicklas et al. 2002 CSFII 1994-96	5	86	15	13-17	0.08	1.29
Peanuts, roasted	15 (4)	DEEM, CSFII 94-96, 98	1.4	20.5	27	ND-36	0.04	0.55
Peanut butter, total	17 (4)	CSFII 1994-96, 98 DEEM	3.5	34.0	88	64-125	0.31	2.99
		Smicklas et al. 2002 CSFII 1994-96	4	24	88	64-125	0.35	2.11
Pie	32 (8)	Smicklas et al. 2002 CSFII 1994-96	7	162	22	ND-74	0.15	3.56
Pizza	12 (4)	Smicklas et al. 2002 CSFII 1994-96	19	175	20	19-20	0.38	3.50
Popcorn	15 (4)	Smicklas et al. 2002 CSFII 1994-96	2	43	180	97-352	0.36	7.74
		DiNovi 2004, CSFII 89-92		19	180	97-352		3.42
		DiNovi 2004, CSFII 94-96, 98	2.6	24	180	97-352	0.47	4.32
Potato Chips	54 (4)	Smicklas et al. 2002 CSFII 1994-96	4	41	466	117-2510	1.86	19.11
		Robie and DiNovi 2003, CSFII 89-92	4.6	26.6	466	117-2510	2.24	12.40
		Robie and DiNovi 2003, CSFII 94-96, 98	5.3	30.8	466	117-2510	2.47	14.35
		Robie and DiNovi 2003, MRCA 82-87	4	11.9	466	117-2510	4.19	5.55
Postum (dry)	2 (0)	CSFII 1994-96, 98 SAS	0.0021	3.0	4573	3747-5399	0.01	13.72
Prune juice	13 (4)	CSFII 1994-96, 98 DEEM	0.56	102.9	159	53-267	0.09	16.36
		DiNovi and Howard 2004 portion size		140	159	53-267		22.26
Quickbreads and Muffins	24 (8)	Smicklas et al. 2002 CSFII 1994-96	6	87	8	ND-37	0.05	0.70
Sunflower seeds	12 (0)	DEEM, CSFII 94-96, 98	0.22	29.0	39.5	31-57	0.01	1.15
Sweet potatoes, canned (adult food only)	12 (0)	DEEM, CSFII 94-96, 98	0.16	157	93	59-153	0.01	14.60
(adult and babyfood)	28 (8)	DEEM, CSFII 94-96, 98	0.67	309	84	37-153	0.06	25.96
Toast	3 (0)	Robie and DiNovi 2003, CSFII 89-92	11	31.5	213	59-364	2.34	6.71
		Robie and DiNovi 2003, CSFII 94-96, 98	7.7	34.3	213	59-364	1.64	7.31
		Robie and DiNovi 2003, MRCA 82-87	21.5	79.8	213	59-364	4.58	17.00
Tortillas (corn or flour)	16 (4)	Smicklas et al. 2002 CSFII 1994-96	7	68	6	ND-15	0.04	0.41

ND, not detected
 * Food categories as described by USDA (Smicklas-Wright et al. 2002), where possible. Some less commonly eaten foods or specific high-acrylamide-content foods are listed separately.
 ** The Total Diet Study (FDA, 2004b) tested composites of three samples per composite, whereas other FDA sampling efforts (FDA, 2004a) assayed individual samples. The total number of samples represented treats each composite as three individual samples and each individual sample as one. See the Appendix for individual data.
 *** Source of food consumption rates are as follows:
 (1) CSFII 1994-96: 2-day survey data as reported by USDA Foods Commonly Eaten in the United States (Smicklas-Wright et al., 2002) - data not adjusted for intake per body weight
 (2) CSFII 1994-96, 98: 2-day survey data (a) as reported by Robie and DiNovi (2003) or DiNovi (2004), (b) as accessed by DEEM, or (c) as accessed by SAS programming of raw data disk
 (3) CSFII 1989-92: 3-day survey data as reported by Robie and DiNovi (2003) or DiNovi (2004)
 (4) MRCA: 14-day survey data as reported by Robie and DiNovi (2003)
 **** Ranges likely to be underestimates since some samples were composites of 3 samples

The analyses presented in Table 1 have been summarized in a simpler format in Table 2. Where data permit, acrylamide intake estimates are also presented in Table 2 for individual types of cookies and breakfast cereals. These additions illustrate that some cookies (such as sugar cookies) do not result in acrylamide intake rates as high as some others, while several types of breakfast cereals result in average daily intakes that exceed 1.0 ug/day, assuming one consumes that cereal type solely.

determine with confidence whether the NSRL is or is not exceeded for consumers of canned black olives, based upon the small number of samples tested by FDA and the uncertainty in the frequency of canned black olive consumption by olive eaters. Frequency data on how often this food is consumed are not readily available.

Canned sweet potatoes

Canned sweet potatoes are consumed as babyfood and as adult food. Babyfood sweet potatoes averaged 77 ppb (based on four composites and four individual samples), while regular canned sweet potatoes averaged 93 ppb (based on four composites) (Appendix). Using the DEEM program to abstract consumption information from the CSFII 1994-1996, 1998 data set, the lower (population-based) and upper (everyday eaters) bounds on acrylamide intake were 0.01 and 14.6 $\mu\text{g}/\text{d}$ for regular canned sweet potatoes and 0.06 and 26.0 $\mu\text{g}/\text{d}$ when babyfood was also included. These numbers suggest that on average children consume considerably more sweet potatoes on a body weight basis than older children and adults. This also suggests that one needs to consume canned sweet potatoes once every 26 days over a lifetime to exceed the proposed NSRL (Table 3). OEHHA cannot determine with confidence whether the NSRL is or is not exceeded for consumers of canned sweet potatoes, based upon the uncertainty in the frequency of consumption by eaters of this food.

Babyfood

The FDA (2004a, 2004b) tested a wide variety of babyfood samples, including cereals, dairy products, fruit and vegetable samples and mixtures. No acrylamide was detected in babyfood cereals. USDA (Smiciklas-Wright *et al.*, 2002) includes consumption of infant cereals in its category of ready-to-eat cereals. Fruit-based baby food samples were mostly nondetectable, with the exception of plum-based foods, which averaged 36 ppb, based on four composites. Vegetable babyfood samples usually contained measurable levels of acrylamide. Carrot babyfood samples contained a weighted average of 40 ppb (based on four composites and two individual samples), green beans averaged 23 ppb (based on four composites and one individual samples), squash averaged 19 ppb (based on four composites and two individual samples), and sweet potatoes averaged 77 ppb (based on four composites and four individual samples). Peach cobbler babyfood also had measurable acrylamide levels which averaged 40 ppb, based on four composite samples. Babyfood cookies contained high levels of acrylamide, averaging 188 ppb for cookies (eight composite and five individual samples), whereas babyfood crackers contained less, averaging 20 ppb (four composites and one individual sample). Since babyfood is consumed for a limited duration of life, and given the limited data on food consumption for most babyfoods, OEHHA has limited confidence in determining if acrylamide levels in babyfoods exceed the proposed NSRL, except in cases where these foods are also consumed in adulthood and adult foods also have relatively high levels. This analysis did not take into account potential increased sensitivity to acrylamide carcinogenesis by infants and children. Any increased early sensitivity to acrylamide that might exist would heighten the concern over the levels of acrylamide measured in baby crackers, cookies, green beans, sweet potatoes and other squash.

Additional concerns

The foods examined in this analysis are the foods for which we have acrylamide data from the FDA (2004a, 2004b). With each new round of foods tested, new surprises emerge where high acrylamide levels were observed in foods previously untested (e.g., Postum® and Wheatena®)

or where they were not expected (e.g., prune juice). It should be noted that for the analyses here, the focus was on the average consumer of a given food. However, there may be significant concerns with respect to foods that are eaten in large quantities with regularity by a smaller fraction of the population. For example, five percent of young adult males consumed about four times the average of popcorn, potato chips, and corn chips (Smiciklas-Wright *et al.*, 2002). Thus, some individuals consume high-acrylamide content food much more frequently than the average.

The risk projections for consumption of acrylamide from various foods do not include any consideration for early-life susceptibility to cancer induction. The U.S. EPA draft guidelines for carcinogen assessment propose weighting postnatal exposures to genotoxic carcinogens like acrylamide by a factor of ten and childhood and juvenile exposures by a factor of three relative to adults, when chemical-specific data are not available. Such age-specific weighting adjustments have not been performed in this initial analysis. In the future, it is likely that acrylamide-specific cancer data on early-life exposures will be available. The National Center for Toxicological Research is planning to conduct animal cancer studies of acrylamide, which employ early life exposure groups. These data likely will be used to evaluate whether infant and childhood exposures to acrylamide-containing foods present a greater cancer risk than equivalent exposures in adulthood.

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Appendix. FDA data on acrylamide concentration in foods

Data generated by FDA (2004a, 2004b) were compiled and sorted into different food categories as defined by USDA in its document *Foods Commonly Eaten in the United States*, where possible (Smiciklas-Wright *et al.*, 2002).

The data table presented in the Appendix includes five columns of information. The first column lists the name of the food as described by FDA (2004a, 2004b). FDA released the acrylamide data in four batches beginning in December 4, 2002 through March 2004. The second column lists the date that FDA released that data and is added for easy reference back to the original source. The third column gives the acrylamide concentration measured in the sample, in units of parts per billion (ppb). If no acrylamide was detected in a sample, the FDA reported the concentration as “ND”, or not detected. For purposes of this analysis, in cases where acrylamide has been reported for other samples of the same food type, the acrylamide concentration was set to one-half the limit of detection, or 5 ppb. In cases where acrylamide was not detected in any other samples of the same food type (e.g., babyfood cereals), the acrylamide concentration is reported as ND, and assumed to be 0 ppb. The fourth column lists the number of samples of a particular food included in each analysis of acrylamide content. Data reported by the FDA in its *Exploratory Data on Acrylamide in Foods* (FDA, 2004a) represent individual samples. Data reported by FDA in its Total Diet Study (FDA, 2004b) represent a composite of three individual food samples, which were pooled prior to acrylamide analysis. The fifth column provides comments and summary measures of the acrylamide levels in different food types and the number of samples represented. The summary measures included average and weighted average levels (ppb) of acrylamide. In many cases, in a given food type (for example cookies), the FDA produced data on individual samples and on composite samples. Weighted averages were calculated for these foods, based on the number of samples represented by each data point. For foods where only individual samples or only composite samples were measured, a simple average was calculated.

In the Appendix, babyfood is generally treated as a separate food category, except in cases where both adults and infants routinely eat these foods, such as cookies and crackers. In the case of ready-to-eat cereals, analyses were performed which either included dry babyfood cereals with other ready-to-eat cereals or analyzed babyfood cereals and other ready-to-eat cereals separately.

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Food product	Date of data release	Acrylamide ppb	# samples in composite	Summary statistics or remarks
Chock full o' Nuts 100% Colombian Coffee (ground, not brewed)	Mar. 12, 2003	245	1	in acrylamide intake estimates
Folgers Classic Roast (medium roast), Lot 1 (ground, not brewed)	Mar. 12, 2003	374	1	(see below)
Folgers Classic Roast (medium roast), Lot 2 (ground, not brewed)	Mar. 12, 2003	353	1	
Folgers Classic Roast (medium roast), Lot 3 (ground, not brewed)	Mar. 12, 2003	350	1	
Folgers Classic Decaf (medium roast), Lot 1 (ground, not brewed)	Mar. 12, 2003	312	1	<u>Average</u>
Folgers Classic Decaf (medium roast), Lot 2 (ground, not brewed)	Mar. 12, 2003	361	1	regular roast coffee grounds
Folgers Classic Decaf (medium roast), Lot 3 (ground, not brewed)	Mar. 12, 2003	326	1	222.50
Hills Bros Coffee, Lot 1 (ground, not brewed)	Mar. 12, 2003	191	1	Number of samples =
Hills Bros Coffee, Lot 2 (ground, not brewed)	Mar. 12, 2003	149	1	26
Hills Bros 100% Colombian Coffee (ground, not brewed)	Mar. 12, 2003	64	1	
Maxwell House Master Blend (ground, not brewed)	Mar. 12, 2003	215	1	
Maxwell House Original Signature Blend, Lot 1 (ground, not brewed)	Mar. 12, 2003	250	1	
Maxwell House Original Signature Blend, Lot 2 (ground, not brewed)	Mar. 12, 2003	170	1	
Maxwell House Original Signature Blend, Lot 3 (ground, not brewed)	Mar. 12, 2003	222	1	
Maxwell House Original Signature Blend, Lot 4 (ground, not brewed)	Mar. 12, 2003	258	1	
Melitta Traditional Premium Roast coffee (ground, not brewed)	Mar. 12, 2003	332	1	
Sanka Decaffeinated Coffee, Lot 1 (ground, not brewed)	Mar. 12, 2003	351	1	
Sanka Decaffeinated Coffee, Lot 2 (ground, not brewed)	Mar. 12, 2003	244	1	
Starbucks Coffee Breakfast Blend (ground, not brewed)	Mar. 12, 2003	161	1	
Starbucks Coffee Colombia (ground, not brewed)	Mar. 12, 2003	163	1	
Starbucks Coffee House Blend (ground, not brewed)	Mar. 12, 2003	151	1	
Yuban 100% Colombian Coffee, Lot 1 (ground, not brewed)	Mar. 12, 2003	45	1	
Yuban 100% Colombian Coffee, Lot 2 (ground, not brewed)	Mar. 12, 2003	37	1	
Yuban 100% Colombian Coffee, Lot 3 (ground, not brewed)	Mar. 12, 2003	70	1	
Coffee - dark roasts (grounds)				
Café Bustelo Dark Roast, Lot 1 (ground, not brewed)	Mar. 12, 2003	142	1	
Café Bustelo Dark Roast, Lot 2 (ground, not brewed)	Mar. 12, 2003	138	1	
Café Bustelo Dark Roast, Lot 3 (ground, not brewed)	Mar. 12, 2003	134	1	<u>Average</u>
Chock full o' Nuts Rich French Roast, Lot 1 (ground, not brewed)	Mar. 12, 2003	257	1	Dark roast coffee grounds
Chock full o' Nuts Rich French Roast, Lot 2 (ground, not brewed)	Mar. 12, 2003	154	1	189.92
Chock full o' Nuts Rich French Roast, Lot 3 (ground, not brewed)	Mar. 12, 2003	163	1	Number of samples =
Chock full o' Nuts Rich French Roast, Lot 4 (ground, not brewed)	Mar. 12, 2003	319	1	24
Chock full o' Nuts Rich French Roast, Lot 5 (ground, not brewed)	Mar. 12, 2003	231	1	
Chock full o' Nuts Rich French Roast, Lot 6 (ground, not brewed)	Mar. 12, 2003	162	1	
Maxwell House French Roast, Lot 1 (ground, not brewed)	Mar. 12, 2003	235	1	
Maxwell House French Roast, Lot 2 (ground, not brewed)	Mar. 12, 2003	185	1	
Maxwell House French Roast, Lot 3 (ground, not brewed)	Mar. 12, 2003	184	1	
Medaglia D'oro Caffè Espresso, Lot 1 (ground, not brewed)	Mar. 12, 2003	194	1	
Medaglia D'oro Caffè Espresso, Lot 2 (ground, not brewed)	Mar. 12, 2003	155	1	
Medaglia D'oro Caffè Espresso, Lot 3 (ground, not brewed)	Mar. 12, 2003	144	1	
Starbucks Coffee French Roast, Lot 1 (ground, not brewed)	Mar. 12, 2003	150	1	
Starbucks Coffee French Roast, Lot 2 (ground, not brewed)	Mar. 12, 2003	149	1	
Starbucks Coffee French Roast, Lot 3 (ground, not brewed)	Mar. 12, 2003	97	1	
Maxwell House Slow Roast (ground, not brewed)	Dec. 4, 2002	209	1	
Starbucks Coffee Columbia Ground (ground, not brewed)	Dec. 4, 2002	175	1	
Super G Instant Coffee (powdered, not brewed)	Dec. 4, 2002	188	1	
Folgers Classic Decaf Coffee Crystals (crystals, not brewed)	Dec. 4, 2002	351	1	
Maxwell House Instant Coffee (powder, not brewed)	Dec. 4, 2002	263	1	
Medaglia D'Oro Caffè Espresso Coffee (ground, not brewed)	Dec. 4, 2002	179	1	
Instant coffee				
Folgers Classic Roast Instant Coffee (powdered, not brewed)	Mar-04	458	1	
Maxwell House Instant Coffee, Naturally Decaffeinated (powdered, not brewed)	Mar-04	172	1	<u>Average</u>
Nescafé Classic Instant Coffee (powdered, not brewed)	Mar-04	471	1	Dry instant coffee
Safeway Instant Coffee (powdered, not brewed)	Mar-04	377	1	360.33
Taster's Choice Chocolate Roast Instant Coffee (powdered, not brewed)	Mar-04	266	1	Number of samples =
Taster's Choice Gourmet Roast Instant Coffee (powdered, not brewed)	Mar-04	411	1	9
Taster's Choice Hazelnut Roast Instant Coffee (powdered, not brewed)	Mar-04	263	1	
Taster's Choice Naturally Decaffeinated Instant Coffee (powdered, not brewed)	Mar-04	539	1	
Taster's Choice Vanilla Roast Instant Coffee (powdered, not brewed)	Mar-04	286	1	
Brewed coffee				
7-Eleven Regular Coffee (brewed)	Mar. 12, 2003	5	1	
7-Eleven French Roast Coffee (brewed)	Mar. 12, 2003	6	1	<u>Average, ppb</u>
Dunkin' Donuts Coffee Regular (brewed)	Mar. 12, 2003	10	1	Coffee, brewed
McDonald's Regular Coffee (brewed)	Mar. 12, 2003	8	1	7.35
Starbucks Coffee Colombia (brewed)	Mar. 12, 2003	7	1	Number of samples =
Starbucks Coffee Lite Note (brewed)	Mar. 12, 2003	11	1	20
Café Bustelo Dark Roast (brewed)	March 1, 2004	6	1	
Dunkin' Donuts (brewed)	March 1, 2004	8	1	
Folgers Classic Roast (medium roast) (brewed)	March 1, 2004	13	1	
Folgers Classic Decaf (medium roast) (brewed)	March 1, 2004	11	1	
Maxwell House Master Blend (brewed)	March 1, 2004	8	1	
Medaglia D'oro Caffè Espresso (brewed)	March 1, 2004	6	1	

Food product	Date of data release	Acrylamide ppb	# samples in composite	Summary statistics or remarks
Starbucks (brewed)	March 1, 2004	8	1	
7-Eleven (brewed)	March 1, 2004	6	1	
Folgers Classic Roast Instant Coffee (brewed)	March 1, 2004	6	1	
Maxwell House Instant Coffee, Naturally Decaffeinated (brewed)	March 1, 2004	3	1	
Nescafé Classic Instant Coffee (brewed)	March 1, 2004	6	1	
Safeway Instant Coffee (brewed)	March 1, 2004	6	1	
Taster's Choice Gourmet Roast Instant Coffee (brewed)	March 1, 2004	6	1	
Taster's Choice Naturally Decaffeinated Instant Coffee (brewed)	March 1, 2004	7	1	
<i>Coffee samples from March 2004 Total diet study not included due to high limit of detection for reporting.</i>				
Other beverages				
Beer	March 2004	ND	3	
Beer	March 2004	ND	3	Not Detected, ND
Bottled Drinking Water (Mineral/Spring), not Carbonated or Flavored	March 2004	ND	3	in most beverages except
Bottled Drinking Water (Mineral/Spring), not Carbonated or Flavored	March 2004	ND	3	for Postum
Carbonated Beverage, Cola, Low-Calorie	March 2004	ND	3	
Carbonated Beverage, Cola, Low-Calorie	March 2004	ND	3	
Carbonated Beverage, Cola, Regular	March 2004	ND	3	
Carbonated Beverage, Cola, Regular	March 2004	ND	3	
Carbonated Beverage, Fruit-Flavored, Regular	March 2004	ND	3	
Carbonated Beverage, Fruit-Flavored, Regular	March 2004	ND	3	
Decaffeinated Coffee, from Ground	March 2004	ND	3	
Decaffeinated Coffee, from Ground	March 2004	ND	3	
Decaffeinated Tea, from Tea Bag	March 2004	ND	3	
Decaffeinated Tea, from Tea Bag	March 2004	ND	3	
Fruit Drink (10% Juice), Canned or Bottled	March 2004	ND	3	
Fruit Drink (10% Juice), Canned or Bottled	March 2004	ND	3	
Fruit Drink, from Powder	March 2004	ND	3	
Fruit Drink, from Powder	March 2004	ND	3	
Lemonade, Frozen Concentrate, Reconstituted	March 2004	ND	3	
Lemonade, Frozen Concentrate, Reconstituted	March 2004	ND	3	
Popsicle, Fruit-Flavored	March 2004	ND	3	
Popsicle, Fruit-Flavored	March 2004	ND	3	
Tea, from Tea Bag	March 2004	ND	3	
Tea, from Tea Bag	March 2004	ND	3	
Wine, Dry Table, Red/White	March 2004	ND	3	
Wine, Dry Table, Red/White	March 2004	ND	3	
Grain-based coffee substitutes				
Postum Original Caffeine Free Instant Hot Beverage (powdered)	March 1, 2004	3747	1	Average, ppb dry Postum
Postum Original Caffeine Free Instant Hot Beverage (powdered)	March 1, 2004	5399	1	4573
Postum Original Caffeine Free Instant Hot Beverage (brewed)	March 1, 2004	93	1	Number of samples = 2
FRUITS AND FRUIT JUICES				
Fruits and fruit juices				
Apple (red), Raw (w/ Peel)	March 2004	ND	3	Fruits and juices
Apple (red), Raw (w/ Peel)	March 2004	ND	3	Most were not detected, ND
Apple Juice, Bottled	March 2004	ND	3	except for prune juice
Apple Juice, Bottled	March 2004	ND	3	
Apple, Mott's Apple Sauce	Dec. 4, 2002	ND	1	
Apple, Richfood Apple Sauce Cinnamon	Dec. 4, 2002	ND	1	
Applesauce, Bottled	March 2004	ND	3	
Applesauce, Bottled	March 2004	ND	3	
Apricots, Canned in Heavy/Light Syrup	March 2004	ND	3	
Apricots, Canned in Heavy/Light Syrup	March 2004	ND	3	
Avocado, Raw	March 2004	ND	3	
Avocado, Raw	March 2004	ND	3	
Banana, Raw	March 2004	ND	3	
Banana, Raw	March 2004	ND	3	
Cantaloupe, Raw/Frozen	March 2004	ND	3	
Cantaloupe, Raw/Frozen	March 2004	ND	3	
Cranberry Juice Cocktail, Canned/Bottled	March 2004	ND	3	
Cranberry Juice Cocktail, Canned/Bottled	March 2004	ND	3	
Fruit Cocktail, Canned in Light Syrup	March 2004	ND	3	
Fruit Cocktail, Canned in Light Syrup	March 2004	ND	3	
Fruit Juice Blend (100% Juice), Canned/Bottled	March 2004	ND	3	
Fruit Juice Blend (100% Juice), Canned/Bottled	March 2004	ND	3	
Grape Juice, Frozen Concentrate, Reconstituted	March 2004	ND	3	
Grape Juice, Frozen Concentrate, Reconstituted	March 2004	ND	3	
Grapefruit Juice, Frozen Concentrate, Reconstituted	March 2004	ND	3	
Grapefruit Juice, Frozen Concentrate, Reconstituted	March 2004	ND	3	
Grapefruit, Raw	March 2004	ND	3	
Grapefruit, Raw	March 2004	ND	3	
Grapes (Red/Green), Raw	March 2004	ND	3	

Food product	Date of data release	Acrylamide ppb	# samples in composite	Summary statistics or remarks
Grapes (Red/Green), Raw	March 2004	ND	3	
Orange (Navel/Valencia), Raw	March 2004	ND	3	
Orange (Navel/Valencia), Raw	March 2004	ND	3	
Orange Juice, Bottled/Carlton	March 2004	ND	3	
Orange Juice, Bottled/Carlton	March 2004	ND	3	
Orange Juice, Frozen Concentrate, Reconstituted	March 2004	ND	3	
Orange Juice, Frozen Concentrate, Reconstituted	March 2004	ND	3	
Peach, Canned in Light/Medium Syrup	March 2004	ND	3	
Peach, Canned in Light/Medium Syrup	March 2004	ND	3	
Peach, Raw/Frozen	March 2004	ND	3	
Peach, Raw/Frozen	March 2004	ND	3	
Pear, Canned in Light Syrup	March 2004	ND	3	
Pear, Canned in Light Syrup	March 2004	ND	3	
Pear, Raw (w/ Peel)	March 2004	ND	3	
Pear, Raw (w/ Peel)	March 2004	ND	3	
Pineapple Juice, 3 Diamonds Sliced Pineapple in Unsweetened	Mar. 12, 2003	ND	1	
Pineapple Juice, Frozen Concentrate, Reconstituted	March 2004	ND	3	
Pineapple Juice, Frozen Concentrate, Reconstituted	March 2004	ND	3	
Pineapple, Canned in Juice	March 2004	ND	3	
Pineapple, Canned in Juice	March 2004	ND	3	
Pineapple, Dole Pineapple Chunks in its Own Juice	Mar. 12, 2003	10	1	
Pineapple, Dole Pineapple Slices in Heavy Syrup	Mar. 12, 2003	ND	1	
Prune Juice, Bottled	March 2004	160	3	<u>Weighted average, ppb</u>
Prune Juice, Bottled	March 2004	185	3	Prune juice
Prune Juice, Bottled	March 2004	202	3	159.00
Prune Juice, Bottled	March 2004	53	3	number of samples =
Prune Juice, Giant Orchard Harvest	March 1, 2004	267	1	13
Raisins	March 2004	ND	3	
Raisins	March 2004	ND	3	
Strawberries, Raw/Frozen	March 2004	ND	3	
Strawberries, Raw/Frozen	March 2004	ND	3	
Watermelon, Raw/Frozen	March 2004	ND	3	
Watermelon, Raw/Frozen	March 2004	ND	3	
MEATS, POULTRY, AND FISH				
Beef Roast, Chuck, Oven-Roasted	March 2004	ND	3	
Beef Roast, Chuck, Oven-Roasted	March 2004	ND	3	Levels low
Beef Steak, Loin/Sirloin, Broiled	March 2004	ND	3	most not detected, ND
Beef Steak, Loin/Sirloin, Broiled	March 2004	ND	3	
Beef, Ground, Regular, Pan-Cooked	March 2004	ND	3	
Beef, Ground, Regular, Pan-Cooked	March 2004	ND	3	
Bologna (Beef/Pork)	March 2004	ND	3	
Bologna (Beef/Pork)	March 2004	ND	3	
Catfish, Pan-Cooked w/ Oil	March 2004	ND	3	
Catfish, Pan-Cooked w/ Oil	March 2004	ND	3	
Chicken Breast, Fried, Fast-Food w/ Skin	March 2004	12	3	
Chicken Breast, Fried, Fast-Food w/ Skin	March 2004	ND	3	
Chicken Breast, Fried, Fast-Food w/ Skin	March 2004	ND	3	
Chicken Breast, Fried, Fast-Food w/ Skin	March 2004	11	3	
Chicken Breast, Oven-Roasted (Skin removed)	March 2004	ND	3	
Chicken Breast, Oven-Roasted (Skin removed)	March 2004	ND	3	
Chicken Leg, Fried, Fast-Food (w/ Skin)	March 2004	ND	3	
Chicken Leg, Fried, Fast-Food (w/ Skin)	March 2004	ND	3	
Chicken Nuggets, Fast-Food	March 2004	26	3	
Chicken Nuggets, Fast-Food	March 2004	23	3	<u>Average, ppb</u>
Chicken Nuggets, Fast-Food	March 2004	22	3	Chicken nuggets or strips
Chicken Nuggets, Fast-Food	March 2004	22	3	24.00
Checkers Chicken Pieces	Dec. 4, 2002	22	1	Number of samples =
Tyson Crispy Chicken Strips (baked)	Dec. 4, 2002	35	1	14
Tyson Crispy Chicken Strips (not baked)	Dec. 4, 2002	32	1	
Chicken Thigh, Oven-Roasted (Skin Removed)	March 2004	ND	3	
Chicken Thigh, Oven-Roasted (Skin Removed)	March 2004	ND	3	
Fish Sticks or Patty, Frozen, Oven-Cooked	March 2004	5	3	Highlighted, ND, assumed 5 ppb
Fish Sticks or Patty, Frozen, Oven-Cooked	March 2004	12	3	<u>Weighted average, ppb</u>
Fish Sticks or Patty, Frozen, Oven-Cooked	March 2004	5	3	Breaded, fried fish
Fish Sticks or Patty, Frozen, Oven-Cooked	March 2004	5	3	8.53
Gorton's Tenders Extra Crunchy fish fillets (baked)	Dec. 4, 2002	30	1	Number of samples =

Food product	Date of data release	Acrylamide ppb	# samples in composite	Summary statistics or remarks
Mrs. Paul's Crispy Fish Fillets (baked)	Dec. 4, 2002	12	1	15
Van de Kamp's Crunchy Fish Sticks (baked)	Dec. 4, 2002	5	1	
Gorton's Tenders Extra Crunchy fish fillets (not baked)	Dec. 4, 2002	25	1	
Mrs. Paul's Crispy Fish Fillets (not baked)	Dec. 4, 2002	13	1	
Van de Kamp's Crunchy Fish Sticks (not baked)	Dec. 4, 2002	ND	1	
Frankfurter (Beef/Pork), Boiled	March 2004	ND	3	
Frankfurter (Beef/Pork), Boiled	March 2004	ND	3	
Ham, Cured (Not Canned), Baked	March 2004	ND	3	
Ham, Cured (Not Canned), Baked	March 2004	ND	3	
Lamb Chop, Pan-Cooked w/ Oil	March 2004	ND	3	
Lamb Chop, Pan-Cooked w/ Oil	March 2004	ND	3	
Liver (Beef/Calf), Pan-Cooked w/ Oil	March 2004	ND	3	
Liver (Beef/Calf), Pan-Cooked w/ Oil	March 2004	ND	3	
Luncheon Meat (Chicken/Turkey)	March 2004	ND	3	
Luncheon Meat (Chicken/Turkey)	March 2004	ND	3	
Luncheon Meat (Ham)	March 2004	ND	3	
Luncheon Meat (Ham)	March 2004	ND	3	
Pork Bacon, Oven-Cooked	March 2004	ND	3	
Pork Bacon, Oven-Cooked	March 2004	ND	3	
Pork Chop, Pan-Cooked w/ Oil	March 2004	ND	3	
Pork Chop, Pan-Cooked w/ Oil	March 2004	ND	3	
Pork Roast, Loin, Oven-Roasted	March 2004	ND	3	
Pork Roast, Loin, Oven-Roasted	March 2004	ND	3	
Pork Sausage (Link/Patty), Oven-Cooked	March 2004	ND	3	
Pork Sausage (Link/Patty), Oven-Cooked	March 2004	11	3	
Pork Sausage (Link/Patty), Oven-Cooked	March 2004	ND	3	
Pork Sausage (Link/Patty), Oven-Cooked	March 2004	ND	3	
Chifles Fried Pork Rinds Smokehouse Flavored	Dec. 4, 2002	12	1	
Salami, Luncheon-Meat Type (Not Hard)	March 2004	ND	3	
Salami, Luncheon-Meat Type (Not Hard)	March 2004	ND	3	
Salmon, Steaks/Fillets, Baked	March 2004	ND	3	
Salmon, Steaks/Fillets, Baked	March 2004	ND	3	
Shrimp, Boiled	March 2004	ND	3	
Shrimp, Boiled	March 2004	ND	3	
Tuna, Canned in Water, Drained	March 2004	ND	3	
Tuna, Canned in Water, Drained	March 2004	ND	3	
Turkey Breast, Oven-Roasted	March 2004	ND	3	
Turkey Breast, Oven-Roasted	March 2004	ND	3	
Pastene Fancy Light Tuna in Olive Oil	Dec. 4, 2002	ND	1	
Progresso Light Tuna in Olive Oil	Dec. 4, 2002	ND	1	
DAIRY FOODS				
Grace Sweetened Condensed Milk	Dec. 4, 2002	ND	1	
Carnation Malted Milk Original	Dec. 4, 2002	43	1	
Carnation Insant Nonfat Dry Milk	Dec. 4, 2002	11	1	Dairy
Saco Cultured Buttermilk Blend	Dec. 4, 2002	ND	1	Levels were low
Butter, Regular (Salted)	March 2004	ND	3	
Butter, Regular (Salted)	March 2004	ND	3	
Cheese, American, Processed	March 2004	ND	3	
Cheese, American, Processed	March 2004	ND	3	
Cheese, Cheddar, Natural (Sharp/Mild)	March 2004	ND	3	
Cheese, Cheddar, Natural (Sharp/Mild)	March 2004	ND	3	
Cheese, Swiss, Natural	March 2004	ND	3	
Cheese, Swiss, Natural	March 2004	ND	3	
Cottage Cheese, Creamed, Lowfat (2% Milk Fat)	March 2004	ND	3	
Cottage Cheese, Creamed, Lowfat (2% Milk Fat)	March 2004	ND	3	
Cream Cheese	March 2004	ND	3	
Cream Cheese	March 2004	ND	3	
Giant Foods Low Fat Milk,1% Milkfat	March 1, 2004	ND	3	
Half & Half Cream	March 2004	ND	3	
Half & Half Cream	March 2004	ND	3	
Ice Cream, Light, Vanilla	March 2004	ND	3	
Ice Cream, Light, Vanilla	March 2004	ND	3	
Ice Cream, Light, Vanilla	March 2004	ND	3	
Ice Cream, Light, Vanilla	March 2004	ND	3	
Ice Cream, Regular, Vanilla	March 2004	ND	3	
Ice Cream, Regular, Vanilla	March 2004	ND	3	
Lucerne Fat Free Milk	March 1, 2004	ND	1	
Lucerne Reduced Fat Milk,2% Milkfat	March 1, 2004	ND	1	
Lucerne Whole Milk	March 1, 2004	ND	1	
Meal Replacement, Liquid RTD, Any Flavor	March 2004	ND	3	

Food product	Date of data release	Acrylamide ppb	# samples in composite	Summary statistics or remarks
Meal Replacement, Liquid RTD, Any Flavor	March 2004	ND	3	
Milk Shake, Chocolate, Fast-Food	March 2004	ND	3	
Milk Shake, Chocolate, Fast-Food	March 2004	15	3	
Milk Shake, Chocolate, Fast-Food	March 2004	16	3	
Milk Shake, Chocolate, Fast-Food	March 2004	14	3	
Milk, Chocolate, Lowfat, Fluid	March 2004	ND	3	
Milk, Chocolate, Lowfat, Fluid	March 2004	ND	3	
Milk, Lowfat (2%), Fluid	March 2004	ND	3	
Milk, Lowfat (2%), Fluid	March 2004	ND	3	
Milk, Skim, Fluid	March 2004	ND	3	
Milk, Skim, Fluid	March 2004	ND	3	
Milk, Whole, Fluid	March 2004	ND	3	
Milk, Whole, Fluid	March 2004	ND	3	
Pudding, Ready-to-Eat, Flavor Other Than Chocolate	March 2004	ND	3	
Pudding, Ready-to-Eat, Flavor Other Than Chocolate	March 2004	ND	3	
Sherbet, Fruit-Flavored	March 2004	ND	3	
Sherbet, Fruit-Flavored	March 2004	ND	3	
Sour Cream	March 2004	ND	3	
Sour Cream	March 2004	ND	3	
Sour Cream Dip, Any Flavor	March 2004	ND	3	
Sour Cream Dip, Any Flavor	March 2004	ND	3	
Yogurt, Lowfat, Fruit-Flavored	March 2004	ND	3	
Yogurt, Lowfat, Fruit-Flavored	March 2004	ND	3	
Eggs				
Eggs, Boiled	March 2004	ND	3	
Eggs, Boiled	March 2004	ND	3	
Eggs, Scrambled w/ Oil	March 2004	ND	3	
Eggs, Scrambled w/ Oil	March 2004	ND	3	
GRAVIES AND SEASONINGS				
Heinz Home Style Savory Beef Gravy (canned)	Dec. 4, 2002	ND	1	
Heinz Home Style Classic Chicken Gravy (canned)	Dec. 4, 2002	ND	1	Levels highly variable
Butterball Brown Gravy Mix	Dec. 4, 2002	ND	1	Most were low
McCormick Mushroom Gravy Mix	Dec. 4, 2002	ND	1	
McCormick Turkey Gravy Mix	Dec. 4, 2002	ND	1	
Kame Dark Soy Sauce	Dec. 4, 2002	ND	1	
Kikkoman Soy Sauce	Dec. 4, 2002	ND	1	
Colgin Natural Hickory Liquid Smoke	Dec. 4, 2002	54	1	
Colgin Natural Pecan Liquid Smoke	Dec. 4, 2002	151	1	
Stubb's Mesquite Liquid Smoke	Dec. 4, 2002	38	1	
Accent Flavor Enhancer	Dec. 4, 2002	ND	1	
Char Crust Roto Roast Dry-Rub Seasoning	Dec. 4, 2002	ND	1	
Wyler's Shakers Beef & French Onion Flavor Instant Bouillon	Dec. 4, 2002	ND	1	
Knorr Taste Breaks Soup Chicken Noodle Flavor	Dec. 4, 2002	22	1	
Maruchan Instant Lunch Ramen Noodles with Vegetables Chicken	Dec. 4, 2002	52	1	
Nissin Cup Noodles Chicken Flavor	Dec. 4, 2002	136	1	
Lipton Recipe Secrets Onion Soup & Dip Mix	Dec. 4, 2002	1184	1	
Super G Onion Recipe Soup Mix	Dec. 4, 2002	90	1	
Mustard, Yellow	March 2004	ND	3	
Mustard, Yellow	March 2004	ND	3	
CANDY, SWEETS, SUGAR, SYRUPS, COCOA				
Droste Cocoa	Dec. 4, 2002	ND	1	
Ghirardelli Unsweetened Cocoa	Dec. 4, 2002	316	1	
Hershey's Cocoa	Dec. 4, 2002	909	1	Levels highly variable
Hershey's European Style Dutch Processed Cocoa	Dec. 4, 2002	58	1	Most were low
Baker's Bittersweet Baking Chocolate Squares	Dec. 4, 2002	104	1	
Ghirardelli Bittersweet Chocolate Baking Bar	Dec. 4, 2002	93	1	
Hershey's Milk Chocolate Bar	Dec. 4, 2002	ND	1	
Hershey's Chocolate Milk Mix	Dec. 4, 2002	ND	1	
Nestle Nesquik Chocolate Flavor	Dec. 4, 2002	45	1	
Land O Lakes Cocoa Classics Chocolate Supreme Artificially	Dec. 4, 2002	ND	1	
Super G Hot Cocoa Mix Milk Chocolate Flavor	Dec. 4, 2002	24	1	
Swiss Miss Milk Chocolate Flavor Hot Cocoa Mix	Dec. 4, 2002	ND	1	
Jell-O Chocolate Flavor Instant Pudding & Pie Filling	Dec. 4, 2002	15	1	
Super G Chocolate Flavor Instant Pudding & Pie Filling	Dec. 4, 2002	17	1	
Candy Bar, Chocolate, Nougat, and Nuts	March 2004	22	3	
Candy Bar, Chocolate, Nougat, and Nuts	March 2004	11	3	
Candy Bar, Chocolate, Nougat, and Nuts	March 2004	21	3	
Candy Bar, Chocolate, Nougat, and Nuts	March 2004	20	3	
Candy Bar, Milk Chocolate, Plain	March 2004	21	3	

Food product	Date of data release	Acrylamide ppb	# samples in composite	Summary statistics or remarks
Candy Bar, Milk Chocolate, Plain	March 2004	19	3	
Candy Bar, Milk Chocolate, Plain	March 2004	17	3	
Candy Bar, Milk Chocolate, Plain	March 2004	22	3	
Candy, Hard, Any Flavor	March 2004	ND	3	
Candy, Hard, Any Flavor	March 2004	ND	3	
Gelatin Dessert, Any Flavor	March 2004	ND	3	
Gelatin Dessert, Any Flavor	March 2004	ND	3	
Honey	March 2004	ND	3	
Honey	March 2004	ND	3	
Jelly, Any Flavor	March 2004	ND	3	
Jelly, Any Flavor	March 2004	ND	3	
Sugar, White, Granulated	March 2004	ND	3	
Sugar, White, Granulated	March 2004	ND	3	
Sweet & Sour Sauce	March 2004	ND	3	
Sweet & Sour Sauce	March 2004	ND	3	
Syrup, Chocolate	March 2004	27	3	
Syrup, Chocolate	March 2004	20	3	
Syrup, Chocolate	March 2004	29	3	
Syrup, Chocolate	March 2004	26	3	
Syrup, Pancake	March 2004	ND	3	
Syrup, Pancake	March 2004	ND	3	
Super G Non-Dairy Coffee Creamer	Dec. 4, 2002	ND	1	
Polaner All Fruit Spreadable Fruit, Pineapple	Mar. 12, 2003	ND	1	
Smucker's Apple Jelly	Mar. 12, 2003	ND	1	
Smucker's Seedless Strawberry Jam	Mar. 12, 2003	ND	1	
Cream Substitute, Non-Dairy, Liquid/Frozen	March 2004	ND	3	
Cream Substitute, Non-Dairy, Liquid/Frozen	March 2004	ND	3	
Jell-O Gelatin Dessert Raspberry Artificial Flavor	Dec. 4, 2002	ND	1	
Super G Raspberry Artificial Flavor Gelatin Dessert	Dec. 4, 2002	ND	1	
General Mills Lucky Charms marshmallows	Dec. 4, 2002	ND	1	
Mrs. Richardson's Butterscotch Caramel Topping	Dec. 4, 2002	ND	1	
MIXTURES				
(e.g., casseroles, sandwiches, soups, pizza)				
Beef and Vegetable Stew, Canned	March 2004	ND	3	
Beef and Vegetable Stew, Canned	March 2004	14	3	Levels usually low
Beef and Vegetable Stew, Canned	March 2004	27	3	except for chili con carne
Beef and Vegetable Stew, Canned	March 2004	39	3	
Beef Stroganoff w/ Noodles, Homemade	March 2004	ND	3	
Beef Stroganoff w/ Noodles, Homemade	March 2004	ND	3	
Beef Stroganoff w/ Noodles, Homemade	March 2004	ND	3	
Beef Stroganoff w/ Noodles, Homemade	March 2004	ND	3	
Beef w/ Vegetables in Sauce, from Chinese Carry-out	March 2004	ND	3	
Beef w/ Vegetables in Sauce, from Chinese Carry-out	March 2004	ND	3	
Burrito w/ Beef, Beans and Cheese, from Mexican Carry-Out	March 2004	ND	3	
Burrito w/ Beef, Beans and Cheese, from Mexican Carry-Out	March 2004	17	3	
Burrito w/ Beef, Beans and Cheese, from Mexican Carry-Out	March 2004	17	3	
Burrito w/ Beef, Beans and Cheese, from Mexican Carry-Out	March 2004	15	3	
Chicken Filet (Broiled) Sandwich on Bun, Fast-Food	March 2004	ND	3	
Chicken Filet (Broiled) Sandwich on Bun, Fast-Food	March 2004	18	3	
Chicken Filet (Broiled) Sandwich on Bun, Fast-Food	March 2004	ND	3	
Chicken Filet (Broiled) Sandwich on Bun, Fast-Food	March 2004	13	3	
Chicken Potpie, Frozen, Heated	March 2004	ND	3	
Chicken Potpie, Frozen, Heated	March 2004	12	3	
Chicken Potpie, Frozen, Heated	March 2004	16	3	
Chicken Potpie, Frozen, Heated	March 2004	10	3	
Chicken w/ Vegetables in Sauce, from Chinese Carryout	March 2004	ND	3	
Chicken w/ Vegetables in Sauce, from Chinese Carryout	March 2004	ND	3	
Chili Con Carne w/ Beans, Canned	March 2004	152	3	Average, ppb
Chili Con Carne w/ Beans, Canned	March 2004	126	3	Chili con Carne
Chili Con Carne w/ Beans, Canned	March 2004	187	3	130.25
Chili Con Carne w/ Beans, Canned	March 2004	56	3	Number of samples = 12
Clam Chowder, New England, Canned, Condensed, Prepared w/	March 2004	ND	3	
Clam Chowder, New England, Canned, Condensed, Prepared w/	March 2004	13	3	
Clam Chowder, New England, Canned, Condensed, Prepared w/	March 2004	ND	3	
Clam Chowder, New England, Canned, Condensed, Prepared w/	March 2004	10	3	
Egg, Cheese, and Ham on English Muffin, Fast-Food	March 2004	ND	3	
Egg, Cheese, and Ham on English Muffin, Fast-Food	March 2004	16	3	
Egg, Cheese, and Ham on English Muffin, Fast-Food	March 2004	15	3	
Egg, Cheese, and Ham on English Muffin, Fast-Food	March 2004	15	3	
Fish Sandwich on Bun, Fast-Food	March 2004	ND	3	
Fish Sandwich on Bun, Fast-Food	March 2004	16	3	

Food product	Date of data release	Acrylamide ppb	# samples in composite	Summary statistics or remarks
Fish Sandwich on Bun, Fast-Food	March 2004	ND	3	
Fish Sandwich on Bun, Fast-Food	March 2004	11	3	
Fried Rice, Meatless, from Chinese Carry-Out	March 2004	14	3	
Fried Rice, Meatless, from Chinese Carry-Out	March 2004	23	3	
Fried Rice, Meatless, from Chinese Carry-Out	March 2004	17	3	
Fried Rice, Meatless, from Chinese Carry-Out	March 2004	34	3	
Lasagna w/ Meat, Frozen, Heated	March 2004	ND	3	
Lasagna w/ Meat, Frozen, Heated	March 2004	ND	3	
Macaroni and Cheese, Prepared from Box Mix	March 2004	ND	3	
Macaroni and Cheese, Prepared from Box Mix	March 2004	ND	3	
Meatloaf, Beef, Homemade	March 2004	ND	3	
Meatloaf, Beef, Homemade	March 2004	ND	3	
Pizza, Cheese and Pepperoni, Regular Crust, from Pizza Carry-Out	March 2004	19	3	<u>Average, Pizza</u>
Pizza, Cheese and Pepperoni, Regular Crust, from Pizza Carry-Out	March 2004	20	3	19.50
Pizza, Cheese and Pepperoni, Regular Crust, from Pizza Carry-Out	March 2004	20	3	Number of samples = 12
Pizza, Cheese and Pepperoni, Regular Crust, from Pizza Carry-Out	March 2004	19	3	
Quarter-Pound Cheeseburger on Bun, Fast-Food	March 2004	ND	3	
Quarter-Pound Cheeseburger on Bun, Fast-Food	March 2004	ND	3	
Quarter-Pound Hamburger on Bun, Fast-Food	March 2004	ND	3	
Quarter-Pound Hamburger on Bun, Fast-Food	March 2004	ND	3	
Soup, Bean w/ Bacon/Pork, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Soup, Bean w/ Bacon/Pork, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Soup, Bean w/ Bacon/Pork, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Soup, Bean w/ Bacon/Pork, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Soup, Chicken Noodle, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Soup, Chicken Noodle, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Soup, Chicken Noodle, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Soup, Chicken Noodle, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Soup, Oriental Noodles (Ramen Noodles), Prepared w/ Water	March 2004	ND	3	
Soup, Oriental Noodles (Ramen Noodles), Prepared w/ Water	March 2004	ND	3	
Soup, Oriental Noodles (Ramen Noodles), Prepared w/ Water	March 2004	ND	3	
Soup, Oriental Noodles (Ramen Noodles), Prepared w/ Water	March 2004	ND	3	
Soup, Tomato, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Soup, Tomato, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Soup, Vegetable Beef, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Soup, Vegetable Beef, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Soup, Vegetable Beef, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Soup, Vegetable Beef, Canned, Condensed, Prepared w/ Water	March 2004	ND	3	
Spaghetti w/Meat Sauce, Homemade	March 2004	ND	3	
Spaghetti w/Meat Sauce, Homemade	March 2004	ND	3	
Spaghetti w/Meat Sauce, Homemade	March 2004	ND	3	
Spaghetti w/Meat Sauce, Homemade	March 2004	ND	3	
Taco/Tostada w/ Beef and Cheese, from Mexican Carry-Out	March 2004	18	3	<u>Average, Taco/Tostada</u>
Taco/Tostada w/ Beef and Cheese, from Mexican Carry-Out	March 2004	13	3	26.75
Taco/Tostada w/ Beef and Cheese, from Mexican Carry-Out	March 2004	34	3	Number of samples = 12
Taco/Tostada w/ Beef and Cheese, from Mexican Carry-Out	March 2004	42	3	
Tuna Noodle Casserole, Homemade	March 2004	ND	3	
Tuna Noodle Casserole, Homemade	March 2004	ND	3	
Tuna Noodle Casserole, Homemade	March 2004	ND	3	
Tuna Noodle Casserole, Homemade	March 2004	ND	3	
Lipton Noodles & Sauce Creamy Chicken	Dec. 4, 2002	17	1	
Lipton Asian Side Dishes Teriyaki Noodles	Dec. 4, 2002	34	1	
Kraft Macaroni & Cheese Dinner	Dec. 4, 2002	11	1	
Super G Macaroni & Cheese Dinner	Dec. 4, 2002	12	1	
Lipton Rice & Sauce Herb & Butter	Dec. 4, 2002	ND	1	
Fuddrucker's Onion Rings	Dec. 4, 2002	13	1	
OILS, GRAVIES AND DRESSINGS				
Brown Gravy, Canned or Bottled	March 2004	ND	3	
Brown Gravy, Canned or Bottled	March 2004	ND	3	Not detected, ND
Margarine, Regular (Salted)	March 2004	ND	3	
Margarine, Regular (Salted)	March 2004	ND	3	
Mayonnaise, Regular, Bottled	March 2004	ND	3	
Mayonnaise, Regular, Bottled	March 2004	ND	3	
Olive Oil	March 2004	ND	3	
Olive Oil	March 2004	ND	3	
Salad Dressing, Creamy/Buttermilk Type, Low-Calorie	March 2004	ND	3	
Salad Dressing, Creamy/Buttermilk Type, Low-Calorie	March 2004	ND	3	
Salad Dressing, Creamy/Buttermilk Type, Regular	March 2004	ND	3	

Food product	Date of data release	Acrylamide ppb	# samples in composite	Summary statistics or remarks
Salad Dressing, Creamy/Buttermilk Type, Regular	March 2004	ND	3	
Salad Dressing, Italian, Regular	March 2004	ND	3	
Salad Dressing, Italian, Regular	March 2004	ND	3	
Vegetable Oil	March 2004	ND	3	
Vegetable Oil	March 2004	ND	3	
INFANT FORMULA				
Carnation Good Start Milk-Based Infant Formula (liquid)	Dec. 4, 2002	ND	1	
Carnation Good Start Milk-Based Infant Formula (powdered)	Dec. 4, 2002	ND	1	
Enfamil Milk-Based Infant Formula with Iron (liquid)	Dec. 4, 2002	ND	1	Not detected, ND
Enfamil Milk-Based Infant Formula with Iron (powdered)	Dec. 4, 2002	ND	1	
Similac Infant Formula with Iron (liquid)	Dec. 4, 2002	ND	1	
Similac Infant Formula with Iron (powdered)	Dec. 4, 2002	ND	1	
Carnation Alsoy Soy Infant Formula (liquid)	Dec. 4, 2002	ND	1	
Carnation Alsoy Soy Infant Formula (powdered)	Dec. 4, 2002	ND	1	
Enfamil ProSobee Soy Formula (liquid)	Dec. 4, 2002	ND	1	
Enfamil ProSobee Soy Formula (powdered)	Dec. 4, 2002	ND	1	
Isomil Infant & Toddler Soy Formula with Iron (powdered)	Dec. 4, 2002	ND	1	
Isomil Soy Formula with Iron (liquid)	Dec. 4, 2002	ND	1	
Infant Formula, Milk-Based, High Iron, RTF	March 2004	ND	3	
Infant Formula, Milk-Based, High Iron, RTF	March 2004	ND	3	
Infant Formula, Milk-Based, Low Iron, RTF	March 2004	ND	3	
Infant Formula, Milk-Based, Low Iron, RTF	March 2004	ND	3	
Infant Formula, Soy-Based, RTF	March 2004	ND	3	
Infant Formula, Soy-Based, RTF	March 2004	ND	3	
BABY FOOD (data on cereal, cookies and crackers also appear as subcategories above)				
Cereal - babyfood				
Beech Nut Stage 1 Oatmeal Cereal for Baby	Dec. 4, 2002	ND	1	
Carnation Baby Cereal with Formula Oatmeal	Dec. 4, 2002	ND	1	Not detected, ND
Gerber Single Grain Oatmeal Cereal for Baby	Dec. 4, 2002	ND	1	
Beech Nut Rice Cereal for Baby	Dec. 4, 2002	ND	1	
Carnation Baby Cereal with Formula Rice	Dec. 4, 2002	ND	1	
Gerber Mixed Cereal for Baby	Dec. 4, 2002	ND	1	
Cereal, Barley, Dry, Prepared w/ Water	March 2004	ND	3	
Cereal, Barley, Dry, Prepared w/ Water	March 2004	ND	3	
Cereal, Mixed, Dry, Prepared w/ Water	March 2004	ND	3	
Cereal, Mixed, Dry, Prepared w/ Water	March 2004	ND	3	
Cereal, Oatmeal w/ Fruit, Prepared w/ Water	March 2004	ND	3	
Cereal, Oatmeal w/ Fruit, Prepared w/ Water	March 2004	ND	3	
Cereal, Oatmeal w/ Fruit, Prepared w/ Water	March 2004	ND	3	
Cereal, Oatmeal w/ Fruit, Prepared w/ Water	March 2004	ND	3	
Cereal, Oatmeal, Dry, Prepared w/ Water	March 2004	ND	3	
Cereal, Oatmeal, Dry, Prepared w/ Water	March 2004	ND	3	
Cereal, Rice w/ Apples, Dry, Prepared w/ Water	March 2004	ND	3	
Cereal, Rice w/ Apples, Dry, Prepared w/ Water	March 2004	ND	3	
Cereal, Rice, Dry, Prepared w/ Water	March 2004	ND	3	
Cereal, Rice, Dry, Prepared w/ Water	March 2004	ND	3	
Dairy - babyfood				
Fruit Dessert/Pudding	March 2004	ND	3	
Fruit Dessert/Pudding	March 2004	ND	3	Not detected, ND
Fruit Yogurt Dessert	March 2004	ND	3	
Fruit Yogurt Dessert	March 2004	ND	3	
Vanilla Custard/Pudding	March 2004	ND	3	
Vanilla Custard/Pudding	March 2004	ND	3	
Fruit - babyfood				
Beech Nut Stage 2 Apples & Cherries	Dec. 4, 2002	ND	1	
Gerber 2nd Foods Apples & Cherries	Dec. 4, 2002	ND	1	Most samples were not detected, ND
Apples with Berries	March 2004	ND	3	
Apples with Berries	March 2004	ND	3	
Applesauce	March 2004	ND	3	
Applesauce	March 2004	ND	3	
Apricots w/ Mixed Fruit	March 2004	ND	3	
Apricots w/ Mixed Fruit	March 2004	ND	3	
Banana Dessert	March 2004	ND	3	
Banana Dessert	March 2004	ND	3	
Bananas	March 2004	ND	3	
Bananas	March 2004	ND	3	
Bananas and Pineapple	March 2004	ND	3	
Bananas and Pineapple	March 2004	ND	3	
Juice, Apple	March 2004	ND	3	
Juice, Apple	March 2004	ND	3	

Food product	Date of data release	Acrylamide ppb	# samples in composite	Summary statistics or remarks
Juice, Apple-Banana	March 2004	ND	3	
Juice, Apple-Banana	March 2004	ND	3	
Juice, Apple-Cherry	March 2004	ND	3	
Juice, Apple-Cherry	March 2004	ND	3	
Juice, Apple-Grape	March 2004	ND	3	
Juice, Apple-Grape	March 2004	ND	3	
Juice, Grape	March 2004	ND	3	
Juice, Grape	March 2004	ND	3	
Juice, Mixed Fruit	March 2004	ND	3	
Juice, Mixed Fruit	March 2004	ND	3	
Juice, Orange	March 2004	ND	3	
Juice, Orange	March 2004	ND	3	
Juice, Pear	March 2004	ND	3	
Juice, Pear	March 2004	ND	3	
Peaches	March 2004	ND	3	
Peaches	March 2004	ND	3	
Pears	March 2004	ND	3	
Pears	March 2004	ND	3	
Pears and Pineapple	March 2004	ND	3	
Pears and Pineapple	March 2004	ND	3	
				Highlighted, ND, assumed 5 ppb
Plums w/ Apples and/or Pears	March 2004	5	3	<u>Average</u>
Plums w/ Apples and/or Pears	March 2004	118	3	Plum-containing cooked babyfood
Plums w/ Apples and/or Pears	March 2004	14	3	35.50
Plums w/ Apples and/or Pears	March 2004	5	3	Number of samples = 12
Mixture - babyfood				
Beech Nut Stage 2 Vegetables & Chicken	Dec. 4, 2002	75	1	
Gerber 2nd Foods Vegetable Chicken Dinner	Dec. 4, 2002	30	1	
Beef and Broth/Gravy	March 2004	ND	3	Levels moderately high in
Beef and Broth/Gravy	March 2004	ND	3	some foods such as
Beef and Noodles/Beef Stroganoff	March 2004	ND	3	sweet potatoes, peach cobbles
Beef and Noodles/Beef Stroganoff	March 2004	11	3	squash, carrots and green beans
Beef and Noodles/Beef Stroganoff	March 2004	16	3	
Beef and Noodles/Beef Stroganoff	March 2004	20	3	Most had low levels
Chicken and Broth/Gravy	March 2004	ND	3	
Chicken and Broth/Gravy	March 2004	ND	3	
Chicken Noodle Dinner	March 2004	11	3	
Chicken Noodle Dinner	March 2004	ND	3	
Chicken Noodle Dinner	March 2004	10	3	
Chicken Noodle Dinner	March 2004	ND	3	
Chicken w/ Rice	March 2004	15	3	
Chicken w/ Rice	March 2004	15	3	
Lamb and Broth/Gravy	March 2004	ND	3	
Lamb and Broth/Gravy	March 2004	ND	3	
Macaroni and Cheese	March 2004	ND	3	
Macaroni and Cheese	March 2004	ND	3	
Macaroni, Tomato and Beef	March 2004	53	3	
Macaroni, Tomato and Beef	March 2004	30	3	
Macaroni, Tomato and Beef	March 2004	24	3	
Macaroni, Tomato and Beef	March 2004	17	3	
Turkey and Broth/Gravy	March 2004	ND	3	
Turkey and Broth/Gravy	March 2004	ND	3	
Turkey and Rice	March 2004	10	3	
Turkey and Rice	March 2004	28	3	
Turkey and Rice	March 2004	14	3	
Turkey and Rice	March 2004	47	3	
Veal and Broth/Gravy	March 2004	ND	3	
Veal and Broth/Gravy	March 2004	ND	3	
Vegetables and Beef	March 2004	ND	3	
Vegetables and Beef	March 2004	18	3	
Vegetables and Beef	March 2004	17	3	
Vegetables and Beef	March 2004	21	3	
Vegetables and Chicken	March 2004	17	3	
Vegetables and Chicken	March 2004	15	3	
Vegetables and Chicken	March 2004	22	3	
Vegetables and Chicken	March 2004	26	3	
Vegetables and Ham	March 2004	31	3	
Vegetables and Ham	March 2004	26	3	
Vegetables and Ham	March 2004	19	3	
Vegetables and Ham	March 2004	22	3	
Vegetables and Turkey	March 2004	15	3	
Vegetables and Turkey	March 2004	12	3	
Vegetables and Turkey	March 2004	15	3	

Food product	Date of data release	Acrylamide ppb	# samples in composite	Summary statistics or remarks
Vegetables and Turkey	March 2004	10	3	
Pie, cobbler - babyfood				
Dutch Apple/Apple Cobbler	March 2004	ND	3	
Dutch Apple/Apple Cobbler	March 2004	ND	3	
Dutch Apple/Apple Cobbler	March 2004	ND	3	
Dutch Apple/Apple Cobbler	March 2004	ND	3	
Peach Cobbler/Dessert	March 2004	67	3	<u>Average, ppb</u>
Peach Cobbler/Dessert	March 2004	44	3	Peach cobbler - babyfood
Peach Cobbler/Dessert	March 2004	27	3	40.25
Peach Cobbler/Dessert	March 2004	23	3	Number of samples = 12
Vegetables - babyfood				
Beech Nut Stage 2 Carrots & Peas	Dec. 4, 2002	17	1	<u>Weighted average, ppb</u>
Gerber 2nd Foods Carrots & Sweet Peas	Dec. 4, 2002	39	1	Baby food with carrots
Carrots	March 2004	89	3	54.14
Carrots	March 2004	47	3	Number of samples =
Carrots	March 2004	21	3	14
Carrots	March 2004	77	3	
Gerber 2nd Foods Green Beans	Dec. 4, 2002	26	1	<u>Weighted average, ppb</u>
Green Beans	March 2004	34	3	Baby food -- green beans
Green Beans	March 2004	16	3	23.23
Green Beans	March 2004	20	3	Number of samples =
Green Beans	March 2004	22	3	13
Mixed Vegetables	March 2004	ND	3	
Mixed Vegetables	March 2004	ND	3	
Peas	March 2004	ND	3	
Peas	March 2004	ND	3	
Squash	March 2004	29	3	<u>Weighted average, ppb</u>
Squash	March 2004	19	3	Baby food -- squash
Squash	March 2004	18	3	19.29
Squash	March 2004	15	3	Number of samples =
Beech Nut Stage 2 Butternut Squash	Dec. 4, 2002	22	1	14
Gerber 2nd Foods Squash	Dec. 4, 2002	5	1	Highlighted, ND, assumed 5 ppb
Sweet Potatoes	March 2004	117	3	
Sweet Potatoes	March 2004	100	3	<u>Weighted average, ppb</u>
Sweet Potatoes	March 2004	30	3	Baby food -- sweet potatoes
Sweet Potatoes	March 2004	70	3	77.44
Beech Nut Stage 2 Tender Golden Sweet Potatoes	Dec. 4, 2002	37	1	Number of samples =
Gerber Tender Harvest Organic Sweet Potatoes (lot 1)	Dec. 4, 2002	62	1	16
Gerber Tender Harvest Organic Sweet Potatoes (lot 2)	Dec. 4, 2002	121	1	
Gerber 2nd Foods Sweet Potatoes	Dec. 4, 2002	68	1	