Risk Assessment for C. perfringens in RTE Meat and Poultry Products

## Appendix A Food Categories to be Modeled in the FSIS C. perfringens Risk Assessment

#### A.1 Introduction

The Food Safety and Inspection Service (FSIS) has proposed a ready-to-eat (RTE) rule (FSIS, 2001), a portion of which states that all RTE products, other than thermally processed, commercially sterile products, and processing used to produce partially heat-treated products, meet stabilization (*e.g.*, cooling) performance standards to prevent the multiplication of *Clostridium perfringens* (*C. perfringens*). In an effort to estimate the impact of this rule on the incidence of foodborne illness caused by *C. perfringens* in RTE and partially-cooked foods, a risk assessment was developed. The following document outlines sequentially the procedure adopted by the Agency in selecting and grouping relevant foods for this risk assessment.

#### A.2 Selection of foods

The most representative available information on foods consumed in the United States was obtained from the Continuing Survey of Food Intakes for Individuals (CSFII 1994–1996, 1998 database, referred to as CSFII, (USDA, 2000)). CFSII was a survey conducted by the Agricultural Research Service (ARS) of the U.S. Department of Agriculture (USDA), initially over the three-year period 1994–1996. During each of those three years, a nationally representative sample of non-institutionalized persons residing in the United States was contacted twice (about 3–10 days apart) and asked about what they had eaten during the previous day (24 hours, midnight to midnight). The 3-year CSFII data set includes information on food and nutrient intakes by 16,103 individuals who provided at least 1 day of dietary data.

The three years of CSFII data from 1994–1996 were augmented by the Supplemental Children's Survey in 1998. This survey was conducted in response to the Food Quality Protection Act of 1996, which required the U. S. Department of Agriculture to provide data from a larger sample of children for use by the Environmental Protection Agency in estimating exposure to pesticide residues in the diets of children. The 1998 supplement adds intake data from 5,559 children where ages ranged from birth through age 9 years to the intake data collected from 4,253 children of the same ages participating in the 1994–96 survey.

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

The CSFII obtained descriptions and estimates of the quantities for each of the foods and beverages that participants ate or drank. Each food consumed by a person surveyed was assigned a food code and food description that was as specific as possible (*e.g.* it could be a brand name, or a particular ingredient like raw carrot, skin on, or any other descriptive phrase). Each food code has an associated "recipe" that indicates the best available information on the ingredients of that food, and sometimes the cooking and preparation method. However, it should be noted that the CSFII is not designed specifically to obtain information on the ingredients of foods eaten — it is primarily designed to estimate the dietary intake of nutrients. The CSFII contains information on the sodium content of foods (used here to infer salt content), but does not contain information on any nitrite additives.

Using the recipe database of the CSFII, a list of foods that contained meat or poultry was constructed using the following procedures. First, the Recipe Ingredient Dataset, part of the Recipe Database<sup>97</sup> of the CSFII, was searched using the search terms provided in Table A- 1 to find all ingredients containing possible meat and poultry ingredients.

Table A- 1	Search Terms <sup>a</sup>	for all Meat and	l Poultry	Ingredients in	CSFII.

Piroshki	Ravioli	Opossum	Antelope	Ham	Mountain oysters
Hog	Udder	Crackling	Beaver	Armadillo	Quail
Berliner	Steak	Bear	Ratite	Jerky	Cap(p)icola
Bologna	Buffalo	Venison	Skunk	Zyreicka	Chitterlings
*wurst	Beefalo	Deer	Squirrel	Scrapple	Porcupine
Liver	Peccary	Bison	*burger	Duck	Pastirma
Chorizo	Horse	Rabbit	Meatballs	Cow	Patties
Gyros	Squab	Pheasant	Sremski	Linguisa	Luncheon
Nem-Chua	Game	Dove	Chix	Bacon	Prosciutto
Pastrami	Pigeon	Caribou	Salami	Kidney	Pepperoni
Alessandri	Apenino	Slim Jim	Bouillion	Basturma	Basterna
Wiejskha	Krakowska	Kabanosy	Goralska	Mysliwsa	Kabanosse
White hots	Raccoon	Moose	Brain	Carne	Kabanossy
Feet	Gizzard	Barbeque	Drzewnia	Pate	Krakowska
Turkey	Souse	Poultry	Smokies	Barbecue	Vienna
Link	Dog	Hen	Wieners	Meat	Emu
Basturmi	Patty	Chicken	*furters	Bf	Chick
Ostrich	Goose	Pig	Lamb	Beef	Sausage
Coppa	Head	Veal	Franks	Pork	Goat

a. An asterisk preceding a search term indicates any arbitrary string was considered in connection with the indicated term in the search.

<sup>&</sup>lt;sup>97</sup> The Recipe Database contains an entry for each unique food code included in CSFII, with the list of food codes corresponding to the list of all unique descriptions of foods described as eaten by participants in CSFII. The Recipe Database entries include ingredients and their amounts, as well as further information not used here.

This information has been peer-reviewed under applicable information quality guidelines. FSIS is distributing this information for public comment. It may be revised upon review of public comment.

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

The list of ingredients thus obtained was searched using the terms listed in Table A- 2 to remove unintentional matches (*e.g.*, meatless bacon, horseradish). The ingredients identified in this second search were examined by hand and those having no meat or poultry products were removed.

meatless	link	substitute	oysters	mock
kidney	patties	milk	barbecue	rolls
imitation	luncheon	cheese	steak sauce	horse
bun	soy	vegetarian	coconut	cocnt
pignolia	seasoning	bar	graham	tea
champagne	egg	head	gooseberry	wheat
substitute	patent	cowpeas	pigeonpea	pigeon pea

Table A- 2 Search Terms for Meat-Free Ingredients.

Second, the list of ingredients obtained in the first step was merged with the Food Description Database <sup>98</sup> of the CFSII to obtain all the food codes containing them. The Individual Food Intakes Database <sup>99</sup> was then searched with this list of food codes, and those that had been reported as being consumed at least once<sup>100</sup> in the CSFII were compiled. Food codes with descriptions that do not specify the identity of the meat ingredient (*e.g.*, Lima bean soup) were checked against the recipe database to ensure that they were properly identified and, if appropriate, they were eliminated from consideration.

The result was a list of 1,627 food codes describing foods that contain meat or poultry and that are presumed to represent such foods eaten in the U.S. (Appendix B).

#### A.3 Exclusion Criteria

The list of 1,627 foods containing meat and/or poultry from the CSFII was modified by excluding those that would not be affected by the proposed rule. This was done by removing from the list raw foods (since the proposed rule affects only RTE and partially cooked foods) and those with characteristics or ingredients that can be expected to inhibit the growth of *C. perfringens* or that are otherwise unlikely to cause human illness from *C. perfringens* (Figure A-1). Food characteristics that make commodities unlikely to cause human illness from *C. perfringens* include those that are: (1) processed in a way that result in shelf stable products, such as dried meats and foods sold in cans and jars; (2) very high in salt (sodium chloride) content

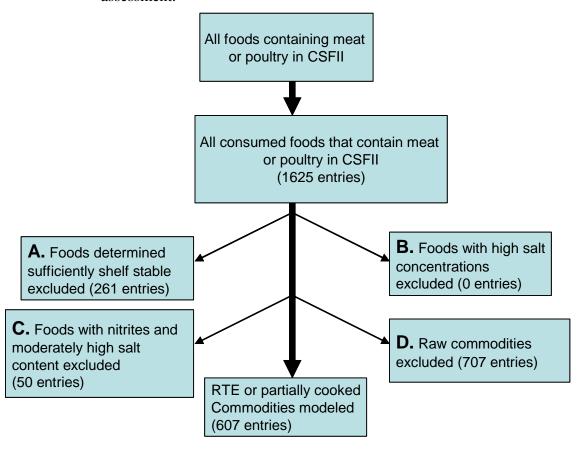
<sup>&</sup>lt;sup>98</sup> In this database, which is a subset of the CSFII, food descriptions are usually generic in nature except for certain breakfast cereals, infant formulas, and candies. Complete and abbreviated descriptions are included. Descriptions for some brand cereals include a name enclosed in parentheses, which denotes the previous name.

<sup>&</sup>lt;sup>99</sup> The Individual Food Intakes database (a subset of the CSFII, record type 30) contains 598,829 records. <sup>100</sup> Foods that were not reported to have been consumed were also found using this protocol. This is because foods recorded in pervious CSFII included these commodities and, consequently, food codes describing them were established and remain as part of the database.

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

(>8%); or (3) moderately high salt content (3-8%) in combination with nitrites. <sup>101</sup> The identification of foods meeting these criteria for exclusion was done using available food descriptions and characteristics (the CSFII does contains information on sodium content of servings, used here to infer salt content, but not nitrite concentrations). When a food was eliminated it was not reconsidered later with subsequent exclusion criteria even though there is some overlap between the exclusionary groups.

Figure A-1 Exclusion criteria used for excluding foods from consideration in this risk assessment.



#### A.3.1 Shelf Stability

Foods that can be stored at room temperature without experiencing growth of *C. perfringens* were eliminated from consideration. Shelf stability is defined in CFR title 9, part 318, Subpart G, 318.300 (u) of the FSIS USDA regulations as "the condition achieved by application of heat, sufficient, alone or in combination with other ingredients and/or treatments, to render the product free of microorganisms capable of growing in the product at non-refrigerated conditions (over 50 °F or 10 °C) at which the product is intended to be held during distribution and storage." The term has been traditionally used by the Agency and is synonymous with the terms "commercial"

<sup>&</sup>lt;sup>101</sup> The Code of Federal Regulations (CFR) Title 9 Chapter III Part 424 subsection 21 states limits of curing regulations for USDA regulated meats. Levels of sodium or potassium nitrite will not exceed 200 part per million (ppm) in the finished product and will reside at lower levels in pork bacon products.
March 2005

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

sterility" or "commercially sterile." Dried foods, foods that are retorted during packaging and foods packaged in jars (*e.g.*, baby foods and pickled products) are shelf stable and will be eliminated from consideration because the production methods either eliminate all *C. perfringens* (both vegetative cells and spores) or prohibit the growth of *C. perfringens* as is discussed below.

#### A.3.2 Dried Foods

Water is necessary for the survival and growth of bacteria including C. perfringens. The availability of free water in a food (water that is otherwise not associated with salts, carbohydrates, proteins or other food components and therefore available for use by bacteria) is measured by the water activity  $(a_w)$ .

In short, studies demonstrate *C. perfringens* growth is optimal at high water activity levels,  $a_w$  in the range 0.97–0.995 (Kang *et al.*, 1969; Strong *et al.*, 1970). At lower  $a_w$  values, within the range 0.93–0.965, the growth rate of *C. perfringens* is decreased (Kang *et al.*, 1969; Strong *et al.*, 1970), and depends on a variety of parameters including the solute used, strain, inoculum size, pH, temperature, oxidation-reduction potential, and presence of various nutrients (Craven, 1980).

Based on this information, foods with  $a_w$  of less than 0.93 have been assumed to prohibit C. perfringens growth. Although CSFII includes some information that might be used in calculation or estimation of  $a_w$ , such as the amino acid and salt content, information is insufficient to accurately estimate  $a_w$ . Indeed, experimental measurements are necessary to provide reliable quantification of the  $a_w$  for foods, so the foods affected by this exclusion have been selected on information independent of the CSFII. Some sausages, salamis, hams, pepperoni, soups, chipped and dried beef products and dried meats have  $a_w$  values below this level (Alzamora and Chirife, 1983; Lee and Styliadis, 1996; Holley *et al.*, 1988).

#### **A.3.3 Retorted Products**

Many commodities packaged in cans and jars have no viable *C. perfringens* bacteria (either vegetative cells or spores) due to retorting. Retorted products are pre-packaged (in cans, jars, or appropriate pouches), hermetically sealed and treated with a post-packaging lethality step that includes heating to 240°F for a specified period of time (FSIS, 1999). Retorting has been verified and validated as a processing method that is lethal to spores and vegetative cells in production facilities. Due to the lethality achieved, foods processed in this way have been presumed to be free of *C. perfringens* cells or spores.

#### **A.3.4** Non-retorted Shelf Stable Jarred Commodities

Products packaged in jars and cans that are not retorted are generally "hot packed," and pH is adjusted to 4.6 or lower. The temperatures used during hot packing are expected to kill vegetative cells<sup>102</sup>. The low pH of these products is expected to prevent growth of any surviving vegetative cells (21CFR114), and prevent the germination (Craven, 1988; Ahmed and Walker, 1971) and subsequent growth of spores.

<sup>&</sup>lt;sup>102</sup> "Hot Packed" RTE products use a thermal process schedule that includes times and temperatures determined to be effective by an industry establishment's process authority. Specific times and temperatures are therefore not known, however, as the process is required to be bacterially lethal, it assumed to kill C. perfringens vegetative cells. March 2005

This information has been peer-reviewed under applicable information quality guidelines. FSIS is distributing this information for public comment. It may be revised upon review of public comment.

#### Risk Assessment for C. perfringens in RTE Meat and Poultry Products

Growth of *C. perfringens* is optimal between pH 6 and 7. Limited growth may be expected at pH values  $\leq$ 5.0 and  $\geq$ 8.3 (Hobbs, 1979; Labbe, 1989). Acidic foods (pH  $\leq$ 5.0) are generally considered inhospitable for growth of *C. perfringens* (McClane, 2001). Moreover, an acidic pH in foods acts synergistically with other factors, such as the presence of curing salts, to inhibit growth of *C. perfringens* (Labbe, 1989). It is reasonable to assume that RTE and partially cooked meat or poultry products with a pH  $\leq$ 5.0 are extremely unlikely to support the growth of *C. perfringens* based on the ranges for growth described above, and consequently, foods hot packed and pH adjusted are excluded from the risk assessment.

The 1,627 CSFII meat and poultry containing foods were searched for a variety of terms (Table A- 3) which are assumed to correspond to dried, retorted, or jar packed products, which were determined to be of limited concern for reasons described above. The first 261 entries (rows 1–261) in Appendix B were those foods eliminated due to shelf stable characteristics described in Table A- 3 and are labeled in column D as either "ss-c" (shelf stable-canned/jarred) or "ss-d" (shelf stable-dried).

Table A- 3 Search Terms for Shelf Stable Products.

Dried Products				
Dried/Dry	Salami	Cracklings		
-beef	-dry	Pastirma		
-duck breast	-fermented	Basterna		
- <u>not</u> beans	-hard	Basturmi		
Ham	Sausage	Basturma		
-dry cured	-Alessandri	Jerky		
-parma	-Apenino	Bacon Bits		
-Serrano	-summer	Pork Rinds (Fried)		
-Westfhalia	-fermented	Proschutto		
Stick	Slim Jim	Prosciutto		
-not drumstick	Pepperoni	Сорра		
Bouillon				
	Canned/Jarred Products	1		
Soup	Sauce	Baby		
- <u>not</u> home recipe	-spaghetti <u>and</u> meatball	Jar or Canned		
- <u>not</u> with game meats	-pasta with meat sauce			
- <u>not</u> mushroom	- <u>not</u> home recipe			
	Stew	Deviled Ham		

March 2005 193

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

	- <u>not</u> home recipe	Chipped Beef
Vienna	Dressing	Potted or Roast Beef Spread
Spam	-with bacon	Pickled

#### **A.3.5** Salt

The concentration of salt (sodium chloride) in a food item affects the ability of *C. perfringens* to grow. A review of the published literature identified various studies that examined *C. perfringens* growth in varying concentrations of salt (Table A- 4).

Table A- 4 Effect of salt on *C. perfringens* growth: Summary of studies.

Reference	Inoculum cell type; level	Time (days)	Temperature (°C)	% Salt	Results <sup>a</sup>
	type, iever		ted in lab media		
Gough and Alford, 1965	Vegetative; unknown	1	37	4	14/18 <sup>b</sup> 'good' growth; 4/18 'slight' growth
				6	1/14 'good' growth; 8/14 'slight' growth
				8	1/18 'slight' growth
Mead, 1969	Vegetative; 2 log <sub>10</sub> cfu	1, 14	37	6	1 d: 0/4 14 d: 4/4
	$7.6 \log_{10} \text{cfu}$			6	1 d: 3/4 14 d: 4/4
Roberts and Derrick, 1978	Vegetative; unknown	90	35	6	11/21 growth to visible turbidity
				7	1/21 growth to visible turbidity
		Tested	d in a food matrix	<u>'</u>	
Juneja and Majka, 1995 <sup>b</sup>	Spores; 2.3 log <sub>10</sub> cfu/g	0.5	28	3	2 log <sub>10</sub> cfu/g growth in beef
Juneja and Marmer, 1996a <sup>b</sup>	Spores; 3 log <sub>10</sub> cfu/g	0.75	28	3	2.7 log <sub>10</sub> cfu/g growth in turkey

a. Results are indicated in terms of growth as the number of samples in which growth occurred/total number of samples; where not specified, the extent of growth was unspecified — but assumed to be an observed increase over the starting inoculum.

Only at concentrations greater than 8% salt, was growth essentially halted (Gough and Alford, 1965). Consequently, only foods with at least this concentration of salt were considered for elimination. The concentration of salt in each food was calculated using data obtained from the CSFII. A maximum, mean and minimum sodium concentration and serving amount for each food item is provided by CSFII; the minimum was used in the exclusion calculation. To

March 2005 194

b. Food samples included 0.3% sodium pyrophosphate.

#### Risk Assessment for C. perfringens in RTE Meat and Poultry Products

calculate the salt percentage, it was assumed that all sodium present in a particular food was sodium chloride. The minimum number of grams of sodium reported in the CSFII was then converted into grams of salt and this value was divided by the minimum portion size in grams. Foods found to contain >8% salt, based on this calculation, were eligible for exclusion from this risk assessment. All such commodities had already been eliminated from consideration due to the fact that they qualified as shelf stable.

#### A.3.6 Salt in the Presence of Nitrites

Nitrites are added to various meat products as preservatives typically in the form of sodium nitrite (NaNO<sub>2</sub>) or potassium nitrite (KNO<sub>2</sub>). Foods with nitrite were considered for exclusion from the final list of food items. The available data (Table A- 5) suggest nitrite and salt are effective at inhibiting *C. perfringens* growth; however, most of the experiments were conducted at temperature below the *C. perfringens* optimum growth temperature (43 and 47°C) and could not be used to predict growth in foods containing salt and nitrite at higher temperature. One study conducted at a higher temperature suggests that a combination of a minimum of 3% salt and 156 ppm ingoing nitrite is effective at inhibiting *C. perfringens* growth (Kalinowski *et al.*, 2003). As the level of ingoing nitrite in this study was below the maximum allowed in most products (200 ppm), it was assumed that products known to contain nitrites would have similar nitrite levels to those used by Kalinowski and contributors.

Table A- 5 Effect of combined nitrite and salt on *C. perfringens* growth: Summary of studies.

Reference	Food matrix	Inoculum cell type; level	Time (days)	Temperature (°C)	Nitrite (ppm) <sup>a</sup>	Salt (%)	Result (growth)
Solberg and	beef/pork	Unclear; 3	3	15	136	2.2	2 log <sub>10</sub> growth
Elkind, 1970	frankfurters	$\log_{10}$	5	12			increase
Paradis and Stiles, 1978	bologna	Vegetative; 2–3 log <sub>10</sub> cfu/g	1	30	Exact nitrite level unspecified	2.4	No growth
Hallerbach and Potter,	beef/pork frankfurters	Spores; 2– 3 log <sub>10</sub>	3.1	20	140	2.2	No growth
1981	Thuringer cervelat sausage	cfu/g	4		156	2.7	
Vareltzis et al., 1984	Chicken frankfurters	Spores; 4.7 log <sub>10</sub> cfu/g	9	20	150	2.6	No growth; ~0.7 log <sub>10</sub> cfu/g decline

March 2005 195

#### Risk Assessment for C. perfringens in RTE Meat and Poultry Products

Kalinowski	Cooked	Spores; 2	0.25	43.3	156	3.0	No growth;
et al., 2003	turkey	log <sub>10</sub> cfu/g					post 1 hr,
							levels fell
							below 3 cfu/g
							(detection
							level)

a. Ingoing levels of nitrite.

The PROFILE® ShowCase (2002) includes information on 696 manufacturers and suppliers and lists their products and labeling information. This database was used to develop a list of search terms that are representative of foods containing nitrite. A minimum of two manufacturers' product labels were arbitrarily chosen from those available for each type of food. If the products contained nitrites from all companies checked, all similar products were assumed to also contain nitrites. Table A- 6 indicates the search terms that were used to establish which foods had nitrite. The 50 foods found in rows 262–311 of Appendix B contain a minimum of 3% salt in addition to the nitrite indicated and were excluded from consideration in the risk assessment.

Table A- 6 Search Terms<sup>a</sup> for Foods with Nitrite.

Cappicola	Souse	Hot Dogs
Cured	Ham	Cold Cuts
Pork	Bacon	Sausage
- <u>not</u> *chop	-not w burger	- <u>not</u> fresh
- <u>not</u> fresh	- <u>not</u> w chicken	
Chorizo	Mortadella	Wieners
*wurst	Salami	Head Cheese
nced with recipe	Luncheon	Benedict
h meat type)		
lucts	*furters	Bologna
	Cured  Pork  -not *chop  -not fresh  Chorizo  *wurst  nced with recipe  h meat type)	Cured Ham  Pork Bacon  -not *chop -not w burger  -not fresh -not w chicken  Chorizo Mortadella  *wurst Salami  nced with recipe Luncheon  h meat type)  lucts *furters

An asterisk proceeding a search term indicates any arbitrary string was considered in connection with the indicated term in the search.

#### **A.3.7** Raw Commodities

March 2005

This risk assessment addresses RTE and partially cooked foods. Consequently, those foods that can be presumed to have left production plants raw were eliminated from consideration. First, foods consisting of exotic meats, organ meat, or wild game were excluded based on the assumption that these are not commonly available as RTE or partially cooked commodities in the marketplace. Second, foods that include descriptors specifically designating the commodity as raw were excluded (*e.g.* cooked, home recipe). Third, foods were excluded that are not

196

#### Risk Assessment for C. perfringens in RTE Meat and Poultry Products

commonly available as RTE or partially cooked based on the PROFILE® ShowCase (2002). The terms used to identify raw foods according to these criteria are listed in Table A- 7.

Table A-7 Search Terms for Foods Presumed to be Prepared from Raw Meat.

Brain	Head (not headcheese)	Ostrich
Gizzard	Feet (chicken, pig)	Kidney
Liver	Neck	Tail
Back	Tripe	Stomach
Duck	Rabbit	Squirrel
Lamb	Goat	Quail
Caribou	Bison	Dove
Venison	Ratite	Bear
Pheasant	Emu	Deer
Sparerib (Barbecued)	Egg (scrambled with meat)	Egg Casserole
Ground meat/poultry	Egg Casserole	Tartare
Steak	Burger	Oxtail
Bacon	Cooked <sup>a</sup>	Prepared
Mushroom (soup) mixture	Raw	Uncooked <sup>a</sup>
Nonvalue added meats: meats listed either with or without		Home Made
bone, with or without skin, le various ways but without saud		Home Recipe

a. The apparent contradiction of having both "cooked" and "uncooked" in these search terms is that uncooked may identify raw ingredients directly, while cooked in the CSFII database (USDA, 2000) often indicates that the participant prepared the food from raw ingredients.

The 707 foods excluded using the above terms are found in rows 312 through 1018 in Appendix B and are marked in column D with an "R".

#### A.3.8 Factors Not Employed as Exclusion Criteria

In addition to shelf stability, salt content, nitrites in combination with salt, and raw foods, the effects of added antimicrobials and the availability of oxygen were considered as a means for exclusion of foods. Examination of the scientific evidence, the disparity of industrial product formulations, and the fact that these product formulations are protected from disclosure prohibit the Agency from excluding the possibility of *C. perfringens* growth based on the presence of any allowable antimicrobials or the exclusion of oxygen.

March 2005 197

#### Risk Assessment for C. perfringens in RTE Meat and Poultry Products

## **A.4** Food Categories

The 607 foods not excluded based on the preceding methods (rows 1019 through 1625 of Appendix B) were examined for similarities that would allow examination of a number of commodities in tandem. The characteristics that were considered to be most relevant are:

- 1) foods containing nitrites with between 2.2% and 3% salt,
- 2) foods unlikely to be reheated prior to consumption,
- 3) foods likely to be reheated immediately prior to consumption, and
- 4) foods reheated prior to consumption but not necessarily immediately before consumption ("hot held").

It was not possible to determine if some of the foods identified in the CSFII were RTE or prepared from raw ingredients. In these instances it was clear that the foods, if RTE, would have been frozen due to commercial availability. Foods of this type are assigned to one of the appropriate categories listed above and the number of servings used in the exposure assessment will be adjusted according to a factor that correlates to the percent of foods that are believed to be RTE.

## A.4.1 Category 1: Foods Containing Nitrites and between 2.2% and 3% Salt

The effects of nitrite were previously discussed. Foods were excluded if they contained nitrite in the presence of at least 3% salt. Foods that have between 2.2% and 3% salt are likely to inhibit *C. perfringens* growth (Solberg and Elkind, 1970; Kalinowski *et al.*, 2003), although they may not completely prevent growth. Due to the different growth rates anticipated in these foods, they will be modeled as a group. Foods in this group are marked in Appendix B with a "1" in Column D and encompass the 62 foods in rows 1018–1080.

#### A.4.2 Category 2: Foods Unlikely to be Reheated for Consumption

RTE meat salads and sandwiches are sold refrigerated with instructions to keep refrigerated and serve cold. Additionally, meats such as cold cuts loose moisture quickly if heated, and therefore are likely to be prepared and served cold. There are 23 foods from the CSFII that are unlikely to be reheated prior to consumption and will thus be modeled as a group to reflect these consumer practices. They are marked with a "2" in Column D, rows 1081–1112 of Appendix B.

#### A.4.3 Category 3: Foods Likely to be Reheated for Immediate Consumption

It is assumed that foods reported in CSFII as "frozen meals" are not bulk foods and consequently are highly unlikely to be stored above refrigeration temperatures for any extended period of time. Focus group studies conducted for the Food Safety and Inspection Service's (Office of Policy and Program Development) Labeling and Consumer Protection Staff (Cates *et al.*, 2002) have indicated that consumers consider preparation instructions for frozen entrees and dinners "most useful." The study also found that focus group members believe such preparation instructions are product specific, so that consumers are likely to follow the instructions when preparing frozen meals. While the results are qualitative and were not intended to be nationally representative, this suggests that consumers are unlikely to abuse such products in such a way as to facilitate *C. perfringens* spore germination and subsequent cell growth. Additionally, in a March 2005

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

Home Food Safety Study (Audits International, 2000) that monitored meal preparation, service, post-meal clean up, and the handling or storage of leftovers in a non-random, non-representative group of 115 household kitchens, no instances of hot holding (either proper or improper) were observed in homes. When the in-home results were compared to analogous observations in food service establishments (*i.e.*, hospitals, nursing homes, schools, full service restaurants, and fast food establishments), homes were found to have much higher compliance (68%) with appropriate holding times and temperatures than full service restaurants (37%). Since no observations of hot holding were made in households, the only temperature abuse observed involved improper cold storage. Audits International suggested this is "logical because homes tend to cook for immediate consumption whereas restaurants tend to hold food, thus increasing their opportunities for a violation." As described, the study conducted by Audits International was not designed to be nationally representative; but lacking any other sources of data, the observations have been used here to indicate likely national characteristics.

Because "frozen meals" are not commonly available in hotel, restaurant or institutional settings where hot-holding is likely to occur (PROFILE® ShowCase, 2002) and, because consumers are reported to follow explicit preparation instructions provided by manufacturers for frozen meals, all frozen meals considered in this risk assessment are modeled as a part of the "foods likely to be reheated for immediate consumption" group. The food list was also surveyed for foods likely to be prepared for immediate consumption. The main trait that qualifies a food as such is a likelihood that food quality would grossly deteriorate if held warm for extended periods. The foods that were reported to be frozen meals in CSFII are denoted with a "3" in Column D, rows 1113–1515 of Appendix B.

# A.4.4 Category 4: Foods Served Hot but not Necessarily Prepared for Immediate Consumption

Since 46 out of 46 *C. perfringens* outbreaks studied by CDC had "improper hot holding" as a contributing factor (CDC 2002), foods that are hot held are considered of greater risk than those that are not. A list of foods commonly hot held has been provided to FSIS by US FoodService (Appendix C). These foods are modeled so as to incorporate the distribution of times and temperatures associated with hot holding in the final food preparation component of the risk assessment model. The 110 foods in this category make up the remainder of the list and are identified with a "4" in Column D, rows 1516–1625 of Appendix B.

#### A.5 Summary

This appendix describes how foods were chosen to be modeled in the *C. perfringens* risk assessment. The steps involved were:

- A list of all foods consumed in the U.S. that contains meat or poultry was constructed from the information in the CSFII.
- Ready to eat and partially cooked foods on this list that are not likely to either have any *C. perfringens* or support the growth of *C. perfringens* due to food characteristics or ingredients were excluded. Foods that were excluded were those foods that are canned,

March 2005 199

#### Risk Assessment for C. perfringens in RTE Meat and Poultry Products

jarred, very high (>8%) in salt, and moderately high (3-8%) in salt and containing nitrites.

- Foods that are sold raw or uncooked, based on the description in CSFII, were excluded from consideration.
- The remaining foods were grouped into four categories that will be modeled in the *C. perfringens* risk assessment. These categories are: (1) foods with 2.2%–3% salt in the presence of nitrites; (2) foods unlikely to be reheated before consumption; (3) foods likely to be reheated before immediate consumption; and (4) foods served hot but not necessarily prepared for immediate consumption.

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

# Appendix B Food code listing

Meat and poultry containing foods considered for inclusion in the *C. perfringens* risk assessment. Food codes and descriptions are from the Consumer Survey of Food Intakes for Individuals (CSFII) 1994-1996, 1998, Section 12.2 "Food Codes and Abbreviated Descriptions".

## Key

	Key
	Foods Excluded from Risk Assessment
Reason for	exclusion
ss-d	shelf stable dried
ss-c	shelf stable canned/jarred
N	contains ≥3% salt and nitrites
R	raw
	Foods Included in Risk Assessment
Categories a	and lump codes
Category 1	foods containing between 2.2 and 3% salt and nitrites
	(no lump codes)
Category 2	foods unlikely to be reheated for consumption
	(no lump codes)
Category 3	foods likely to be reheated for immediate consumption
	a = sauce, acid as a component
	b = partially cooked
	c = Mexican spices as an ingredient (higher spore count)
	d = all others
Cotocomy	foods sawyed but but not necessarily managed
Category 4	foods served hot but not necessarily prepared for immediate consumption
	a = sauce, acid as a component
	c = Mexican spices as an ingredient (higher spore count)
	d = all others
	u – an ouicis

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

Row	FOOD CODE	Description	%NaCl	Reason for Exclusion/ modeling	Lump Codes
1	28310130	Beef, broth, bouillon, or consomme, dry, not reconstituted	52.06	ss-d	
2	28340140	Chicken broth, bouillion, or consomme, dry, not reconstituted	47.22	ss-d	
3	23321900	Venison/deer jerky	7.44	ss-d	
4	22311450	Ham, prosciutto	6.85	ss-d	
5	27118130	Stewed dried beef, Puerto Rican style (Tasajo guisado, carne cecina guisada)	5.67	ss-d	
6	21602100	Beef jerky	5.62	ss-d	
7	25221250	Pepperoni	5.18	ss-d	
8	25221520	Salami, dry or hard	4.72	ss-d	
9	22709010	Pork skin, rinds, deep-fried	4.67	ss-d	
10	25220120	Beef sausage, smoked, stick	4.29	ss-d	
11	25221810	Thuringer	3.16	ss-d	
12	22003000	Pork, dehydrated, oriental style	1.74	ss-d	
13	28520000	Gravy or sauce, Chinese (soy sauce, stock or bouillon, cornstarch)	1.67	ss-d	
14	27113200	Creamed chipped or dried beef	1.52	ss-d	
15	22820000	Meat stick, baby food	1.39	ss-d	
16	24705010	Chicken stick, baby food	1.22	ss-d	
17	58421000	Sopa seca (dry soup), Mexican style, NFS	1.11	ss-d	
18	58421060	Sopa seca de arroz (dry rice soup), Mexican style	1.08	ss-d	
19	75649050	Vegetable soup, made from dry mix	1.01	ss-d	
20	28310110	Beef, broth, bouillon, or consomme	0.83	ss-d	
21	28340110	Chicken, broth, bouillon, or consomme	0.81	ss-d	
22	58163310	Flavored rice mixture	0.68	ss-d	
23	21602010	Beef, dried, chipped, cooked in fat	0.14	ss-d	
24	21602000	Beef, dried, chipped, uncooked	8.82	ss-d	
25	25221920	Vienna sausage, chicken, canned	3.48	ss-c	
26	25230530	Ham and pork, luncheon meat, chopped, minced, pressed, spiced, canned	3.39	ss-c	
27	25240210	Ham, deviled or potted	3.28	ss-c	
28	25240000	Meat spread or potted meat, NFS	3.27	ss-c	
29	22311500	Ham, smoked or cured, canned, NS as to fat eaten	3.24	ss-c	

March 2005 202

March 2005

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

30	22311520	Ham, smoked or cured, canned, lean only eaten	3.19	ss-c
31	22311510	Ham, smoked or cured, canned, lean and fat eaten	3.15	ss-c
32	21002000	Beef, pickled	2.88	ss-c
33	28320150	Pork, vegetable soup with potatoes, stew type	2.83	ss-c
34	83101600	Bacon and tomato dressing	2.75	ss-c
35	25240310	Roast beef spread	2.57	ss-c
36	21416150	Corned beef, canned, ready-to-eat	2.55	ss-c
37	25221910	Vienna sausage, canned	2.42	ss-c
38	58156210	Rice with vienna sausage, Puerto Rican style (arroz con salchichas)	2.41	ss-c
39	25230550	Ham, pork, and chicken, luncheon meat, chopped, minced, pressed, spiced, canned, reduced sodium	2.40	SS-C
40	25230540	Ham, pork and chicken, luncheon meat, chopped, minced, pressed, spiced, canned	2.40	ss-c
41	22707020	Pork, pig's feet, pickled	2.35	ss-c
42	27563010	Meat spread or potted meat sandwich	2.00	ss-c
43	28345140	Chicken or turkey soup, cream of, canned, undiluted	2.00	ss-c
44	58403020	Chicken noodle soup, canned, undiluted	1.92	ss-c
45	27111300	Mexican style beef stew, no potatoes, tomato-based sauce (mixture) (Carne guisada sin papas)	1.87	ss-c
46	58146110	Pasta with meat sauce	1.83	ss-c
47	75649020	Vegetable soup, canned, undiluted	1.68	ss-c
48	28340750	Hot and sour soup	1.63	ss-c
49	75652020	Vegetable beef soup, canned, undiluted	1.60	ss-c
50	28355350	Salmon soup, cream style	1.58	ss-c
51	58402020	Beef dumpling soup	1.51	ss-c
52	58128210	Dressing with oysters	1.49	ss-c
53	71851010	Plantain soup, Puerto Rican style (Sopa de platano)	1.48	ss-c
54	58146120	Pasta with cheese and meat sauce	1.46	ss-c
55	58131320	Ravioli, meat-filled, with tomato sauce or meat sauce	1.46	ss-c
56	58130013	Lasagna with meat, canned	1.43	ss-c
57	28340550	Sweet and sour soup	1.42	ss-c
3.6	1 2005	202		

This information has been peer-reviewed under applicable information quality guidelines. FSIS is distributing this information for public comment. It may be revised upon review of public comment.

203

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

58	27111310	Mexican style beef stew, no potatoes, with chili peppers, tomato-based sauce (mixture) (Carne guisada con	1.41	ss-c
59	58131323	Ravioli, meat-filled, with tomato sauce or meat sauce, canned	1.37	ss-c
60	75647000	Seaweed soup	1.27	ss-c
61	74604100	Tomato beef rice soup, prepared with water	1.23	ss-c
62	24706010	Turkey stick, baby food	1.23	ss-c
63	28321130	Bacon soup, cream of, prepared with water	1.20	ss-c
64	24206000	Turkey, canned	1.19	ss-c
65	28320120	Pork vegetable soup with noodles, stew type, chunky style	1.17	ss-c
66	58400100	Noodle soup, NFS	1.17	ss-c
67	28340530	Chicken soup	1.17	SS-C
68	28310320	Beef noodle soup, Puerto Rican style (Sopa de carne y fideos)	1.16	ss-c
69	58132713	Pasta with tomato sauce and frankfurters or hot dogs, canned	1.16	ss-c
70	27120130	Mexican style pork stew, no potatoes, tomato-based sauce (mixture) (cerdo guisado sin papas)	1.14	ss-c
71	58146200	Pasta, meat-filled, with gravy, canned	1.11	ss-c
72	28317010	Beef stroganoff soup, chunky style	1.11	ss-c
73	58132360	Spaghetti with tomato sauce and meatballs, whole wheat noodles or spaghetti with meat sauce, whole wheat	1.10	ss-c
74	58132310	Spaghetti with tomato sauce and meatballs or spaghetti with meat sauce or spaghetti with meat sauce and m	1.10	ss-c
75	28345120	Chicken or turkey soup, cream of, prepared with milk	1.07	ss-c
76	28345160	Chicken and mushroom soup, cream of, prepared with milk	1.06	ss-c
77	28340690	Chicken vegetable soup with potato and cheese, chunky style	1.06	ss-c
78	28345110	Chicken or turkey soup, cream of, NS as to prepared with milk or water	1.05	ss-c
79	28310210	Chili beef soup	1.05	ss-c
March 2	005	204		

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

80	27350310	Seafood stew with potatoes and vegetables (including carrots, broccoli, and/or dark-green leafy), tomato-	1.05	ss-c
81	41601070	Soybean soup, miso broth	1.05	ss-c
82	27350030	Seafood stew with potatoes and vegetables (excluding carrots, broccoli, and dark-green leafy), tomato-bas	1.04	ss-c
83	28345130	Chicken or turkey soup, cream of, prepared with water	1.03	ss-c
84	58132710	Spaghetti with tomato sauce and frankfurters or hot dogs	1.03	ss-c
85	27330210	Lamb or mutton stew with potatoes and vegetables (including carrots, broccoli, and/or dark-green leafy),	1.03	SS-C
86	58403050	Chicken noodle soup, cream of	1.03	ss-c
87	41602030	Split pea and ham soup	1.02	ss-c
88	41602010	Chunky pea and ham soup	1.02	ss-c
89	28340210	Chicken rice soup, Puerto Rican style (Sopa de pollo con arroz)	1.02	ss-c
90	27221150	Mexican style pork stew, with potatoes, tomato-based sauce (mixture) (cerdo guisado con papas)	1.02	SS-C
91	75607040	Mushroom soup, with meat broth, prepared with water	1.01	ss-c
92	58400000	Soup, NFS	1.01	ss-c
93	27330030	Lamb or mutton stew with potatoes and vegetables (including carrots, broccoli, and/or dark-green leafy),	1.00	SS-C
94	74404030	Spaghetti sauce with meat, canned, no extra meat added	1.00	ss-c
95	58402010	Beef noodle soup	1.00	ss-c
96	28340310	Chicken gumbo soup	0.99	ss-c
97	75651120	Vegetable chicken noodle soup, prepared with water or ready-to-serve	0.99	ss-c
98	58407040	Instant soup, rice	0.99	SS-C
99	58400200	Rice soup, NFS	0.99	SS-C
100	58403010	Chicken noodle soup	0.98	ss-c
101	75651050	Vegetable chicken or turkey soup, prepared with water or ready-to-serve	0.98	ss-c
102	41601020	Bean with bacon or pork soup	0.96	ss-c
March 20	005	205		

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

103	27430410	Lamb or mutton stew with vegetables (excluding carrots, broccoli, and dark-green leafy (no potatoes)), gr	0.96	SS-C
104	74604010	Tomato beef noodle soup, prepared with water	0.96	ss-c
105	74603010	Tomato beef soup, prepared with water	0.96	SS-C
106	75656060	Vegetable beef soup, chunky style	0.95	ss-c
107	28340630	Chicken vegetable soup with rice, stew type, chunky style	0.94	ss-c
108	58408500	Noodle soup with vegetables, Oriental style	0.93	ss-c
109	75651110	Vegetable chicken rice soup, prepared with water or ready-to-serve	0.93	ss-c
110	58132313	Pasta with tomato sauce and meat or meatballs, canned	0.92	ss-c
111	41601010	Bean soup, NFS	0.92	ss-c
112	28315100	Beef vegetable soup with potato, stew	0.92	ss-c
113	58404520	type Chicken soup with dumplings	0.91	ss-c
114	75651030	Vegetable beef noodle soup, prepared with water	0.91	ss-c
115	28340610	Chicken or turkey vegetable soup, stew type	0.90	ss-c
116	28340510	Chicken noodle soup, chunky style	0.90	ss-c
117	28340640	Chicken vegetable soup with noodles, stew type, chunky style	0.88	ss-c
118	27601000	Beef stew, baby food, toddler	0.88	SS-C
119	75652030	Vegetable beef soup, prepared with milk	0.87	ss-c
120	28315140	Beef vegetable soup, Mexican style (Sopa / caldo de Res)	0.87	ss-c
121	58404010	Chicken rice soup	0.86	SS-C
122	75649010	Vegetable soup, prepared with water or ready-to-serve	0.86	ss-c
123	58406010	Turkey noodle soup	0.85	ss-c
124	28315120	Beef vegetable soup with noodles, stew type, chunky style	0.85	ss-c
125	28315130	Beef vegetable soup with rice, stew type, chunky style	0.85	ss-c
126	75651080	Vegetable beef soup with rice, prepared with water or ready-to-serve	0.83	ss-c
127	75651020	Vegetable beef soup, prepared with water	0.83	ss-c
March 2	005	206		
		-		

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

128	28310220	Chili beef soup, chunky style	0.82	ss-c
129	58508500	Ravioli, meat-filled, with tomato sauce, baby food, toddler	0.82	ss-c
130	58407010	Instant soup, noodle	0.82	ss-c
131	58404510	Chicken soup with dumplings and potatoes	0.81	ss-c
132	58408010	Won ton (wonton) soup	0.81	ss-c
133	58134613	Tortellini, meat-filled, with tomato sauce, canned	0.81	ss-c
134	58404500	Matzo ball soup	0.80	ss-c
135	32300100	Egg drop soup	0.76	ss-c
136	58401010	Barley soup	0.75	ss-c
137	58147510	Flavored pasta	0.74	ss-c
138	28310330	Beef and rice noodle soup, Oriental style (Vietnamese Pho Bo)	0.69	ss-c
139	28320110	Pork and rice soup, stew type, chunky style	0.68	ss-c
140	75604020	Corn soup, cream of, prepared with water	0.68	ss-c
141	28340580	Chicken soup with vegetables (broccoli, carrots, celery, potatoes and onions), Oriental style	0.63	ss-c
142	27341520	Chicken or turkey stew with potatoes and vegetables (excluding carrots, broccoli, and dark-green leafy),	0.63	ss-c
143	41601040	Lima bean soup	0.62	ss-c
144	28345030	Chicken or turkey soup, cream of, canned, made with water, reduced sodium	0.62	ss-c
145	73501000	Carrot soup, cream of, prepared with milk	0.61	ss-c
146	58402030	Beef rice soup	0.60	ss-c
147	58407050	Instant soup, noodle with egg, shrimp or chicken	0.60	ss-c
148	28355210	Crab soup, cream of, prepared with milk	0.60	ss-c
149	28340160	Chicken broth, canned, less or reduced sodium	0.59	ss-c
150	58407000	Instant soup, NFS	0.58	ss-c
151	28350050	Fish chowder	0.58	ss-c
152	27360100	Brunswick stew	0.57	ss-c
153	71803010	Potato chowder	0.55	ss-c
154	58421080	Sopa de tortilla, Mexican style tortilla soup	0.53	ss-c

March 2005 207

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

155	72308000	Dark-green leafy vegetable soup with meat, Oriental style	0.53	ss-c
156	28345020	Chicken or turkey soup, cream of, canned, made with milk, reduced sodium	0.52	ss-c
157	76607030	Potatoes with cheese and ham, baby food, toddler	0.52	ss-c
158	41601060	Bean soup, with macaroni and meat	0.52	ss-c
159	27341320	Chicken or turkey stew with potatoes and vegetables (excluding carrots, broccoli, and dark-green leafy),	0.52	ss-c
160	58503050	Macaroni with beef and tomato sauce, baby food, toddler	0.51	SS-C
161	28320130	Ham, rice, and potato soup, Puerto Rican style	0.51	ss-c
162	28315150	Meat and corn hominy soup, Mexican style (Pozole)	0.51	ss-c
163	41602090	Split pea and ham soup, canned, reduced sodium, prepared with water or ready-to-serve	0.50	ss-c
164	27341310	Chicken or turkey stew with potatoes and vegetables (including carrots, broccoli, and/or dark-green leafy	0.50	ss-c
165	58404050	Chicken rice soup, canned, reduced sodium, prepared with milk	0.49	ss-c
166	58403060	Chicken noodle soup, canned, reduced sodium, ready-to-serve	0.49	ss-c
167	81302030	Orange sauce (for duck)	0.49	ss-c
168	24198560	Chicken, canned, meat only, dark meat	0.48	ss-c
169	28340150	Mexican style chicken broth soup stock	0.48	ss-c
170	27640810	Chicken, noodles, and vegetables, baby food, toddler	0.47	ss-c
171	27430400	Lamb or mutton stew with vegetables (including carrots, broccoli, and/or darkgreen leafy (no potatoes)),	0.47	ss-c
172	27642130	Turkey, rice, and vegetables, baby food, toddler	0.46	ss-c
173	24198550	Chicken, canned, meat only, light meat	0.46	ss-c
174	27610730	Beef with vegetables, baby food, toddler	0.45	ss-c
175	41601090	Bean soup, with macaroni	0.45	ss-c
176	41601170	Bean and rice soup	0.44	ss-c
March 2	005	208		

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

177	28340670	Chicken vegetable soup with rice, Mexican style (Sopa / Caldo de Pollo)	0.44	ss-c
178	58404040	Chicken rice soup, canned, reduced sodium, prepared with water or ready-to-serve	0.43	SS-C
179	28340170	Chicken broth, canned, low sodium	0.40	SS-C
180	53110100	Cake, plum pudding	0.40	ss-c
181	83101500	Bacon dressing (hot)	0.39	ss-c
182	41601100	Portuguese bean soup	0.37	ss-c
183	41601110	Bean and ham soup, chunky style	0.36	ss-c
184	41601050	Soybean soup, made with milk	0.35	ss-c
185	58127110	Vegetables in pastry	0.35	ss-c
186	24198570	Chicken, canned, meat only, light and dark meat	0.34	ss-c
187	24198540	Chicken, canned, meat only, NS as to light or dark meat	0.34	ss-c
188	28340800	Chicken soup with vegetables and fruit, Oriental Style	0.34	ss-c
189	58421020	Sopa de Fideo Aguada, Mexican style noodle soup	0.34	ss-c
190	75651140	Vegetable soup with chicken broth, Mexican style (Sopa Ranchera)	0.33	ss-c
191	75601200	Cabbage soup	0.32	ss-c
192	77563010	Puerto Rican stew (Sancocho)	0.30	ss-c
193	75601210	Cabbage with meat soup	0.29	ss-c
194	28345170	Duck soup	0.28	SS-C
195	28355470	Seafood soup with vegetables (including carrots, broccoli, and/or dark-green leafy (no potatoes))	0.27	SS-C
196	28355450	Seafood soup with potatoes and vegetables (including carrots, broccoli, and/or dark-green leafy)	0.27	SS-C
197	28355480	Seafood soup with vegetables (excluding carrots, broccoli, and dark-green leafy (no potatoes))	0.27	SS-C
198	28355460	Seafood soup with potatoes and vegetables (excluding carrots, broccoli, and dark-green leafy)	0.26	SS-C
199	28340220	Chicken soup with noodles and potatoes, Puerto Rican style	0.24	ss-c

March 2005 209

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

200	27341510	Chicken or turkey stew with potatoes and vegetables (including carrots, broccoli, and/or dark-green leafy	0.23	ss-c
201	76607020	Vegetable and ham, baby food, junior	0.22	ss-c
202	21701010	Beef, baby food, strained	0.21	ss-c
203	75144100	Lettuce, wilted, with bacon dressing	0.20	ss-c
204	28310230	Meatball soup, Mexican style (Sopa de Albondigas)	0.19	ss-c
205	25180110	Liver, beef, baby food, strained	0.19	ss-c
206	76605020	Vegetable and chicken, baby food, junior	0.18	ss-c
207	24703020	Turkey, baby food, junior	0.18	ss-c
208	41610100	White bean soup, Puerto Rican style (Sopon de habichuelas blancas)	0.17	ss-c
209	21701020	Beef, baby food, junior	0.17	ss-c
210	24703000	Turkey, baby food, NS as to strained or junior	0.16	ss-c
211	23420010	Veal, baby food, strained	0.16	ss-c
212	23410010	Lamb, baby food, strained	0.16	ss-c
213	21401400	Beef, roast, canned	0.15	ss-c
214	20000070	Meat, baby food, NS as to type, NS as to strained or junior	0.15	ss-c
215	76602000	Carrots and beef, baby food, strained	0.15	ss-c
216	24703010	Turkey, baby food, strained	0.14	ss-c
217	24701010	Chicken, baby food, strained	0.12	ss-c
218	76601020	Vegetable and bacon, baby food, junior	0.11	ss-c
219	76601010	Vegetable and bacon, baby food, strained	0.11	ss-c
220	28320300	Pork with vegetable (excluding carrots, broccoli and/or dark-green leafy) soup, Oriental Style	0.10	ss-c
221	22810010	Ham, baby food, strained	0.10	ss-c
222	58503010	Macaroni, tomatoes, and beef, baby food, strained	0.10	ss-c
223	75651090	Vegetable chicken soup, canned, prepared with water, low sodium	0.09	ss-c
224	76603020	Vegetable and beef, baby food, junior	0.08	ss-c
225	41601130	Bean soup, mixed beans	0.08	ss-c
226	28310120	Beef, broth, bouillon, or consomme, canned, low sodium	0.08	ss-c
227	27642310	Turkey vegetable dinner, baby food, strained	0.08	ss-c

March 2005 210

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

228	58403030	Chicken noodle soup, canned, low sodium, ready-to-serve	0.08	ss-c
229	58503000	Macaroni, tomatoes, and beef, baby food, NS as to strained or junior	0.07	ss-c
230	28316020	Beef and mushroom soup, canned, low sodium	0.06	ss-c
231	76605010	Vegetable and chicken, baby food, strained	0.06	ss-c
232	27610710	Beef with vegetables, baby food, strained	0.06	ss-c
233	27610100	Beef and egg noodles, baby food, NS as to strained or junior	0.06	ss-c
234	76604500	Sweetpotatoes and chicken, baby food, strained	0.06	ss-c
235	76604000	Broccoli and chicken, baby food, strained	0.05	ss-c
236	76611030	Vegetables, turkey, and barley, baby food, strained	0.05	ss-c
237	76611010	Vegetable and turkey, baby food, strained	0.05	ss-c
238	58509020	Spaghetti, tomato sauce, and beef, baby food, junior	0.05	ss-c
239	76603010	Vegetable and beef, baby food, strained	0.05	ss-c
240	58503020	Macaroni, tomatoes, and beef, baby food, junior	0.04	ss-c
241	27640120	Chicken noodle dinner, baby food, junior	0.04	ss-c
242	27610120	Beef and egg noodles, baby food, junior	0.04	ss-c
243	27644110	Chicken soup, baby food	0.04	ss-c
244	27640110	Chicken noodle dinner, baby food, strained	0.04	ss-c
245	76611020	Vegetable and turkey, baby food, junior	0.04	ss-c
246	27642120	Turkey, rice and vegetables, baby food, junior	0.04	ss-c
247	27642110	Turkey, rice and vegetables, baby food, strained	0.04	ss-c
248	27640050	Chicken and rice dinner, baby food, strained	0.04	ss-c
249	27610110	Beef and egg noodles, baby food, strained	0.04	ss-c
250	67501000	Apples and chicken, baby food, strained	0.03	ss-c
251	76611500	Green beans and turkey, baby food, strained	0.03	ss-c
252	76607010	Vegetable and ham, baby food, strained	0.03	ss-c
253	67501200	Apples and turkey, baby food, strained	0.03	ss-c
254	67501100	Apples with ham, baby food, strained	0.02	ss-c
March 20	005	211		

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

255	24701020	Chicken, baby food, junior	0.13	ss-c
256	27640100	Chicken noodle dinner, baby food, NS as to strained or junior	0.13	ss-c
257	27311320	Beef stew with potatoes and vegetables (excluding carrots, broccoli, and dark-green leafy), tomato-based	0.62	SS-C
258	27311420	Beef stew with potatoes and vegetables (excluding carrots, broccoli, and dark-green leafy), gravy	0.61	ss-c
259	27360000	Stew, NFS	0.58	ss-c
260	27311310	Beef stew with potatoes and vegetables (including carrots, broccoli, and/or dark-green leafy), tomato-bas	0.14	SS-C
261	27211200	Beef stew with potatoes, gravy	0.07	ss-c
262	24208500	Turkey bacon, cooked	5.80	N
263	21601000	Beef, bacon, cooked	5.72	N
264	21601500	Beef, bacon, formed, lean meat added, cooked	5.72	N
265	22605010	Pork bacon, formed, lean meat added, cooked	5.33	N
266	22600200	Pork bacon, NS as to fresh, smoked or cured, cooked	4.06	N
267	22704010	Pork, cracklings, cooked	4.06	N
268	22601000	Pork bacon, smoked or cured, cooked	4.03	N
269	22600100	Bacon, NS as to type of meat, cooked	4.02	N
270	22501010	Canadian bacon, cooked	3.93	N
271	22601020	Pork bacon, smoked or cured, cooked, lean only eaten	3.92	N
272	25221680	Smoked sausage, pork	3.81	N
273	25221650	Smoked link sausage, pork	3.81	N
274	25210410	Frankfurter or hot dog, turkey	3.66	N
275	22311010	Ham, smoked or cured, cooked, lean and fat eaten	3.66	N
276	25230900	Turkey or chicken breast, prepackaged or deli, luncheon meat	3.65	N
277	25230610	Luncheon loaf (olive, pickle, or pimiento)	3.65	N
278	22311000	Ham, smoked or cured, cooked, NS as to fat eaten	3.65	N
279	25230520	Ham, luncheon meat, chopped, minced, pressed, spiced, lowfat, not canned	3.63	N

March 2005 212

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

280	25230230	Ham, sliced, extra lean, prepackaged or deli, luncheon meat	3.63	N
281	25220510	Capicola	3.63	N
282	25210310	Frankfurter or hot dog, chicken	3.52	N
283	22421000	Pork roast, smoked or cured, cooked, NS as to fat eaten	3.52	N
284	25230430	Ham and cheese loaf	3.41	N
285	25220420	Bologna, Lebanon	3.40	N
286	25230510	Ham, luncheon meat, chopped, minced, pressed, spiced, not canned	3.37	N
287	22421020	Pork roast, smoked or cured, cooked, lean only eaten	3.37	N
288	22311020	Ham, smoked or cured, cooked, lean only eaten	3.36	N
289	25230110	Luncheon meat, NFS	3.29	N
290	25221430	Pork sausage, country style, fresh, cooked	3.29	N
291	25221420	Pork sausage, brown and serve, cooked	3.29	N
292	25221400	Sausage (not cold cut), NFS	3.29	N
293	25230410	Ham loaf, luncheon meat	3.28	N
294	25230210	Ham, sliced, prepackaged or deli, luncheon meat	3.25	N
295	22621000	Salt pork, cooked	3.25	N
296	25210110	Frankfurter, wiener, or hot dog, NFS	3.23	N
297	27520250	Ham on biscuit	3.22	N
298	22300140	Ham, fried, lean only eaten	3.20	N
299	25220910	Head cheese	3.19	N
300	25210230	Frankfurter or hot dog, beef and pork, lowfat	3.19	N
301	25221210	Mortadella	3.17	N
302	25220710	Chorizos	3.13	N
303	22107020	Pork chop, smoked or cured, cooked, lean only eaten	3.13	N
304	21603000	Beef, pastrami (beef, smoked, spiced)	3.12	N
305	27120150	Pork or ham with soy-based sauce (mixture)	3.05	N
306	22300130	Ham, fried, lean and fat eaten	3.05	N
307	22300120	Ham, fried, NS as to fat eaten	3.04	N
308	25220460	Bologna, pork	3.01	N
309	25210280	Frankfurter or hot dog, meat and poultry	3.01	N

March 2005 213

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

310	22300170	Ham, breaded or floured, fried, lean only eaten	3.00	N
311	25221530	Salami, beef	2.99	N
312	22601040	Bacon or side pork, fresh, cooked	4.06	R
313	25230810	Veal loaf	3.38	R
314	25221410	Pork sausage, fresh, bulk, patty or link, cooked	3.28	R
315	25160130	Tongue pot roast, Puerto Rican style (Lengua al caldero)	3.15	R
316	77250110	Stuffed tannier fritters, Puerto Rican style (Alcapurrias)	3.08	R
317	21416110	Corned beef, cooked, lean and fat eaten	2.88	R
318	21416000	Corned beef, cooked, NS as to fat eaten	2.88	R
319	27520170	Bacon on biscuit	2.82	R
320	22107010	Pork chop, smoked or cured, cooked, lean and fat eaten	2.72	R
321	22107000	Pork chop, smoked or cured, cooked, NS as to fat eaten	2.72	R
322	25221510	Salami, soft, cooked	2.71	R
323	25220110	Beef sausage, brown and serve, links, cooked	2.63	R
324	32202070	Egg, cheese, and bacon on biscuit	2.57	R
325	27418410	Beef steak with onions, Puerto Rican style (mixture) (Biftec encebollado)	2.54	R
326	24203120	Turkey, wing, smoked, cooked, skin eaten	2.53	R
327	24202120	Turkey, drumstick, smoked, cooked, skin eaten	2.53	R
328	24201520	Turkey, light or dark meat, smoked, cooked, skin not eaten	2.53	R
329	24201500	Turkey, light or dark meat, smoked, cooked, NS as to skin eaten	2.53	R
330	25130150	Kidney, breaded, fried	2.48	R
331	22311220	Ham, smoked or cured, low sodium, cooked, lean only eaten	2.46	R
332	22311210	Ham, smoked or cured, low sodium, cooked, lean and fat eaten	2.46	R
333	22311200	Ham, smoked or cured, low sodium, cooked, NS as to fat eaten	2.46	R
334	41205100	Black bean sauce	2.45	R

March 2005 214

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

335	25220140	Beef sausage, fresh, bulk, patty or link, cooked	2.41	R
336	27520120	Bacon and cheese sandwich, with spread	2.33	R
337	77316010	Stuffed cabbage, with meat, Puerto Rican style (Repollo relleno con carne)	2.25	R
338	25221870	Turkey and pork sausage, fresh, bulk, patty or link, cooked	2.23	R
339	27150190	Lobster sauce (broth-based)	2.20	R
340	32202130	Egg and steak on biscuit	2.19	R
341	58107000	Ground beef with tomato sauce on a pizza crust	2.16	R
342	27133010	Stewed goat, Puerto Rican style (Cabrito en fricase, chilindron de chivo)	2.09	R
343	27220050	Ham or pork with stuffing (mixture)	2.07	R
344	27118110	Meatballs, Puerto Rican style (Albondigas)	2.07	R
345	27148010	Stuffed chicken, drumstick or breast, Puerto Rican style (Muslo de pollo o pechuga rellena)	2.06	R
346	27120110	Sausage with tomato-based sauce (mixture)	2.06	R
347	25221470	Pork and beef sausage, brown and serve, cooked	2.05	R
348	25221460	Pork and beef sausage	2.05	R
349	24201350	Turkey, light or dark meat, battered, fried, NS as to skin eaten	2.03	R
350	25221890	Turkey, pork, and beef sausage, lowfat, smoked	2.02	R
351	27418310	Corned beef with tomato sauce and onion, Puerto Rican style (mixture)	1.99	R
352	27420460	Sausage and vegetables (excluding carrots, broccoli, and dark-green leafy (no potatoes)), tomato-based sa	1.96	R
353	27260510	Liver dumpling	1.95	R
354	25221610	Scrapple, cooked	1.94	R
355	58109010	Italian pie with meat	1.92	R
356	58155310	Paella, Valenciana style, with meat (Paella Valenciana)	1.87	R
357	41304130	Cowpeas, dry, cooked with pork	1.85	R

March 2005 215

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

358	27510400	Bacon cheeseburger, 1/4 lb meat, with tomato and/or catsup, on bun	1.83	R
359	58155810	Stewed rice, Puerto Rican style (arroz quisado)	1.79	R
360	27319010	Stuffed green pepper, Puerto Rican style (Pimiento relleno)	1.78	R
361	58155110	Rice with chicken, Puerto Rican style (Arroz con Pollo)	1.76	R
362	24198710	Chicken patty with cheese, breaded, cooked	1.76	R
363	58128250	Dressing with meat and vegetables	1.74	R
364	27218310	Stewed corned beef, Puerto Rican style ("Corned beef" guisado)	1.74	R
365	25220210	Blood sausage	1.73	R
366	24204000	Turkey, rolled roast, light or dark meat, cooked	1.73	R
367	27510600	Hamburger, 1 oz meat, plain, on miniature bun	1.73	R
368	32202080	Egg, cheese, and bacon on English muffin	1.71	R
369	75414020	Mushrooms, stuffed	1.70	R
370	32202090	Egg and bacon on biscuit	1.69	R
371	22706010	Pork, neck bones, cooked	1.69	R
372	27515080	Steak sandwich, plain, on biscuit	1.67	R
373	27331150	Veal fricassee, Puerto Rican style (ternera en fricase)	1.67	R
374	25221450	Pork sausage rice links, brown and serve, cooked	1.65	R
375	24158210	Chicken, thigh, with or without bone, smoked, skin eaten	1.63	R
376	27510320	Cheeseburger, 1/4 lb meat, with tomato and/or catsup, on bun	1.63	R
377	27515040	Steak and cheese submarine sandwich, plain, on roll	1.62	R
378	58127350	Croissant sandwich with bacon, egg, and cheese	1.62	R
379	27121010	Stewed pork, Puerto Rican style	1.61	R
380	25110400	Chicken liver, cooked, NS as to cooking method	1.61	R
381	25110340	Pork liver, breaded, fried	1.61	R

March 2005 216

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

382	27510330	Double cheeseburger (2 patties), with tomato and/or catsup, on bun	1.61	R
383	22000300	Pork, NS as to cut, breaded or floured, fried, NS as to fat eaten	1.59	R
384	25221860	Turkey sausage, reduced fat, brown and serve, cooked	1.57	R
385	32105030	Egg omelet or scrambled egg, with ham or bacon	1.56	R
386	27220150	Sausage and rice with (mushroom) soup (mixture)	1.56	R
387	27515150	Steak patty (breaded, fried) sandwich, with mayonnaise or salad dressing, lettuce, and tomato, on bun	1.51	R
388	24198640	Chicken, chicken roll, roasted, NS as to light or dark meat	1.48	R
389	27510250	Cheeseburger, 1/4 lb meat, with mayonnaise or salad dressing, on bun	1.47	R
390	27135040	Veal with butter sauce (mixture)	1.46	R
391	27510280	Double cheeseburger (2 patties), with mayonnaise or salad dressing, on bun	1.45	R
392	27510260	Cheeseburger, 1/4 lb meat, with mushrooms in sauce, on bun	1.45	R
393	27510420	Taco burger, on bun	1.44	R
394	27115100	Steak teriyaki with sauce (mixture)	1.44	R
395	32105122	Egg omelet or scrambled egg, with sausage	1.44	R
396	32105080	Egg omelet or scrambled egg, with cheese and ham or bacon	1.43	R
397	27510390	Double bacon cheeseburger (2 patties, 1/4 lb meat each), on bun	1.43	R
398	24158220	Chicken, thigh, with or without bone, smoked, skin not eaten	1.43	R
399	27510240	Cheeseburger, 1/4 lb meat, plain, on bun	1.43	R
400	27510270	Double cheeseburger (2 patties), plain, on bun	1.43	R
401	27510300	Double cheeseburger (2 patties), with mayonnaise or salad dressing, on double- decker bun	1.42	R
402	25220350	Bratwurst, cooked	1.42	R

March 2005 217

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

403	27510310	Cheeseburger with tomato and/or catsup, on bun	1.41	R
404	27136100	Chili con carne with venison/deer and beans	1.40	R
405	21500200	Ground beef or patty, breaded, cooked	1.40	R
406	58116110	Meat turnover, Puerto Rican style (Pastelillo de carne; Empanadilla)	1.39	R
407	27510360	Cheeseburger with mayonnaise or salad dressing, tomato and bacon, on bun	1.39	R
408	27510210	Cheeseburger, plain, on bun	1.39	R
409	58101800	Ground beef with tomato sauce and taco seasonings on a cornbread crust	1.38	R
410	81201000	Bacon grease or meat drippings	1.38	R
411	27362000	Stewed tripe, Puerto Rican style, with potatoes (Mondongo)	1.37	R
412	25110120	Beef liver, braised	1.35	R
413	27510620	Hamburger, 1/4 lb meat, with tomato and/or catsup, on bun	1.34	R
414	27510540	Double hamburger (2 patties), with tomato and/or catsup, on bun	1.34	R
415	32105160	Egg omelet or scrambled egg, with chorizo	1.34	R
416	27350020	Paella with seafood	1.34	R
417	27510220	Cheeseburger, with mayonnaise or salad dressing, on bun	1.34	R
418	28500050	Gravy, giblet	1.33	R
419	23321200	Venison/deer steak, cooked, NS as to cooking method	1.32	R
420	27510340	Double cheeseburger (2 patties), with mayonnaise or salad dressing and tomatoes, on bun	1.32	R
421	27510350	Cheeseburger, 1/4 lb meat, with mayonnaise or salad dressing and tomatoes, on bun	1.31	R
422	27520150	Bacon, lettuce, and tomato sandwich with spread	1.30	R
423	32105120	Egg omelet or scrambled egg, with sausage and mushrooms	1.28	R
424	32105085	Egg omelet or scrambled egg, with cheese, ham or bacon, and tomatoes	1.27	R

March 2005 218

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

425	28510010	Gravy or sauce, poultry-based from Puerto Rican-style chicken fricasse	1.27	R
426	27213420	Porcupine balls with (mushroom) soup (mixture)	1.27	R
427	25110250	Calves liver, breaded, fried	1.25	R
428	27510510	Hamburger, with tomato and/or catsup, on bun	1.24	R
429	27510440	Bacon cheeseburger, 1/4 lb meat, with mayonnaise or salad dressing and tomatoes, on bun	1.24	R
430	27162050	Spaghetti sauce with combination of meats, homemade-style	1.23	R
431	22002100	Pork, ground or patty, breaded, cooked	1.22	R
432	27510311	Cheeseburger, 1 oz meat, plain, on miniature bun	1.21	R
433	27515030	Steak and cheese sandwich, plain, on roll	1.21	R
434	27510430	Double bacon cheeseburger (2 patties, 1/4 lb meat each), with mayonnaise or salad dressing and tomatoes,	1.21	R
435	27141030	Spaghetti sauce with poultry, home-made style	1.21	R
436	25150000	Brains, cooked	1.20	R
437	27130040	Spaghetti sauce with lamb or mutton, homemade-style	1.20	R
438	27510630	Hamburger, 1/4 lb meat, with mayonnaise or salad dressing, on bun	1.20	R
439	27510370	Double cheeseburger (2 patties, 1/4 lb meat each), with mayonnaise or salad dressing, on bun	1.19	R
440	24146260	Chicken, drumstick, with or without bone, breaded, baked or fried, prepared skinless, coating not eaten~^	1.19	R
441	24146250	Chicken, drumstick, with or without bone, breaded, baked or fried, prepared skinless, coating eaten	1.19	R
442	24201410	Turkey, light or dark meat, stewed, skin not eaten	1.18	R
443	22201420	Pork steak or cutlet, breaded or floured, fried, lean only eaten	1.18	R

March 2005 219

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

Lamb or mutton, rice, and vegetables (including carrots, broccoli, and/or dark- green leafy), tomato-based  Chicken or turkey and rice with (mushroom) soup (mixture)  1.16  27220190  Sausage and noodles with cream or white sauce (mixture)  1.16	R R R R R
447 (mushroom) soup (mixture)  Sausage and noodles with cream or white sauce (mixture)  1.16	R R R
sauce (mixture)	R R
440 25120000 17:1	R
448 25130000 Kidney, cooked, NS as to cooking method 1.16	
Veal chop, NS as to cooking method, lean only eaten 1.16	R
450 25110150 Beef liver, breaded, fried 1.15	
Chicken, thigh, with or without bone, breaded, baked or fried, prepared skinless, coating not eaten	R
Chicken, thigh, with or without bone, breaded, baked or fried, prepared skinless, coating eaten	R
453 23205010 Veal cutlet or steak, fried, NS as to fat eaten 1.15	R
454 23203020 Veal chop, fried, lean and fat eaten 1.15	R
Pork steak or cutlet, breaded or floured, fried, lean and fat eaten 1.15	R
456 27510500 Hamburger, plain, on bun 1.14	R
457 27510590 Hamburger, with mayonnaise or salad dressing, on bun 1.13	R
Steak and cheese submarine sandwich, on roll, with lettuce and tomato  1.13	R
White potato, stuffed, baked, peel not eaten, stuffed with bacon and cheese 1.12	R
460 27520140 Bacon and egg sandwich 1.12	R
Chicken, breast, with or without bone, breaded, baked or fried, prepared skinless, coating eaten	R
Tomato and sofrito stewing sauce, Puerto Rican style  74415110 Tomato and sofrito stewing sauce, Puerto 1.11	R
463 Crepes, filled with meat, fish, or poultry, with sauce 1.11	R

March 2005 220

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

464	32105190	Egg casserole with bread, cheese, milk and meat	1.11	R
465	27464000	Gumbo, no rice (New Orleans type with shellfish, pork, and/or poultry, tomatoes, okra)	1.11	R
466	27463000	Stewed gizzards, Puerto Rican style (Mollejitas guisadas)	1.11	R
467	22101310	Pork chop, breaded or floured, fried, lean and fat eaten	1.11	R
468	27510380	Triple cheeseburger (3 patties, 1/4 lb meat each), with mayonnaise or salad dressing and tomatoes, on bun	1.11	R
469	25110450	Chicken liver, breaded, fried	1.10	R
470	22210450	Pork, tenderloin, battered, fried	1.10	R
471	27510530	Hamburger, 1/4 lb meat, plain, on bun	1.10	R
472	41207030	Beans, dry, cooked with ground beef	1.09	R
473	27510550	Double hamburger (2 patties), with mayonnaise or salad dressing and tomatoes, on double-decker bun	1.09	R
474	21540100	Ground beef with textured vegetable protein, cooked	1.09	R
475	24174220	Chicken, back, with or without bone, fried, no coating, skin not eaten	1.08	R
476	24154200	Chicken, thigh, with or without bone, fried, no coating, NS as to skin eaten	1.08	R
477	24106040	Chicken, boneless, NS as to part, breaded, baked or fried, light or dark meat, prepared skinless, NS as t	1.08	R
478	27510560	Hamburger, 1/4 lb meat, with mayonnaise or salad dressing and tomatoes, on bun	1.07	R
479	25110200	Calves liver, cooked, NS as to cooking method	1.07	R
480	24174200	Chicken, back, with or without bone, fried, no coating, NS as to skin eaten	1.07	R
481	24134210	Chicken, leg (drumstick and thigh), with or without bone, fried, no coating, skin eaten	1.07	R
482	24104010	Chicken, boneless, NS as to part, fried, no coating, light or dark meat, skin eaten	1.07	R

March 2005 221

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

483	24104000	Chicken, boneless, NS as to part, fried, no coating, light or dark meat, NS as to skin eaten	1.07	R
484	28330110	Scotch broth (lamb, vegetables, and barley)	1.07	R
485	27510670	Double hamburger (2 patties), with mayonnaise or salad dressing and tomatoes, on bun	1.06	R
486	24172220	Chicken, back, with or without bone, roasted, skin not eaten	1.06	R
487	24157220	Chicken, thigh, with or without bone, battered, fried, prepared with skin, skin/coating not eaten	1.06	R
488	24156220	Chicken, thigh, with or without bone, breaded, baked or fried, prepared with skin, skin/coating not eaten	1.06	R
489	24147220	Chicken, drumstick, with or without bone, battered, fried, prepared with skin, skin/coating not eaten	1.06	R
490	24146220	Chicken, drumstick, with or without bone, breaded, baked or fried, prepared with skin, skin/coating not e	1.06	R
491	24140220	Chicken, drumstick, with or without bone, NS as to cooking method, skin not eaten	1.06	R
492	24137220	Chicken, leg (drumstick and thigh), with or without bone, battered, fried, prepared with skin, skin/coati	1.06	R
493	58163450	Spanish rice with ground beef	1.05	R
494	24175200	Chicken, back, with or without bone, floured, baked or fried, prepared with skin, NS as to skin/coating e	1.05	R
495	24165120	Chicken, wing, with or without bone, floured, baked or fried, prepared with skin, skin/coating not eaten~	1.05	R
496	24160120	Chicken, wing, with or without bone, NS as to cooking method, skin not eaten	1.05	R
497	24145210	Chicken, drumstick, with or without bone, floured, baked or fried, prepared with skin, skin/coating eaten	1.05	R

March 2005 222

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

498	24115020	Chicken, with bone, NS as to part, floured, baked or fried, light or dark meat, prepared with skin, skin/	1.05	R
499	24105020	Chicken, boneless, NS as to part, floured, baked or fried, light or dark meat, prepared with skin, skin/c	1.05	R
500	22101400	Pork chop, battered, fried, NS as to fat eaten	1.05	R
501	22101140	Pork chop, breaded or floured, broiled or baked, lean and fat eaten	1.05	R
502	22101130	Pork chop, breaded or floured, broiled or baked, NS as to fat eaten	1.05	R
503	41208100	Beans, dry, cooked with pork	1.04	R
504	24172210	Chicken, back, with or without bone, roasted, skin eaten	1.04	R
505	24171210	Chicken, back, with or without bone, broiled, skin eaten	1.04	R
506	24170210	Chicken, back, with or without bone, NS as to cooking method, skin eaten	1.04	R
507	24155200	Chicken, thigh, with or without bone, floured, baked or fried, prepared with skin, NS as to skin/coating	1.04	R
508	24150220	Chicken, thigh, with or without bone, NS as to cooking method, skin not eaten	1.04	R
509	24142210	Chicken, drumstick, with or without bone, roasted, skin eaten	1.04	R
510	24135210	Chicken, leg (drumstick and thigh), with or without bone, floured, baked or fried, prepared with skin, sk	1.04	R
511	24131200	Chicken, leg (drumstick and thigh), with or without bone, broiled, NS as to skin eaten	1.04	R
512	24130210	Chicken, leg (drumstick and thigh), with or without bone, NS as to cooking method, skin eaten	1.04	R
513	24130200	Chicken, leg (drumstick and thigh), with or without bone, NS as to cooking method, NS as to skin eaten	1.04	R
514	24111020	Chicken, with bone, NS as to part, broiled, light or dark meat, skin not eaten	1.04	R

March 2005 223

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

515	24100020	Chicken, boneless, NS as to part and cooking method, light or dark meat, skin not eaten	1.04	R
516	24161110	Chicken, wing, with or without bone, broiled, skin eaten	1.03	R
517	24160110	Chicken, wing, with or without bone, NS as to cooking method, skin eaten	1.03	R
518	24150210	Chicken, thigh, with or without bone, NS as to cooking method, skin eaten	1.03	R
519	24150200	Chicken, thigh, with or without bone, NS as to cooking method, NS as to skin eaten	1.03	R
520	24115000	Chicken, with bone, NS as to part, floured, baked or fried, light or dark meat, prepared with skin, NS as	1.03	R
521	24112010	Chicken, with bone, NS as to part, roasted, light or dark meat, skin eaten	1.03	R
522	24112000	Chicken, with bone, NS as to part, roasted, light or dark meat, NS as to skin eaten	1.03	R
523	24111000	Chicken, with bone, NS as to part, broiled, light or dark meat, NS as to skin eaten	1.03	R
524	24110000	Chicken, with bone, NS as to part and cooking method, light or dark meat, NS as to skin eaten	1.03	R
525	24105010	Chicken, boneless, NS as to part, floured, baked or fried, light or dark meat, prepared with skin, skin/c	1.03	R
526	24105000	Chicken, boneless, NS as to part, floured, baked or fried, light or dark meat, prepared with skin, NS as	1.03	R
527	24102000	Chicken, boneless, NS as to part, roasted, light or dark meat, NS as to skin eaten	1.03	R
528	24101010	Chicken, boneless, NS as to part, broiled, light or dark meat, skin eaten	1.03	R
529	24100000	Chicken, boneless, NS as to part and cooking method, light or dark meat, NS as to skin eaten	1.03	R
530	23220010	Veal, ground or patty, cooked	1.03	R
531	27420010	Cabbage with ham hocks (mixture)	1.02	R
532	24202500	Turkey, thigh, cooked, skin not eaten	1.02	R
March 2005		224		

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

533	24127160	Chicken breast, with or without bone, battered, fried, prepared skinless, coating not eaten	1.02	R
534	24127120	Chicken, breast, with or without bone, battered, fried, prepared with skin, skin/coating not eaten	1.02	R
535	24125120	Chicken, breast, with or without bone, floured, baked or fried, prepared with skin, skin/coating not eate	1.02	R
536	22201020	Pork steak or cutlet, NS as to cooking method, lean only eaten	1.02	R
537	24202460	Turkey, thigh, cooked, skin eaten	1.01	R
538	24202070	Turkey, drumstick, roasted, skin eaten	1.01	R
539	24202050	Turkey, drumstick, roasted, NS as to skin eaten	1.01	R
540	24175220	Chicken, back, with or without bone, floured, baked or fried, prepared with skin, skin/coating not eaten~	1.01	R
541	24125110	Chicken, breast, with or without bone, floured, baked or fried, prepared with skin, skin/coating eaten	1.01	R
542	23204030	Veal cutlet or steak, NS as to cooking method, lean only eaten	1.01	R
543	23200120	Veal, NS as to cut, cooked, lean only eaten	1.01	R
544	21304220	Beef, shortribs, barbecued, with sauce, lean only eaten	1.01	R
545	27510480	Cheeseburger (hamburger with cheese sauce), 1/4 lb meat, with grilled onions, on rye bun	1.01	R
546	27214110	Meat loaf made with beef, with tomato- based sauce	1.00	R
547	24205100	Turkey, back, cooked	1.00	R
548	24121110	Chicken, breast, with or without bone, broiled, skin eaten	1.00	R
549	24120110	Chicken, breast, with or without bone, NS as to cooking method, skin eaten	1.00	R
550	23204010	Veal cutlet or steak, NS as to cooking method, NS as to fat eaten	1.00	R
551	21102120	Beef steak, fried, lean and fat eaten	1.00	R
March 2	005	225		

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

21003000 25170110	Beef, NS as to cut, fried, NS to fat eaten Tripe, cooked	0.99 0.99	R R
24173220	Chicken, back, with or without bone, stewed, skin not eaten	0.99	R
24113000	Chicken, with bone, NS as to part, stewed, light or dark meat, NS as to skin eaten	0.99	R
24103010	Chicken, boneless, NS as to part, stewed, light or dark meat, skin eaten	0.99	R
24103000	Chicken, boneless, NS as to part, stewed, light or dark meat, NS as to skin eaten	0.99	R
23101010	Lamb chop, NS as to cut, cooked, lean and fat eaten	0.99	R
22201120	Pork steak or cutlet, broiled or baked, lean only eaten	0.99	R
24198440	Chicken skin	0.98	R
32105121	Egg omelet or scrambled egg, with sausage and cheese	0.98	R
25112200	Liver paste or pate, chicken	0.98	R
24176210	Chicken, back, with or without bone, breaded, baked or fried, prepared with skin, skin/coating eaten	0.98	R
24173210	Chicken, back, with or without bone, stewed, skin eaten	0.98	R
22201200	Pork steak or cutlet, fried, NS as to fat eaten	0.98	R
22101010	Pork chop, NS as to cooking method, lean and fat eaten	0.98	R
22000210	Pork, NS as to cut, fried, lean and fat eaten	0.98	R
22000110	Pork, NS as to cut, cooked, lean and fat eaten	0.98	R
25120000	Heart, cooked, NS as to cooking method	0.98	R
27510680	Double hamburger (2 patties, 1/4 lb meat each), with tomato and/or catsup, on bun	0.98	R
21000110	Beef, NS as to cut, cooked, lean and fat eaten	0.98	R
21000100	Beef, NS as to cut, cooked, NS as to fat eaten	0.97	R
21101010	Beef steak, NS as to cooking method, lean and fat eaten	0.97	R
	25170110 24173220 24113000 24103010 24103000 23101010 22201120 24198440 32105121 25112200 24176210 24173210 22201200 22101010 22000210 22000210 22101010 25120000 27510680 21000110 21000100	24173220 Chicken, back, with or without bone, stewed, skin not eaten  24113000 Chicken, with bone, NS as to part, stewed, light or dark meat, NS as to part, stewed, light or dark meat, NS as to part, stewed, light or dark meat, skin eaten  24103010 Chicken, boneless, NS as to part, stewed, light or dark meat, skin eaten  24103000 Chicken, boneless, NS as to part, stewed, light or dark meat, NS as to skin eaten  23101010 Lamb chop, NS as to cut, cooked, lean and fat eaten  22201120 Pork steak or cutlet, broiled or baked, lean only eaten  24198440 Chicken skin  32105121 Egg omelet or scrambled egg, with sausage and cheese  25112200 Liver paste or pate, chicken  Chicken, back, with or without bone, breaded, baked or fried, prepared with skin, skin/coating eaten  24173210 Chicken, back, with or without bone, stewed, skin eaten  22201200 Pork steak or cutlet, fried, NS as to fat eaten  22000210 Pork, NS as to cooking method, lean and fat eaten  22000210 Pork, NS as to cut, cooked, lean and fat eaten  22000110 Pork, NS as to cut, cooked, lean and fat eaten  25120000 Heart, cooked, NS as to cooking method  27510680 Double hamburger (2 patties, 1/4 lb meat each), with tomato and/or catsup, on bun  21000110 Beef, NS as to cut, cooked, lean and fat eaten  21000100 Beef, NS as to cut, cooked, NS as to fat eaten	25170110         Tripe, cooked         0.99           24173220         Chicken, back, with or without bone, stewed, skin not eaten         0.99           24113000         Chicken, boneless, NS as to part, stewed, light or dark meat, NS as to skin eaten         0.99           24103010         Chicken, boneless, NS as to part, stewed, light or dark meat, NS as to part, stewed, light or dark meat, NS as to skin eaten         0.99           24103000         Chicken, boneless, NS as to part, stewed, light or dark meat, NS as to skin eaten         0.99           23101010         Lamb chop, NS as to cut, cooked, lean and fat eaten         0.99           22201120         Pork steak or cutlet, broiled or baked, lean only eaten         0.99           24198440         Chicken skin         0.98           32105121         Egg omelet or scrambled egg, with sausage and cheese         0.98           25112200         Liver paste or pate, chicken         0.98           24176210         Chicken, back, with or without bone, breaded, baked or fried, prepared with skin, skin/coating eaten         0.98           24173210         Chicken, back, with or without bone, stewed, skin eaten         0.98           22201200         Pork steak or cutlet, fried, NS as to fat eaten         0.98           22101010         Pork chop, NS as to cooking method, lean and fat eaten         0.98           22000210

March 2005 226

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

574	21101000	Beef steak, NS as to cooking method, NS as to fat eaten	0.97	R
575	25160000	Tongue, cooked, NS as to cooking method	0.97	R
576	22000120	Pork, NS as to cut, cooked, lean only eaten	0.97	R
577	22000100	Pork, NS as to cut, cooked, NS as to fat eaten	0.97	R
578	27515010	Steak sandwich, plain, on roll	0.96	R
579	21105110	Beef steak, braised, NS as to fat eaten	0.96	R
580	71508060	White potato, stuffed, baked, peel eaten, stuffed with bacon and cheese	0.96	R
581	27363000	Gumbo with rice (New Orleans type with shellfish, pork, and/or poultry, tomatoes, okra, rice)	0.96	R
582	24202600	Turkey, neck, cooked	0.96	R
583	24156210	Chicken, thigh, with or without bone, breaded, baked or fried, prepared with skin, skin/coating eaten	0.96	R
584	24156200	Chicken, thigh, with or without bone, breaded, baked or fried, prepared with skin, NS as to skin/coating	0.96	R
585	24136210	Chicken, leg (drumstick and thigh), with or without bone, breaded, baked or fried, prepared with skin, sk	0.96	R
586	24136200	Chicken, leg (drumstick and thigh), with or without bone, breaded, baked or fried, prepared with skin, NS	0.96	R
587	23311120	Rabbit, NS as to domestic or wild, breaded, fried	0.96	R
588	22210300	Pork, tenderloin, cooked, NS as to cooking method	0.96	R
589	27510640	Hamburger, 1/4 lb meat (beef modified in fat content), with tomato and/or catsup, on bun	0.95	R
590	25110420	Chicken liver, braised	0.95	R
591	24180200	Chicken, neck or ribs, with or without bone, NS as to cooking method, NS as to skin eaten	0.95	R

March 2005 227

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

592	24116010	Chicken, with bone, NS as to part, breaded, baked or fried, light or dark meat, prepared with skin, skin/	0.95	R
593	25110320	Pork liver, braised	0.94	R
594	25110300	Pork liver, cooked, NS as to cooking method	0.94	R
595	24166110	Chicken, wing, with or without bone, breaded, baked or fried, prepared with skin, skin/coating eaten	0.94	R
596	24166100	Chicken, wing, with or without bone, breaded, baked or fried, prepared with skin, NS as to skin/coating e	0.94	R
597	24126110	Chicken, breast, with or without bone, breaded, baked or fried, prepared with skin, skin/coating eaten	0.93	R
598	24126100	Chicken, breast, with or without bone, breaded, baked or fried, prepared with skin, NS as to skin/coating	0.93	R
599	27411150	Beef rolls, stuffed with vegetables or meat mixture, tomato-based sauce	0.92	R
600	25170210	Chitterlings, cooked	0.92	R
601	24162110	Chicken, wing, with or without bone, roasted, skin eaten	0.92	R
602	24144200	Chicken, drumstick, with or without bone, fried, no coating, NS as to skin eaten	0.92	R
603	41302000	Chickpeas, dry, cooked, NS as to fat added in cooking	0.91	R
604	24106050	Chicken, boneless, NS as to part, breaded, baked or fried, light or dark meat, prepared skinless, coating	0.91	R
605	71411000	White potato skins, with adhering flesh, fried, with cheese and bacon	0.89	R
606	58128110	Chicken cornbread	0.89	R
607	41102000	Black, brown, or Bayo beans, dry, cooked, NS as to fat added in cooking	0.89	R
608	27146400	Chicken kiev	0.89	R
609	41301000	Cowpeas, dry, cooked, NS as to fat added in cooking	0.88	R
610	25110170	Beef liver, battered, fried	0.88	R

March 2005 228

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

611	22101150	Pork chop, breaded or floured, broiled or baked, lean only eaten	0.88	R
612	27111050	Spaghetti sauce with beef or meat other than lamb or mutton, homemade-style	0.87	R
613	24120100	Chicken, breast, with or without bone, NS as to cooking method, NS as to skin eaten	0.87	R
614	58409000	Noodle soup, with fish ball, shrimp, and dark green leafy vegetable	0.87	R
615	22701040	Pork, spareribs, barbecued, with sauce, lean and fat eaten	0.85	R
616	22701030	Pork, spareribs, barbecued, with sauce, NS as to fat eaten	0.85	R
617	27315320	Beef, rice, and vegetables (excluding carrots, broccoli, and dark-green leafy), (mushroom) soup (mixture)	0.58	R
618	27311610	Beef, potatoes, and vegetables (including carrots, broccoli, and/or dark-green leafy), (mushroom) soup (m	0.63	R
619	27311620	Beef, potatoes, and vegetables (excluding carrots, broccoli, and dark-green leafy), (mushroom) soup (mixt	0.65	R
620	27315310	Beef, rice, and vegetables (including carrots, broccoli, and/or dark-green leafy), (mushroom) soup (mixtu	0.76	R
621	27213000	Beef and rice, no sauce (mixture)	0.76	R
622	27313320	Beef, noodles, and vegetables (excluding carrots, broccoli, and dark-green leafy), (mushroom) soup (mixtu	0.78	R
623	27313310	Beef, noodles, and vegetables (including carrots, broccoli, and/or dark-green leafy), (mushroom) soup (mi	0.79	R
624	27414200	Beef with vegetables (excluding carrots, broccoli, and dark-green leafy (no potatoes)), (mushroom) soup (	0.81	R
625	27414100	Beef with vegetables (including carrots, broccoli, and/or dark-green leafy (no potatoes)), (mushroom) sou	1.22	R
626	27114000	Beef with (mushroom) soup (mixture)	0.85	R
627	23220030	Veal patty, breaded, cooked	0.83	R
628	32105110	Egg omelet or scrambled egg, with beef	0.83	R
March 2	005	229		

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

21104110	Beef steak, battered, fried, NS as to fat eaten	0.83	R
21104120	Beef steak, battered, fried, lean and fat eaten	0.82	R
24146210	Chicken, drumstick, with or without bone, breaded, baked or fried, prepared with skin, skin/coating eaten	0.82	R
24146200	Chicken, drumstick, with or without bone, breaded, baked or fried, prepared with skin, NS as to skin/coat	0.82	R
22701050	Pork, spareribs, barbecued, with sauce, lean only eaten	0.82	R
27510520	Hamburger, with mayonnaise or salad dressing and tomatoes, on bun	0.82	R
27515000	Steak submarine sandwich, on roll, with lettuce and tomato	0.81	R
27144000	Chicken or turkey with (mushroom) soup (mixture)	0.81	R
27120090	Ham or pork with (mushroom) soup (mixture)	0.81	R
24167110	Chicken, wing, with or without bone, battered, fried, prepared with skin, skin/coating eaten	0.81	R
24167100	Chicken, wing, with or without bone, battered, fried, prepared with skin, NS as to skin/coating eaten	0.81	R
24106000	Chicken, boneless, NS as to part, breaded, baked or fried, light or dark meat, prepared with skin, NS as	0.81	R
27250270	Clams Casino	0.80	R
24202010	Turkey, drumstick, cooked, skin not eaten	0.80	R
24177210	Chicken, back, with or without bone, battered, fried, prepared with skin, skin/coating eaten	0.80	R
24157250	Chicken, thigh, with or without bone, battered, fried, prepared skinless, coating eaten	0.80	R
24123120	Chicken, breast, with or without bone, stewed, skin not eaten	0.80	R
	21104120 24146210 24146200 22701050 27510520 27515000 27144000 27120090 24167110 24167100 24167200 24106000 27250270 24202010 24177210	21104120 eaten  21104120 Beef steak, battered, fried, lean and fat eaten  Chicken, drumstick, with or without bone, breaded, baked or fried, prepared with skin, skin/coating eaten  Chicken, drumstick, with or without bone, breaded, baked or fried, prepared with skin, NS as to skin/coat  22701050 Pork, spareribs, barbecued, with sauce, lean only eaten  Hamburger, with mayonnaise or salad dressing and tomatoes, on bun  Steak submarine sandwich, on roll, with lettuce and tomato  Chicken or turkey with (mushroom) soup (mixture)  Ham or pork with (mushroom) soup (mixture)  Chicken, wing, with or without bone, battered, fried, prepared with skin, NS as to skin/coating eaten  Chicken, boneless, NS as to part, breaded, baked or fried, light or dark meat, prepared with skin, NS as  27250270 Clams Casino  2410710 Chicken, back, with or without bone, battered, fried, prepared with skin, nS as  Chicken, back, with or without bone, battered, fried, prepared with skin, nS as  Chicken, back, with or without bone, battered, fried, prepared with skin, skin/coating eaten  Chicken, back, with or without bone, battered, fried, prepared with skin, skin/coating eaten  Chicken, thigh, with or without bone, battered, fried, prepared skinless, coating eaten  Chicken, breast, with or without bone, battered, fried, prepared skinless, coating eaten  Chicken, breast, with or without bone, battered, fried, prepared skinless, coating eaten  Chicken, breast, with or without bone, battered, fried, prepared skinless, coating eaten	21104120 Beef steak, battered, fried, lean and fat eaten  Chicken, drumstick, with or without bone, breaded, baked or fried, prepared with skin, NS as to skin/coat dressing and tomatoes, on bun  Porkeden or turkey with (mushroom) soup (mixture)  Chicken, wing, with or without bone, battered, fried, prepared with skin, NS as to skin/coat  Chicken or turkey with (mushroom) soup (mixture)  Chicken, wing, with or without bone, battered, fried, prepared with skin, NS as to skin/coat or turkey with (mushroom) soup (mixture)  Chicken, wing, with or without bone, battered, fried, prepared with skin, NS as to skin/coating eaten  Chicken, boneless, NS as to part, breaded, baked or fried, light or dark meat, prepared with skin, NS as costing eaten  Chicken, back, with or without bone, battered, fried, prepared with skin, NS as costing eaten  Chicken, boneless, NS as to part, breaded, baked or fried, light or dark meat, prepared with skin, NS as costing eaten  Chicken, back, with or without bone, battered, fried, prepared with skin, NS as costing battered, fried, prepared with skin, NS as costing battered, fried, prepared with skin, NS as costing battered, fried, prepared with skin, one eaten  Chicken, back, with or without bone, battered, fried, prepared with skin, skin/coating eaten  Chicken, back, with or without bone, battered, fried, prepared with skin, skin/coating eaten  Chicken, thigh, with or without bone, battered, fried, prepared skinless, coating eaten  Chicken, thigh, with or without bone, battered, fried, prepared skinless, coating eaten  Chicken, breast, with or without bone, battered, fried, prepared skinless, coating eaten

March 2005 230

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

646	41104000	Pinto, calico, or red Mexican beans, dry, cooked, NS as to fat added in cooking	0.79	R
647	41101100	White beans, dry, cooked, NS as to fat added in cooking	0.79	R
648	41101000	Beans, dry, cooked, NS as to type and as to fat added in cooking	0.79	R
649	21102130	Beef steak, fried, lean only eaten	0.79	R
650	41106000	Red kidney beans, dry, cooked, NS as to fat added in cooking	0.78	R
651	41103050	Pink beans, dry, cooked, NS as to fat added in cooking	0.78	R
652	27450420	Shrimp and vegetables (excluding carrots, broccoli, and dark-green leafy (no potatoes)), soy-based sauce	0.76	R
653	27236000	Venison/deer and noodles with cream or white sauce (mixture)	0.76	R
654	24127150	Chicken, breast, with or without bone, battered, fried, prepared skinless, coating eaten	0.76	R
655	24127140	Chicken, breast, with or without bone, battered, fried, prepared skinless, NS as to coating eaten	0.76	R
656	22201050	Pork steak or cutlet, battered, fried, NS as to fat eaten	0.76	R
657	22201310	Pork steak or cutlet, breaded or floured, broiled or baked, lean and fat eaten	0.75	R
658	58155410	Soupy rice with chicken, Puerto Rican style (Asopao de pollo)	0.74	R
659	27460750	Liver, beef or calves, and onions	0.74	R
660	24117010	Chicken, with bone, NS as to part, battered, fried, light or dark meat, prepared with skin, skin/coating	0.74	R
661	24117000	Chicken, with bone, NS as to part, battered, fried, light or dark meat, prepared with skin, NS as to skin	0.74	R
662	24107010	Chicken, boneless, NS as to part, battered, fried, light or dark meat, prepared with skin, skin/coating e	0.74	R

March 2005 231

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

663	24107000	Chicken, boneless, NS as to part, battered, fried, light or dark meat, prepared with skin, NS as to skin/	0.74	R
664	23322350	Venison/deer ribs, cooked	0.74	R
665	23321000	Venison/deer, NFS	0.74	R
666	23000100	Lamb, NS as to cut, cooked	0.74	R
667	32105060	Egg omelet or scrambled egg, with peppers, onion, and ham	0.73	R
668	24157210	Chicken, thigh, with or without bone, battered, fried, prepared with skin, skin/coating eaten	0.73	R
669	24157200	Chicken, thigh, with or without bone, battered, fried, prepared with skin, NS as to skin/coating eaten	0.73	R
670	27450410	Shrimp and vegetables (including carrots, broccoli, and/or dark-green leafy (no potatoes)), soy-based sau	0.72	R
671	27410250	Beef shish kabob with vegetables, excluding potatoes	0.72	R
672	27130010	Lamb or mutton with gravy (mixture)	0.72	R
673	22210310	Pork, tenderloin, breaded, fried	0.72	R
674	22101420	Pork chop, battered, fried, lean only eaten	0.72	R
675	58155320	Seafood paella, Puerto Rican style (Paella a la marinera)	0.71	R
676	27345420	Chicken or turkey, rice, and vegetables (excluding carrots, broccoli, and darkgreen leafy), (mushroom) s	0.71	R
677	27335100	Rabbit stew with potatoes and vegetables	0.71	R
678	27136080	Venison/deer with gravy (mixture)	0.71	R
679	24137210	Chicken, leg (drumstick and thigh), with or without bone, battered, fried, prepared with skin, skin/coati	0.71	R
680	24137200	Chicken, leg (drumstick and thigh), with or without bone, battered, fried, prepared with skin, NS as to s	0.71	R
681	24103020	Chicken, boneless, NS as to part, stewed, light or dark meat, skin not eaten	0.71	R
682	23333100	Squirrel, cooked	0.71	R
683	21105120	Beef steak, braised, lean and fat eaten	0.70	R
684	24203010	Turkey, wing, cooked, skin not eaten	0.70	R
March 2	005	232		

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

685	24201400	Turkey, light or dark meat, stewed, NS as to skin eaten	0.70	R
686	24127110	Chicken, breast, with or without bone, battered, fried, prepared with skin, skin/coating eaten	0.70	R
687	24127100	Chicken, breast, with or without bone, battered, fried, prepared with skin, NS as to skin/coating eaten~^	0.70	R
688	23203030	Veal chop, fried, lean only eaten	0.70	R
689	58155510	Soupy rice mixture with chicken and potatoes, Puerto Rican style	0.69	R
690	32105170	Egg omelet or scrambled egg with chicken	0.69	R
691	27420400	Pork and vegetables (including carrots, broccoli, and/or dark-green leafy (no potatoes)), tomato-based sa	0.69	R
692	24201000	Turkey, NFS	0.69	R
693	24147210	Chicken, drumstick, with or without bone, battered, fried, prepared with skin, skin/coating eaten	0.69	R
694	24147200	Chicken, drumstick, with or without bone, battered, fried, prepared with skin, NS as to skin/coating eate	0.69	R
695	22201400	Pork steak or cutlet, breaded or floured, fried, NS as to fat eaten	0.68	R
696	75649150	Vegetable noodle soup, home recipe	0.67	R
697	24123100	Chicken, breast, with or without bone, stewed, NS as to skin eaten	0.67	R
698	22201100	Pork steak or cutlet, broiled or baked, NS as to fat eaten	0.67	R
699	22101220	Pork chop, fried, lean only eaten	0.67	R
700	75649110	Vegetable soup, home recipe	0.66	R
701	27516010	Gyro sandwich (pita bread, beef, lamb, onion, condiments), with tomato and spread	0.66	R
702	24140200	Chicken, drumstick, with or without bone, NS as to cooking method, NS as to skin eaten	0.66	R

March 2005 233

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

704	21304210	Beef, shortribs, barbecued, with sauce, lean and fat eaten	0.66	R
705	21304200	Beef, shortribs, barbecued, with sauce, NS as to fat eaten	0.66	R
706	27416150	Pepper steak	0.66	R
707	27336100	Venison/deer stew with potatoes and vegetables (including carrots, broccoli, and/or dark-green leafy), to	0.65	R
708	22701000	Pork, spareribs, cooked, NS as to fat eaten	0.65	R
709	27411120	Swiss steak	0.64	R
710	58101830	Mexican casserole made with ground beef, tomato sauce, cheese, taco seasonings, and corn chips	0.64	R
711	41210110	Stewed dry lima beans, Puerto Rican style	0.64	R
712	27430510	Veal goulash with vegetables (including carrots, broccoli, and/or dark-green leafy (no potatoes)), tomato	0.64	R
713	27235000	Meat loaf made with venison / deer	0.64	R
714	27121000	Pork with chili and tomatoes (mixture) (Puerco con chile)	0.64	R
715	24126120	Chicken, breast, with or without bone, breaded, baked or fried, prepared with skin, skin/coating not eate	0.63	R
716	23210020	Veal, roasted, lean and fat eaten	0.63	R
717	23150300	Goat ribs, cooked	0.63	R
718	23150250	Goat, baked	0.63	R
719	23150100	Goat, boiled	0.63	R
720	23110000	Lamb, ribs, cooked, lean only eaten	0.63	R
721	27260010	Meat loaf, NS as to type of meat	0.63	R
722	27242250	Chicken or turkey and noodles with (mushroom) soup (mixture)	0.62	R
723	24153220	Chicken, thigh, with or without bone, stewed, skin not eaten	0.62	R
724	75651000	Minestrone soup, home recipe	0.61	R
725	41102210	Fava beans, cooked, fat added in cooking	0.61	R
726	24145220	Chicken, drumstick, with or without bone, floured, baked or fried, prepared with skin, skin/coating not e	0.61	R
727	25120150	Heart, fried	0.61	R
March 2	005	234		

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

728	27336310	Venison/deer, noodles, and vegetables (excluding carrots, broccoli, and darkgreen leafy), tomato-based s	0.60	R
729	23110010	Lamb, ribs, cooked, NS as to fat eaten	0.60	R
730	27418110	Seasoned shredded soup meat (Ropa vieja, sopa de carne ripiada)	0.60	R
731	27116350	Stewed, seasoned, ground beef, Mexican style (Picadillo de carne de rez)	0.59	R
732	23323500	Bear, cooked	0.59	R
733	21301000	Beef, oxtails, cooked	0.59	R
734	27135050	Veal Marsala	0.58	R
735	25110000	Liver, NS as to type, cooked	0.58	R
736	24300120	Duck, cooked, skin not eaten	0.58	R
737	24201310	Turkey, light and dark meat, roasted, NS as to skin eaten	0.58	R
738	23120120	Lamb, roast, cooked, lean only eaten	0.58	R
739	22101320	Pork chop, breaded or floured, fried, lean only eaten	0.58	R
740	21500100	Ground beef or patty, cooked, NS as to regular, lean, or extra lean	0.58	R
741	21407120	Beef, pot roast, braised or boiled, lean only eaten	0.58	R
742	24401000	Cornish game hen, roasted, NS as to skin eaten	0.57	R
743	24400010	Cornish game hen, cooked, skin eaten	0.57	R
744	24400000	Cornish game hen, cooked, NS as to skin eaten	0.57	R
745	24201110	Turkey, light meat, roasted, NS as to skin eaten	0.57	R
746	24201020	Turkey, light meat, cooked, skin not eaten	0.57	R
747	24201010	Turkey, light meat, cooked, NS as to skin eaten	0.57	R
748	21305000	Beef, cow head, cooked	0.57	R
749	21407000	Beef, pot roast, braised or boiled, NS as to fat eaten	0.57	R
750	24402100	Dove, cooked, NS as to cooking method	0.56	R
751	24301010	Duck, roasted, skin eaten	0.56	R
752	24301000	Duck, roasted, NS as to skin eaten	0.56	R
753	24300110	Duck, cooked, skin eaten	0.56	R

March 2005 235

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

754	24136220	Chicken, leg (drumstick and thigh), with or without bone, breaded, baked or fried, prepared with skin, sk	0.56	R
755	23321250	Venison/deer steak, breaded or floured, cooked, NS as to cooking method	0.56	R
756	22401020	Pork roast, loin, cooked, lean only eaten	0.56	R
757	22401010	Pork roast, loin, cooked, lean and fat eaten	0.56	R
758	22401000	Pork roast, loin, cooked, NS as to fat eaten	0.56	R
759	22301000	Ham, fresh, cooked, NS as to fat eaten	0.56	R
760	22002000	Pork, ground or patty, cooked	0.56	R
761	28340660	Chicken or turkey vegetable soup, home recipe	0.55	R
762	24143220	Chicken, drumstick, with or without bone, stewed, skin not eaten	0.55	R
763	22101300	Pork chop, breaded or floured, fried, NS as to fat eaten	0.55	R
764	21401120	Beef, roast, roasted, lean only eaten	0.55	R
765	24403100	Quail, cooked	0.54	R
766	20000200	Ground meat, NFS	0.54	R
767	27136050	Venison/deer with tomato-based sauce (mixture)	0.54	R
768	23101020	Lamb chop, NS as to cut, cooked, lean only eaten	0.54	R
769	41601180	Bean and ham soup, home recipe	0.53	R
770	27142100	Chicken or turkey fricassee	0.53	R
771	27130100	Lamb curry	0.53	R
772	24160100	Chicken, wing, with or without bone, NS as to cooking method, NS as to skin eaten	0.53	R
773	24133220	Chicken, leg (drumstick and thigh), with or without bone, stewed, skin not eaten	0.53	R
774	23311200	Rabbit, wild, cooked	0.53	R
775	27416200	Beef, ground, with egg and onion (mixture)	0.53	R
776	41101010	Beans, dry, cooked, NS as to type, fat added in cooking	0.52	R
777	24404100	Pheasant, cooked	0.52	R
778	24126160	Chicken breast, with or without bone, breaded, baked or fried, prepared skinless, coating not eaten	0.52	R

March 2005 236

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

7	79	27336200	Venison/deer, potatoes, and vegetables (including carrots, broccoli, and/or darkgreen leafy), gravy (mix	0.51	R
7	80	24207000	Turkey, ground	0.51	R
7	81	28310170	Beef broth, without tomato, home recipe	0.50	R
7	82	22201210	Pork steak or cutlet, fried, lean and fat eaten	0.50	R
7	83	21103120	Beef steak, breaded or floured, baked or fried, lean and fat eaten	0.50	R
7	84	41210100	Stewed dry red beans, Puerto Rican style (Habichuelas coloradas guisadas)	0.49	R
7	85	24124110	Chicken, breast, with or without bone, fried, no coating, skin eaten	0.49	R
7	86	22400110	Pork roast, NS as to cut, cooked, lean and fat eaten	0.49	R
7	87	21103130	Beef steak, breaded or floured, baked or fried, lean only eaten	0.48	R
7	88	24135220	Chicken, leg (drumstick and thigh), with or without bone, floured, baked or fried, prepared with skin, sk	0.48	R
7	89	21103110	Beef steak, breaded or floured, baked or fried, NS as to fat eaten	0.48	R
7	90	28340590	Chicken corn soup, home recipe	0.47	R
7	91	24164120	Chicken, wing, with or without bone, fried, no coating, skin not eaten	0.46	R
7	92	24130220	Chicken, leg (drumstick and thigh), with or without bone, NS as to cooking method, skin not eaten	0.46	R
7	93	23322400	Venison/deer, stewed	0.46	R
7	94	21500110	Ground beef, meatballs, meat only, cooked, NS as to regular, lean, or extra lean	0.45	R
7	95	58160150	Red beans and rice	0.45	R
7	96	24401010	Cornish game hen, roasted, skin eaten	0.45	R
7	97	24155210	Chicken, thigh, with or without bone, floured, baked or fried, prepared with skin, skin/coating eaten	0.45	R
7	98	28310160	Beef broth, with tomato, home recipe	0.44	R
7	99	24152220	Chicken, thigh, with or without bone, roasted, skin not eaten	0.44	R

March 2005 237

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

800	24132200	Chicken, leg (drumstick and thigh), with or without bone, roasted, NS as to skin eaten	0.44	R
801	21101130	Beef steak, broiled or baked, lean only eaten	0.44	R
802	27211550	Stewed, seasoned, ground beef with potatoes, Mexican style (Picadillo de carne de rez con papas)	0.43	R
803	21501000	Ground beef, regular, cooked	0.43	R
804	21001020	Steak, NS as to type of meat, cooked, lean only eaten	0.43	R
805	24164100	Chicken, wing, with or without bone, fried, no coating, NS as to skin eaten	0.43	R
806	24154220	Chicken, thigh, with or without bone, fried, no coating, skin not eaten	0.43	R
807	24112020	Chicken, with bone, NS as to part, roasted, light or dark meat, skin not eaten	0.43	R
808	23104020	Lamb, loin chop, cooked, lean only eaten	0.43	R
809	25170420	Gizzard, cooked	0.41	R
810	28340130	Chicken broth, with tomato, home recipe	0.40	R
811	21501200	Ground beef, lean, cooked	0.39	R
812	27246500	Meat loaf made with chicken or turkey	0.39	R
813	24161120	Chicken, wing, with or without bone, broiled, skin not eaten	0.39	R
814	24155220	Chicken, thigh, with or without bone, floured, baked or fried, prepared with skin, skin/coating not eaten	0.39	R
815	22708010	Pork, pig's hocks, cooked	0.39	R
816	22210350	Pork, tenderloin, braised	0.39	R
817	22201320	Pork steak or cutlet, breaded or floured, broiled or baked, lean only eaten	0.39	R
818	21104130	Beef steak, battered, fried, lean only eaten	0.39	R
819	21401110	Beef, roast, roasted, lean and fat eaten	0.38	R
820	27345410	Chicken or turkey, rice, and vegetables (including carrots, broccoli, and/or darkgreen leafy), (mushroom	0.38	R
821	24166120	Chicken, wing, with or without bone, breaded, baked or fried, prepared with skin, skin/coating not eaten~	0.38	R
822	24152210	Chicken, thigh, with or without bone, roasted, skin eaten	0.38	R
March 2005		238		

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

823	24121120	Chicken, breast, with or without bone, broiled, skin not eaten	0.38	R
824	21000120	Beef, NS as to cut, cooked, lean only eaten	0.37	R
825	24133200	Chicken, leg (drumstick and thigh), with or without bone, stewed, NS as to skin eaten	0.37	R
826	22400100	Pork roast, NS as to cut, cooked, NS as to fat eaten	0.37	R
827	28340120	Chicken broth, without tomato, home recipe	0.36	R
828	58406020	Turkey noodle soup, home recipe	0.36	R
829	58404030	Chicken or turkey rice soup, home recipe	0.36	R
830	27430500	Veal goulash with vegetables (excluding carrots, broccoli, and dark-green leafy (no potatoes)), tomato-ba	0.36	R
831	24153200	Chicken, thigh, with or without bone, stewed, NS as to skin eaten	0.36	R
832	27363100	Jambalaya with meat and rice	0.35	R
833	27141050	Stewed chicken with tomato-based sauce, Mexican style (mixture) (Pollo guisado con tomate)	0.35	R
834	24201330	Turkey, light and dark meat, roasted, skin eaten	0.35	R
835	24113020	Chicken, with bone, NS as to part, stewed, light or dark meat, skin not eaten	0.35	R
836	22201220	Pork steak or cutlet, fried, lean only eaten	0.35	R
837	21410120	Beef, stew meat, cooked, lean only eaten	0.34	R
838	25110240	Calves liver, fried or broiled, no coating	0.34	R
839	24163100	Chicken, wing, with or without bone, stewed, NS as to skin eaten	0.34	R
840	24133210	Chicken, leg (drumstick and thigh), with or without bone, stewed, skin eaten	0.34	R
841	24132220	Chicken, leg (drumstick and thigh), with or without bone, roasted, skin not eaten	0.34	R
842	77316510	Stuffed cabbage, with meat and rice, Syrian dish, Puerto Rican style (Repollo relleno con carne y con arr	0.33	R
843	24202450	Turkey, thigh, cooked, NS as to skin eaten	0.33	R

March 2005 239

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

844	41310200	Chickpeas stewed with pig's feet, Puerto Rican style (Garbanzos guisados con patitos de cerdo)	0.32	R
845	24401020	Cornish game hen, roasted, skin not eaten	0.32	R
846	24201220	Turkey, dark meat, roasted, skin not eaten	0.32	R
847	24201210	Turkey, dark meat, roasted, NS as to skin eaten	0.32	R
848	24123110	Chicken, breast, with or without bone, stewed, skin eaten	0.32	R
849	22201110	Pork steak or cutlet, broiled or baked, lean and fat eaten	0.32	R
850	22101110	Pork chop, broiled or baked, lean and fat eaten	0.32	R
851	27214100	Meat loaf made with beef	0.31	R
852	22301110	Ham, fresh, cooked, lean and fat eaten	0.31	R
853	27116400	Steak tartare (raw ground beef and egg)	0.30	R
854	24143200	Chicken, drumstick, with or without bone, stewed, NS as to skin eaten	0.30	R
855	24135200	Chicken, leg (drumstick and thigh), with or without bone, floured, baked or fried, prepared with skin, NS	0.30	R
856	41103000	Lima beans, dry, cooked, NS as to fat added in cooking	0.29	R
857	27260090	Meat loaf made with beef, veal and pork	0.29	R
858	25110440	Chicken liver, fried or sauteed, no coating	0.29	R
859	24163120	Chicken, wing, with or without bone, stewed, skin not eaten	0.29	R
860	23203120	Veal chop, broiled, lean only eaten	0.29	R
861	27450600	Shellfish mixture and vegetables (including carrots, broccoli, and/or darkgreen leafy (no potatoes)), so	0.29	R
862	75652010	Vegetable beef soup, home recipe	0.27	R
863	25110140	Beef liver, fried or broiled, no coating	0.27	R
864	25110100	Beef liver, cooked, NS as to cooking method	0.27	R
865	24175210	Chicken, back, with or without bone, floured, baked or fried, prepared with skin, skin/coating eaten	0.27	R
866	24122110	Chicken, breast, with or without bone, roasted, skin eaten	0.27	R

March 2005 240

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

867 868	23310000 23210030	Rabbit, NS as to domestic or wild, cooked Veal, roasted, lean only eaten	0.27 0.27	R R
869	22201300	Pork steak or cutlet, breaded or floured, broiled or baked, NS as to fat eaten	0.27	R
870	21302000	Beef, neck bones, cooked	0.27	R
871	24145200	Chicken, drumstick, with or without bone, floured, baked or fried, prepared with skin, NS as to skin/coat	0.26	R
872	24141200	Chicken, drumstick, with or without bone, broiled, NS as to skin eaten	0.26	R
873	58402100	Beef noodle soup, home recipe	0.26	R
874	75652050	Vegetable beef soup with rice, home recipe	0.25	R
875	75652040	Vegetable beef soup with noodles or pasta, home recipe	0.25	R
876	24301020	Duck, roasted, skin not eaten	0.25	R
877	24185220	Chicken, neck or ribs, with or without bone, floured, baked or fried, prepared with skin, skin/coating no	0.25	R
878	24174210	Chicken, back, with or without bone, fried, no coating, skin eaten	0.25	R
879	24145250	Chicken, drumstick, with or without bone, floured, baked or fried, prepared skinless, coating eaten	0.25	R
880	24144220	Chicken, drumstick, with or without bone, fried, no coating, skin not eaten	0.25	R
881	24102010	Chicken, boneless, NS as to part, roasted, light or dark meat, skin eaten	0.25	R
882	21304000	Beef, shortribs, cooked, NS as to fat eaten	0.25	R
883	24157260	Chicken, thigh, with or without bone, battered, fried, prepared skinless, coating not eaten	0.24	R
884	24151210	Chicken, thigh, with or without bone, broiled, skin eaten	0.24	R
885	24142220	Chicken, drumstick, with or without bone, roasted, skin not eaten	0.24	R
886	24141220	Chicken, drumstick, with or without bone, broiled, skin not eaten	0.24	R

March 2005 241

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

887	24134220	Chicken, leg (drumstick and thigh), with or without bone, fried, no coating, skin not eaten	0.24	R
888	23203100	Veal chop, broiled, NS as to fat eaten	0.24	R
889	22701010	Pork, spareribs, cooked, lean and fat eaten	0.24	R
890	22000200	Pork, NS as to cut, fried, NS as to fat eaten	0.24	R
891	21410000	Beef, stew meat, cooked, NS as to fat eaten	0.24	R
892	41310100	Stewed pigeon peas, Puerto Rican style (Gandules guisados, Gandur, Gandules)	0.23	R
893	41301010	Cowpeas, dry, cooked, fat added in cooking	0.23	R
894	24198720	Chicken, ground	0.23	R
895	24167120	Chicken, wing, with or without bone, battered, fried, prepared with skin, skin/coating not eaten	0.23	R
896	24162120	Chicken, wing, with or without bone, roasted, skin not eaten	0.23	R
897	24154210	Chicken, thigh, with or without bone, fried, no coating, skin eaten	0.23	R
898	24144210	Chicken, drumstick, with or without bone, fried, no coating, skin eaten	0.23	R
899	24142200	Chicken, drumstick, with or without bone, roasted, NS as to skin eaten	0.23	R
900	24141210	Chicken, drumstick, with or without bone, broiled, skin eaten	0.23	R
901	24140210	Chicken, drumstick, with or without bone, NS as to cooking method, skin eaten	0.23	R
902	24134200	Chicken, leg (drumstick and thigh), with or without bone, fried, no coating, NS as to skin eaten	0.23	R
903	24131220	Chicken, leg (drumstick and thigh), with or without bone, broiled, skin not eaten	0.23	R
904	24125140	Chicken, breast, with or without bone, floured, baked or fried, prepared skinless, NS as to coating eaten	0.23	R
905	24107020	Chicken, boneless, NS as to part, battered, fried, light or dark meat, prepared with skin, skin/coating n	0.23	R

March 2005 242

March 2005

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

906	24104020	Chicken, boneless, NS as to part, fried, no coating, light or dark meat, skin not eaten	0.23	R
907	22101100	Pork chop, broiled or baked, NS as to fat eaten	0.23	R
908	22000220	Pork, NS as to cut, fried, lean only eaten	0.23	R
909	58105110	Pupusa, meat-filled	0.22	R
910	24151220	Chicken, thigh, with or without bone, broiled, skin not eaten	0.22	R
911	24132210	Chicken, leg (drumstick and thigh), with or without bone, roasted, skin eaten	0.22	R
912	24131210	Chicken, leg (drumstick and thigh), with or without bone, broiled, skin eaten	0.22	R
913	24102020	Chicken, boneless, NS as to part, roasted, light or dark meat, skin not eaten	0.22	R
914	24101020	Chicken, boneless, NS as to part, broiled, light or dark meat, skin not eaten	0.22	R
915	23210010	Veal, roasted, NS as to fat eaten	0.22	R
916	23200100	Veal, NS as to cut, cooked, NS as to fat eaten	0.22	R
917	41210150	Stewed pink beans with viandas, ham, Puerto Rican style	0.21	R
918	24201320	Turkey, light and dark meat, roasted, skin not eaten	0.21	R
919	24162100	Chicken, wing, with or without bone, roasted, NS as to skin eaten	0.21	R
920	24161100	Chicken, wing, with or without bone, broiled, NS as to skin eaten	0.21	R
921	24152200	Chicken, thigh, with or without bone, roasted, NS as to skin eaten	0.21	R
922	24151200	Chicken, thigh, with or without bone, broiled, NS as to skin eaten	0.21	R
923	24122120	Chicken, breast, with or without bone, roasted, skin not eaten	0.21	R
924	24111010	Chicken, with bone, NS as to part, broiled, light or dark meat, skin eaten	0.21	R
925	24101000	Chicken, boneless, NS as to part, broiled, light or dark meat, NS as to skin eaten	0.21	R
926	23321100	Venison/deer, roasted	0.21	R
927	23132000	Lamb, ground or patty, cooked	0.21	R
928	23120100	Lamb, roast, cooked, NS as to fat eaten	0.21	R
3.6	1 2005	242		

This information has been peer-reviewed under applicable information quality guidelines. FSIS is distributing this information for public comment. It may be revised upon review of public comment.

243

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

929	22705010	Pork ears, tail, head, snout, miscellaneous parts, cooked	0.21	R
930	21101110	Beef steak, broiled or baked, NS as to fat eaten	0.20	R
931	41302010	Chickpeas, dry, cooked, fat added in cooking	0.20	R
932	25110410	Chicken liver, battered, fried	0.20	R
933	3 24202060	Turkey, drumstick, roasted, skin not eaten	0.20	R
934	24202020	Turkey, drumstick, cooked, skin eaten	0.20	R
935	24202000	Turkey, drumstick, cooked, NS as to skin eaten	0.20	R
936	5 24165110	Chicken, wing, with or without bone, floured, baked or fried, prepared with skin, skin/coating eaten	0.20	R
937	24165100	Chicken, wing, with or without bone, floured, baked or fried, prepared with skin, NS as to skin/coating e	0.20	R
938	3 24164110	Chicken, wing, with or without bone, fried, no coating, skin eaten	0.20	R
939	24153210	Chicken, thigh, with or without bone, stewed, skin eaten	0.20	R
940	24124120	Chicken, breast, with or without bone, fried, no coating, skin not eaten	0.20	R
941	24124100	Chicken, breast, with or without bone, fried, no coating, NS as to skin eaten	0.20	R
942	2 23205030	Veal cutlet or steak, fried, lean only eaten	0.20	R
943	3 23204220	Veal cutlet or steak, broiled, lean only eaten	0.20	R
944	24201230	Turkey, dark meat, roasted, skin eaten	0.19	R
945	24143210	Chicken, drumstick, with or without bone, stewed, skin eaten	0.19	R
946	5 24125100	Chicken, breast, with or without bone, floured, baked or fried, prepared with skin, NS as to skin/coating	0.19	R
947	22411020	Pork roast, shoulder, cooked, lean only eaten	0.19	R
948	3 22101410	Pork chop, battered, fried, lean and fat eaten	0.19	R
949	58160140	Rice with beans and pork	0.18	R

March 2005 244

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

950	24122100	Chicken, breast, with or without bone, roasted, NS as to skin eaten	0.18	R
951	24121100	Chicken, breast, with or without bone, broiled, NS as to skin eaten	0.18	R
952	22210400	Pork, tenderloin, baked	0.18	R
953	21501300	Ground beef, extra lean, cooked	0.18	R
954	21420100	Beef, sandwich steak (flaked, formed, thinly sliced)	0.18	R
955	27315270	Stuffed grape leaves with beef and rice	0.18	R
956	21102110	Beef steak, fried, NS as to fat eaten	0.18	R
957	21500000	Ground beef, raw	0.17	R
958	27330170	Stuffed grape leaves with lamb and rice	0.17	R
959	24198500	Chicken feet	0.17	R
960	24163110	Chicken, wing, with or without bone, stewed, skin eaten	0.17	R
961	23120110	Lamb, roast, cooked, lean and fat eaten	0.17	R
962	23101000	Lamb chop, NS as to cut, cooked, NS as to fat eaten	0.17	R
963	22411000	Pork roast, shoulder, cooked, NS as to fat eaten	0.17	R
964	22101020	Pork chop, NS as to cooking method, lean only eaten	0.17	R
965	21304110	Beef, shortribs, cooked, lean and fat eaten	0.17	R
966	21101020	Beef steak, NS as to cooking method, lean only eaten	0.17	R
967	24400020	Cornish game hen, cooked, skin not eaten	0.16	R
968	24205000	Turkey, tail, cooked	0.16	R
969	24203020	Turkey, wing, cooked, skin eaten	0.16	R
970	24201130	Turkey, light meat, roasted, skin eaten	0.16	R
971	24201120	Turkey, light meat, roasted, skin not eaten	0.16	R
972	24201060	Turkey, light meat, breaded, baked or fried, skin not eaten	0.16	R
973	24201030	Turkey, light meat, cooked, skin eaten	0.16	R
974				
	22301120	Ham, fresh, cooked, lean only eaten	0.16	R
975	22301120 22201000	Ham, fresh, cooked, lean only eaten Pork steak or cutlet, NS as to cooking method, NS as to fat eaten	0.16 0.16	R R
975 976		Pork steak or cutlet, NS as to cooking		
	22201000	Pork steak or cutlet, NS as to cooking method, NS as to fat eaten	0.16	R

March 2005 245

## Risk Assessment for C. perfringens in RTE Meat and Poultry Products

979	22101000	Pork chop, NS as to cooking method, NS as to fat eaten	0.16	R
980	21401000	Beef, roast, roasted, NS as to fat eaten	0.16	R
981	20000000	Meat, NFS	0.16	R
982	21001010	Steak, NS as to type of meat, cooked, lean and fat eaten	0.15	R
983	21101120	Beef steak, broiled or baked, lean and fat eaten	0.15	R
984	21001000	Steak, NS as to type of meat, cooked, NS as to fat eaten	0.15	R
985	21105130	Beef steak, braised, lean only eaten	0.15	R
986	25160100	Tongue, braised	0.15	R
987	24203000	Turkey, wing, cooked, NS as to skin eaten	0.15	R
988	23324100	Caribou, cooked	0.15	R
989	22400120	Pork roast, NS as to cut, cooked, lean only eaten	0.15	R
990	21304120	Beef, shortribs, cooked, lean only eaten	0.15	R
991	24402110	Dove, fried	0.14	R
992	23326100	Bison, cooked	0.14	R
993	22701020	Pork, spareribs, cooked, lean only eaten	0.14	R
994	22101520	Pork chop, stewed, lean only eaten	0.14	R
995	22101510	Pork chop, stewed, lean and fat eaten	0.12	R
996	22101500	Pork chop, stewed, NS as to fat eaten	0.12	R
997	27111200	Beef burgundy	0.12	R
998	41106010	Red kidney beans, dry, cooked, fat added in cooking	0.11	R
999	28500150	Gravy, redeye	0.10	R
1000	25170310	Hog maws (stomach), cooked	0.09	R
1001	58403040	Chicken noodle soup, home recipe	0.08	R
1002	22707010	Pork, pig's feet, cooked	0.08	R
1003	41102010	Black, brown, or Bayo beans, dry, cooked, fat added in cooking	0.05	R
1004	41104010	Pinto, calico, or red Mexican beans, dry, cooked, fat added in cooking	0.04	R
1005	41101110	White beans, dry, cooked, fat added in cooking	0.04	R
1006	41103010	Lima beans, dry, cooked, fat added in cooking	0.03	R
1007	22621100	Fat back, cooked	0.02	R

March 2005 246

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

1008	41103070	Pink beans, dry, cooked, fat added in cooking	0.01	R
1009	91361050	Duck sauce	0.00	R
1010	27510230	Cheeseburger, with mayonnaise or salad dressing and tomatoes, on bun	1.17	R
1011	27213120	Porcupine balls with tomato-based sauce (mixture)	1.16	R
1012	58421010	Sopa Seca de Fideo, Mexican style, made with dry noodles	1.14	R
1013	27510690	Double hamburger (2 patties, 1/4 lb meat each), with mayonnaise or salad dressing and tomatoes and/or cat	0.90	R
1014	25160110	Tongue, smoked, cured, or pickled, cooked	2.64	R
1015	27212400	Beef and noodles with (mushroom) soup (mixture)	0.66	R
1016	23322100	Deer bologna	2.49	R
1017	27211170	Beef and potatoes with (mushroom) soup (mixture)	0.57	R
1018	58101820	Mexican casserole made with ground beef, beans, tomato sauce, cheese, taco seasonings, and corn chips	0.54	R
1019	25230560	Liverwurst	2.90	1
1020	25220390	Bologna, beef, lowfat	2.87	1
1021	25210220	Frankfurter or hot dog, beef and pork	2.87	1
1022	25220500	Bologna, beef and pork, lowfat	2.82	1
1023	14620320	Pizza topping from meat pizza	2.82	1
1024	22300160	Ham, breaded or floured, fried, lean and fat eaten	2.81	1
1025	22300150	Ham, breaded or floured, fried, NS as to fat eaten	2.81	1
1026	25210150	Frankfurter or hot dog, cheese-filled	2.78	1
1027	25221310	Polish sausage	2.74	1
1028	25221710	Souse	2.62	1
1029	25221480	Mettwurst	2.73	1
1030	25221500	Salami, NFS	2.71	1
1031	22321110	Ham, smoked or cured, ground patty	2.70	1
1032	32202020	Egg, cheese, and ham on biscuit	2.68	1
1033	25220010	Cold cut, NFS	2.68	1
1034	25210610	Frankfurter or hot dog, beef, lowfat	2.67	1
	• • • •			

March 2005 247

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

1035	25210250	Frankfurter or hot dog, meat and poultry, fat free	2.67	1
1036	25230820	Turkey pastrami	2.66	1
1037	25230790	Turkey ham, sliced, extra lean, prepackaged or deli, luncheon meat	2.64	1
1038	25210210	Frankfurter or hot dog, beef	2.64	1
1039	22431000	Pork roll, cured, fried	2.64	1
1040	22602010	Pork bacon, smoked or cured, lower sodium	2.62	1
1041	27560400	Chicken frankfurter or hot dog, plain, on bun	2.60	1
1042	25220650	Chicken and beef sausage, smoked	2.59	1
1043	25220450	Bologna ring, smoked	2.59	1
1044	25220410	Bologna, NFS	2.59	1
1045	25220130	Beef sausage, smoked	2.59	1
1046	25220100	Beef sausage, NFS	2.59	1
1047	25221110	Knockwurst	2.57	1
1048	25220400	Bologna, pork and beef	2.57	1
1049	25230840	Turkey salami	2.55	1
1050	21416120	Corned beef, cooked, lean only eaten	2.55	1
1051	58156310	Rice with Spanish sausage, Puerto Rican style	2.54	1
1052	27520350	Ham and cheese sandwich, with spread, grilled	2.53	1
1053	25230800	Turkey ham	2.53	1
1054	27120100	Ham or pork with tomato-based sauce (mixture)	2.50	1
1055	25220430	Bologna, beef	2.49	1
1056	25220480	Bologna, chicken, beef, and pork	2.47	1
1057	25230220	Ham, sliced, low salt, prepackaged or deli, luncheon meat	2.46	1
1058	27560350	Pig in a blanket (frankfurter or hot dog wrapped in dough)	2.44	1
1059	27560330	Frankfurter or hot dog, with cheese, plain, on bun	2.43	1
1060	25221880	Turkey, pork, and beef sausage, reduced fat, smoked	2.43	1
1061	25221660	Smoked link sausage, pork and beef	2.41	1
1062	32202050	Egg, cheese, and sausage on biscuit	2.38	1

March 2005 248

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

1063	27520320	Ham and cheese sandwich, with lettuce and spread	2.38	1
1064	25210700	Frankfurter or hot dog, meat & poultry, lowfat	2.37	1
1065	27520300	Ham sandwich, with spread	2.34	1
1066	25221350	Italian sausage	2.34	1
1067	27560340	Frankfurter or hot dog, with catsup and/or mustard, on bun	2.33	1
1068	27220010	Meat loaf made with ham (not luncheon meat)	2.32	1
1069	25240220	Ham salad spread	2.32	1
1070	27520360	Ham and cheese sandwich, on bun, with lettuce and spread	2.31	1
1071	74410110	Sofrito, Puerto Rican seasoning	2.29	1
1072	27560670	Sausage and cheese on English muffin	2.29	1
1073	27220080	Ham croquette	2.27	1
1074	27420020	Ham or pork salad	2.26	1
1075	27120250	Frankfurters or hot dogs with tomato- based sauce (mixture)	2.26	1
1076	27520370	Hot ham and cheese sandwich, on bun	2.23	1
1077	25221850	Turkey sausage, smoked	2.23	1
1078	25220440	Bologna, turkey	2.23	1
1079	27560370	Frankfurter or hot dog with chili and cheese, on bun	2.21	1
1080	27560650	Sausage on biscuit	2.20	1
1081	75145000	Seven-layer salad (lettuce salad made with a combination of onion, celery, green pepper, peas, mayonnaise	0.71	2
1082	25231110	Beef, sliced, prepackaged or deli, luncheon meat	3.66	2
1083	27513040	Roast beef submarine sandwich, on roll, with lettuce, tomato and spread	0.61	2
1084	27513010	Roast beef sandwich	0.99	2
1085	27540350	Turkey submarine sandwich, on roll, with cheese, lettuce, tomato and spread	2.21	2
1086	27560120	Bologna and cheese sandwich, with spread	2.13	2
1087	27520540	Ham and tomato club sandwich, with lettuce and spread	2.10	2

March 2005 249

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

1088	27560910	Submarine, cold cut sandwich, on bun, with lettuce	2.03	2
1089	27560110	Bologna sandwich, with spread	1.83	2
1090	25220470	Bologna, beef, lower sodium	1.73	2
1091	25230710	Sandwich loaf, luncheon meat	3.52	2
1092	27460510	Antipasto with ham, fish, cheese, vegetables	1.60	2
1093	25230310	*Chicken or turkey loaf, prepackaged or deli, luncheon meat	1.41	2
1094	27520160	Bacon, chicken, and tomato club sandwich, on multigrain roll with lettuce and spread	1.10	2
1095	27513050	Roast beef sandwich with cheese	1.32	2
1096	74304000	Tomato juice with clam or beef juice	0.90	2
1097	27520130	Bacon, chicken, and tomato club sandwich, with lettuce and spread	0.88	2
1098	27540310	Turkey sandwich, with spread	0.87	2
1099	27460490	Julienne salad (meat, cheese, eggs, vegetables), no dressing	0.46	2
1100	27446350	Oriental chicken or turkey garden salad (chicken and/or turkey, lettuce, fruit, nuts), no dressing	0.19	2
1101	27446310	Chicken or turkey garden salad (chicken and/or turkey, other vegetables excluding tomato and carrots), no	0.10	2
1102	27446300	Chicken or turkey garden salad (chicken and/or turkey, tomato and/or carrots, other vegetables), no dress	0.09	2
1103	27520390	Ham and cheese submarine sandwich, on multigrain roll, with lettuce, tomato and spread	1.84	2
1104	25240110	Chicken salad spread	0.96	2
1105	27540320	Turkey salad or turkey spread sandwich	0.89	2
1106	27540120	Chicken salad or chicken spread sandwich	0.89	2
1107	27446220	Chicken or turkey salad with egg	0.63	2
1108	27446200	Chicken or turkey salad	0.40	2
1109	58148550	Pasta salad with meat (macaroni or noodles, vegetables, meat, dressing)	1.57	2
1110	58148170	Macaroni salad with chicken	1.00	2
1111	27416250	Beef salad	0.41	2
1112	27520340	Ham salad sandwich	1.94	2
March 2005		250		

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

1113	27420410	Pork and vegetables (excluding carrots, broccoli, and dark- green leafy (no potatoes)), tomato-based sauc	0.20	3	a
1114	27320080	Sausage, noodles, and vegetables (excluding carrots, broccoli, and darkgreen leafy), tomato-based sauce~	1.28	3	a
1115	28140740	Chicken patty, or nuggets, boneless, breaded, with pasta and tomato sauce, fruit, dessert (frozen meal)~^	0.98	3	a
1116	28110620	Beef short ribs, boneless, with barbecue sauce, potatoes, vegetable (frozen meal)	0.49	3	a
1117	27320090	Sausage, noodles, and vegetables (including carrots, broccoli, and/or darkgreen leafy), tomato-based sau	1.25	3	a
1118	27162010	Meat with tomato-based sauce (mixture)	0.67	3	a
1119	27343510	Chicken or turkey, noodles, and vegetables (including carrots, broccoli, and/or dark-green leafy), tomato	0.62	3	a
1120	58304020	Spaghetti and meatballs with tomato sauce, sliced apples, bread (frozen meal)	1.72	3	a
1121	58302060	Spaghetti or noodles with beef in tomato- based sauce, lowfat, reduced sodium (diet frozen meal)	0.45	3	a
1122	28113050	Salisbury steak with vegetables in tomato- based sauce, noodles (diet frozen meal)	1.11	3	a
1123	27343520	Chicken or turkey, noodles, and vegetables (excluding carrots, broccoli, and dark-green leafy), tomato-ba	0.77	3	a
1124	28141200	Chicken teriyaki with rice, vegetable (frozen meal)	1.77	3	a
1125	27220120	Sausage and rice with tomato-based sauce (mixture)	1.55	3	a
1126	58301010	Lasagna with cheese, tomato sauce, vegetable, dessert (frozen meal)	0.76	3	a
1127	27320070	Ham or pork, noodles, and vegetables (including carrots, broccoli, and/or darkgreen leafy), tomato-based	1.80	3	a
1128	28500010	Gravy, meat or poultry, with wine	1.02	3	a

March 2005 251

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

1129	27313220	Beef, noodles, and vegetables (excluding carrots, broccoli, and dark-green leafy), tomato-based sauce (mi	0.79	3	a
1130	27260100	Meat loaf made with beef and pork, with tomato-based sauce	1.16	3	a
1131	58134710	Tortellini, spinach-filled, with tomato sauce	1.59	3	a
1132	58304300	Cannelloni, cheese-filled, with tomato sauce (diet frozen meal)	1.20	3	a
1133	28160310	Meat loaf in tomato sauce with potatoes, vegetable (frozen meal)	0.91	3	a
1134	27116300	Beef with sweet and sour sauce (mixture)	1.36	3	a
1135	27315220	Beef, rice, and vegetables (excluding carrots, broccoli, and/or dark-green leafy), tomato-based sauce (mi	0.70	3	a
1136	27313210	Beef, noodles, and vegetables (including carrots, broccoli, and/or dark-green leafy), tomato-based sauce	0.29	3	a
1137	27243500	Chicken or turkey and rice with tomato- based sauce (mixture)	0.39	3	a
1138	27320110	Pork, potatoes, and vegetables (excluding carrots, broccoli, and dark-green leafy), tomato-based sauce (m	1.31	3	a
1139	58134610	Tortellini, meat-filled, with tomato sauce	1.65	3	a
1140	27211110	Mexican style beef stew with potatoes, tomato-based sauce (mixture) (Carne guisada con papas)	1.04	3	a
1141	27315210	Beef, rice, and vegetables (including carrots, broccoli, and/or dark-green leafy), tomato-based sauce (mi	0.71	3	a
1142	27213100	Beef and rice with tomato-based sauce (mixture)	0.88	3	a
1143	27220110	Pork and rice with tomato-based sauce (mixture)	1.20	3	a
1144	58131110	Ravioli, NS as to filling, with tomato sauce	1.02	3	a
1145	27345520	Chicken or turkey, rice, and vegetables (excluding carrots, broccoli, and dark-green leafy), tomato-based	0.55	3	a
1146	27120060	Sweet and sour pork	0.94	3	a

March 2005 252

# Risk Assessment for C. perfringens in RTE Meat and Poultry Products

1147	27411200	Beef with vegetables (excluding carrots, broccoli, and dark-green leafy (no potatoes)), tomato-based sauc	1.01	3	a
1148	27242400	Chicken or turkey and noodles, tomato- based sauce (mixture)	0.92	3	a
1149	58126150	Turnover, meat- and cheese-filled, tomato-based sauce	1.88	3	a
1150	27411100	Beef with vegetables (including carrots, broccoli, and/or dark-green leafy (no potatoes)), tomato-based s	0.24	3	a
1151	27111000	Beef with tomato-based sauce (mixture)	0.40	3	a
1152	27120030	Ham or pork with barbecue sauce (mixture)	1.88	3	a
1153	27145000	Chicken or turkey teriyaki (chicken or turkey with soy-based sauce)	3.34	3	a
1154	27212100	Beef and noodles with tomato-based sauce (mixture)	0.68	3	a
1155	27146000	Chicken or turkey with barbecue sauce (mixture)	0.54	3	a
1156	27112100	Beef bourguignonne	0.36	3	a
1157	27246300	Chicken or turkey cake, patty, or croquette	0.65	3	b
1158	24198700	Chicken patty, fillet, or tenders, breaded, cooked	1.35	3	b
1159	58100610	Enchilada with chicken and beans, tomato-based sauce	0.65	3	c
1160	58101240	Flauta with chicken	0.44	3	c
1161	58100620	Enchilada with chicken, beans, and cheese, tomato- based sauce	0.70	3	c
1162	58104310	Chalupa with beans, chicken, cheese, lettuce and tomato	0.54	3	c
1163	58115110	Tamale casserole, Puerto Rican style (Tamales en cazuela)	0.72	3	c
1164	58104250	Nachos with chicken or turkey and cheese	0.72	3	c
1165	58104450	Chimichanga with beef and tomato	1.24	3	c
1166	58306200	Chicken fajitas (diet frozen meal)	0.78	3	c
1167	58100560	Enchilada with ham and cheese, no beans	1.14	3	c
1168	58104510	Chimichanga with beef, cheese, lettuce and tomato	0.75	3	c
1169	58104490	Chimichanga, NFS	0.58	3	c

March 2005 253