CSPI Center for Science in the Public Interest
Publisher of *Nutrition Action Healthletter*

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October 2, 1998

Food Safety and Inspection Service Hearing Clerk
U.S. Department of Agriculture
300 12th St., Rm. 102 Cotton Annex
Washington, D.C. 20250-3700

Re: **Docket No. 98-045N**
President's National Food Safety Initative

Dear Sir/Madam:

On behalf of the over one million members of the Center for Science in the Public Interest (CSPI), we are responding to the request for public comments on the President's National Food Safety Initiative. CSPI is a nonprofit, consumer organization that focuses on food safety and nutrition issues. We are specifically addressing the elements that should be considered in developing a comprehensive strategic Federal food safety plan. Please accept the following document that highlights our concerns and recommendations for a strategic plan.

Respectfully submitted,

Caroline Smith DeWaal

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A BLUEPRINT FOR THE FUTURE

Statement of Caroline Smith DeWaal
Director of Food Safety
at the 1998 Institute of Food Technologists Annual Meeting

Atlanta, Georgia
June 21, 1998

The Clinton administration has taken a number of important steps to improve food safety in the United States, such as mandating preventative controls for seafood, meat and poultry; the Food Quality Protection Act; and the President's Food Safety Initiative. While these improvements are important, there is still a long journey ahead of us to improve the safety of food for the American consumer.

New hazards are showing up almost monthly: parasites and viruses on imported berries; hazardous strains of *E. coli* on lettuce, on sprouts, and in unpasteurized apple juice; *Salmonella* in breakfast cereal, in orange juice and on alfalfa sprouts.[1] Old hazards remain unaddressed:

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[1] Centers for Disease Control and Prevention (CDC), "Outbreaks of *Escherichia coli* O157:H7 Infection Associated with Eating Alfalfa Sprouts -- Michigan and Virginia, June-July 1997," *Morbidity and Mortality Weekly Report*, Vol. 46, No. 32 (1997), pp. 741-744; CDC, "Update: Outbreaks of Cyclosporiasis -- United States and Canada, 1997," *Morbidity and Mortality Weekly Report*, Vol. 46, No. 23 (1997), pp. 521-523; United States Department of Agriculture (USDA) and U.S. Department of Health and Human Services (HHS), "Hepatitis A Outbreak In Michigan Schools," USDA Release No. 0100.97, April 2, 1997; Barbara Mahon et al., "An International Outbreak of *Salmonella* Infections Caused by Alfalfa Sprouts Grown from Contaminated Seeds," *Journal of Infectious Diseases*, Vol. 175 (1997), pp. 876-882; Pam Belluck and Christopher Drew, "Tracing Bout of Illness to Small Lettuce Farm," *New York Times*, Jan. 5, 1998, p. A1; HHS, "*E. coli* O157:H7 Outbreak Associated with Odwalla Brand Apple Juice Products," *HHS News*, P96-17, Oct. 31, 1996; Mickey Parish, "Coliforms, *Escherichia coli* and *Salmonella* Serovars Associated with a Citrus-Processing Facility Implicated in a

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Salmonella in eggs and poultry; harmful bacteria and viruses in shellfish.[2] Public health officials estimate that up to 33 million illnesses and 9,000 deaths occur each year from contaminated food.[3]

Today, the federal government deploys an army of meat and poultry inspectors and a small squad of inspectors for all other foods.[4] It is using laws that were enacted up to 90 years ago, which are not proving adequate to address emerging hazards or encourage new technologies. Food safety regulation needs fundamental restructuring, and while this process has begun, it is nowhere near finished.

In the meat, poultry and seafood industries, reliance on government inspectors to ensure safety is slowly giving way to new systems of preventative controls, known as Hazard Analysis and Critical Control Point (HACCP) systems, which are implemented and monitored by industry.[5] HACCP is a highly-touted system developed by the food industry that has been

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Salmonellosis Outbreak," *Journal of Food Protection*, Vol. 61, No. 3 (1998), pp. 280-284.

[2] U.S. General Accounting Office (GAO), *Food Safety and Quality: Salmonella Control Efforts Show Need for More Coordination* (Washington, D.C.: GAO, April 1992) [hereinafter cited as *Salmonella Control Efforts*]; Food Safety and Inspection Service (FSIS), USDA, *Nationwide Broiler Chicken Microbiological Baseline Data Collection Program, July 1994-June 1995* (Washington, D.C.: USDA, April 1996); Eric Mouzin, et al., "Prevention of *Vibrio vulnificus* Infections," *Journal of the American Medical Association*, Vol. 278, No. 7 (1997), pp. 576-578; CDC, "Viral Gastroenteritis Associated with Eating Oysters -- Louisiana, December 1996-January 1997," *Morbidity and Mortality Weekly Report*, Vol. 46, No. 47 (1997), pp. 1109-1112; USDA, HHS, and the U.S. Environmental Protection Agency, *Food Safety From Farm To Table: A National Food Safety Initiative. A Report to the President*, May 1997, Appendix B [hereinafter cited as *Food Safety From Farm to Table*].

[3] Council for Agricultural Science and Technology (CAST), *Foodborne Pathogens: Risks and Consequences* (Ames, IA: CAST, 1994), p. 1.

[4] *Food Safety From Farm to Table*, p. 37; FSIS, USDA, "Pathogen Reduction; Hazard Analysis and Critical Control Point (HACCP) Systems; Proposed Rule," *Federal Register*, Vol. 60, No. 23 (1995), p. 6780.

[5] Food and Drug Administration (FDA), HHS, "Procedures for the Safe and Sanitary Processing and Importing of Fish and Fishery Products; Final Rule," *Federal Register*, Vol. 60, No. 242 (1995), pp. 65096-65202; FSIS, USDA, "Pathogen Reduction; Hazard Analysis and Critical Control Point (HACCP) Systems; Final Rule," *Federal Register*, Vol. 61, No. 144 (1996), pp. 38806-38989.

adapted to regulatory programs. While the system may encourage greater responsibility for food safety in the food industry, there are no real models detailing how the government can best ensure that these systems reach their potential for maximizing food safety, such as what is the best use of government inspectors. The change in the government's oversight role over food plants that utilize HACCP systems is just beginning.

With new foodborne hazards, new process control systems, and new roles for government all on the horizon, our federal oversight structure is in dire need of streamlining. Responsibility for food safety is spread among a number of federal agencies, with the U.S. Department of Agriculture (USDA) and the Food and Drug Administration (FDA) playing the leading roles, with assistance from the Environmental Protection Agency (EPA), the National Oceanic and Atmospheric Administration (NOAA), and thousands of state and local agencies.[6] Meat, poultry and some egg products are regulated by USDA's Food Safety and Inspection Service (FSIS) and are subject to continuous oversight by government inspectors.[7] All other foods are regulated by FDA, which has an average inspection frequency of once every ten years for food processors.[8] FDA has jurisdiction over of high risk foods, such as seafood and shell eggs, and foods that are becoming riskier, like fruits and vegetables.

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[6] *Food Safety From Farm to Table*, pp. 3, 39; National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Department of Commerce, "Privatization of In-plant Seafood Inspections and Related Services; Notice of Inquiry," *Federal Register*, Vol. 60, No. 184 (1995), pp. 49242-49245; Michael Taylor, "Preparing America's Food Safety System for the Twenty-First Century -- Who is Responsible for What When it Comes to Meeting the Food Safety Challenges of the Consumer-Driven Global Economy?" *Food and Drug Law Journal*, Vol. 52, No. 1 (1997), p. 18 [hereinafter cited as *Preparing for the Twenty-First Century*].

[7] *Food Safety From Farm to Table*, p. 37; 21 U.S.C. §§ 21 U.S.C. §§ 451 et seq.; 601 et seq.;21 U.S.C. §§ 1031 et seq.

[8] *Food Safety From Farm to Table*, p. 37.

The Acts that establish the food safety programs at USDA and FDA set up two entirely different regulatory schemes. The statutes governing the safety of meat and poultry products focus on preventing contaminated food from reaching the market, while the Food and Drug Act places the emphasis on removing contaminated products from the market.[9] FDA and USDA also utilize entirely different inspection approaches, with USDA inspecting plants on an ongoing basis while FDA rarely even visits food plants unless there is an illness outbreak associated with a particular food product.[10] Such discrepancies between the two agencies are already assuring inconsistencies in HACCP implementation and enforcement, which raises questions regarding the federal government's ability to address food safety problems proactively.[11]

This fragmented structure has given rise to a number of bizarre situations. Here are several examples:

Under the current structure, food safety problems fall through the cracks of agency jurisdiction. Lettuce and other fresh fruits and vegetables are essentially unregulated for safety. The use of animal manure on food crops is not controlled. These are problems that quite literally fall through the cracks of the current jurisdictional systems.

Under the current structure, multiple agencies fail to address glaring public health problems. Eggs are regulated both by FDA and USDA, but neither agency has developed an effective containment strategy to prevent the spread of *Salmonella enteritidis* (SE) in shell eggs, an issue that CSPI fully documented in a report we released last year called *Scrambled Eggs*:

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[9] *Preparing for the Twenty-First Century*, pp. 15-18.

[10] *Preparing for the Twenty-First Century*, p. 16; 21 U.S.C. §§ 21 U.S.C. §§ 451 et seq.; 601 et seq.; 21 U.S.C. §§ 1031 et seq.

[11] Caroline Smith DeWaal, "Delivering on HACCP's Promise to Improve Food Safety: A Comparison of Three HACCP Regulations," *Food and Drug Law Journal*, Vol. 52, No. 3 (1997), pp. 331-335 [hereinafter cited as *Delivering on HACCP's Promise*].

How A Broken Food Safety System Let Contaminated Eggs Become a National Food Poisoning Epidemic.[12] Instead, the agencies have acted like keystone cops, tripping over each other and bungling each attempt to control SE in eggs.[13] Today, over twelve years since SE inside eggs was first identified as a public health concern by the Centers for Disease Control, consumers still await an effective strategy to eradicate SE in shell eggs.

Under the current structure, the same food processing plant may get two entirely different "food safety" inspections. The classic example is a processing plant that produces both pepperoni and cheese frozen pizza. The pepperoni line will get daily visits from a USDA inspector to check on conditions in the plant as workers slice the pepperoni and apply it to the pizza.[14] The cheese line will be subject to FDA inspection on average once every 10 years.[15] The minimal difference in hazard between the processing of cheese and pepperoni pizza is not enough to justify the vast disparity in government inspection.

Under the current structure, some food processing plants may get no federal food safety inspections. Due to resource constraints, FDA has turned some portions of its regulatory responsibility over to the states. The best example of this is in the area of shellfish production, where FDA relies totally on state inspectors. In other instances, FDA is simply unaware of plants that it is supposed to regulate. A 1991 Inspector General investigation documented that FDA's identifies food firms "by reviewing newspapers, magazines, phone books, industry publications,

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[12] Elizabeth Dahl and Caroline Smith DeWaal, *Scrambled Eggs: How a Broken Food Safety System Let Contaminated Eggs Become a National Food Poisoning Epidemic* (Washington, D.C.: Center for Science in the Public Interest, 1997) [hereinafter cited as *Scrambled Eggs*].

[13] *Salmonella Control Efforts.*

[14] *Preparing for the Twenty-First Century*, p. 18.

[15] *Preparing for the Twenty-First Century*, p. 18; *Food Safety From Farm to Table*, p. 37.

trade periodicals, surveillance reports and consumer complaints. Inspectors may also walk through stores looking for new products."[16] The Inspector General reported that, under this system, some food plants escape detection for long periods of time.

Under the current structure, quality inspections occur more frequently than safety inspections. There are many shell egg plants that receive regular inspections from U.S. government inspectors, but the inspections are for quality, not for safety. All plants shipping eggs between states are visited by the Agricultural Marketing Service (AMS) each quarter and many plants also participate in a voluntary grading program where they receive continuous inspection by AMS.[17] Under the voluntary AMS program, our government ensures that each has a yolk of the proper diameter, but nothing in the program checks for the presence of SE.[18] FDA, the agency charged with food safety oversight of shell eggs, also does not check for SE during its once-a-decade inspections.[19]

Under the current structure, HACCP is a different system at FDA and at USDA. The new HACCP systems for seafood, meat and poultry share almost as many differences as similarities. For example, both frequent inspection and laboratory verification of product samples are essential to give the government appropriate oversight over plants utilizing HACCP. Otherwise, the HACCP program becomes little more than an industry honor system. While USDA requires both on-site inspection by government inspectors and two levels of laboratory

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[16] Department of Health and Human Services Office of the Inspector General, "FDA Food Safety Inspection," August 1991 (OEI-05-09-01070). (Lucy -- check format)

[17] 7 C.F.R. § 59.28; Poultry Division, AMS, USDA, "Quality Eggs for Volume Buyers," Brochure No. AMS-627, August, 1996 [hereinafter cited as *Eggs for Volume Buyers*].

[18] *Eggs for Volume Buyers.*

[19] *Scrambled Eggs,* p. 11.

verification of meat and poultry products, FDA requires neither of seafood products. FDA inspects seafood plants once every one to five years and made laboratory testing for HACCP verification optional for seafood processors.[20]

Multiple agencies may prolong the time it takes to bring the benefits of new technologies to the consumer. Let's look at research and technology. Under the existing system we have at least 20 government agencies involved in food safety research.[21] Just last month, we netted the benefit of one of their projects when Agriculture Secretary Dan Glickman announced the commercial availability of a biological inoculation for young chicks against *Salmonella*.[22] This product was developed by the USDA's Agricultural Research Service and then spent years being considered for approval at the Food and Drug Administration.[23] For several other heralded technologies, like trisodium phosphate for poultry and irradiation for poultry and red meat, FDA approval is just the first step in implementation; there is often a public rulemaking process at USDA before products can be used in meat and poultry plants. This bifricated process can take years to get through.[24]

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[20] *Delivering on HACCP's Promise*, pp. 331-335.

[21] *Preparing for the Twenty-First Century*, p. 19.

[22] USDA, "USDA Researchers Create New Product That Reduces *Salmonella* in Chickens," USDA Release No. 0121.98, March 19, 1998.

[23] Telephone conversation with John DeLoach, MS BioScience, Inc., Dundee, IL, April 1998.

[24] Rosanna Mentzer Morrison, Jean Buzby, and C. T. Jordan Lin, "Irradiating Ground Beef to Enhance Food Safety," *Food Review*, Vol. 20, No. 1 (1997), p. 34; FDA, HHS, "Irradiation in the Production, Processing, and Handling of Food; Final Rules," *Federal Register*, Vol. 62, No. 232 (1997), pp. 64102-64121; Memo from Robert Sindt, Burditt & Radzius, to Caroline Smith DeWaal, April 1, 1998; Meeting with Robert Sindt, Burditt & Radzius, James Elfstrum, Rhodia, and Jerry Carosella, Consultant, Regulatory Microbiology, Washington, D.C., April 3, 1998.

Under the current structure, imported products are treated differently at FDA and USDA. Imported meat and poultry products are subject to a two-stage approval process by USDA. First, the exporting country's meat or poultry inspection safety system must be approved by USDA; then, the individual plant must be inspected by USDA before it can ship meat to the U.S. Even then, it is subject to random verification checks at the border. FDA meanwhile only has the authority to inspect food at the border but has the staff to check less than two percent of import shipments.[25] FDA can't send inspectors to foreign countries except by invitation, even when they are checking the source of food involved in an outbreak in the U.S.

Under the current structure, we risk exporting our irrational food safety system. There is increasing international pressure to "harmonize" our food safety systems with the systems used in foreign countries. "Harmonization" is the process of assuring that the systems in use in foreign countries provide an equally safe food product.[26] With international trade in food products expanding rapidly, tremendous energy is being devoted to identifying and eliminating unnecessary barriers to trade and simplifying standard setting internationally, using organizations like Codex and the World Trade Organization.[27] We shouldn't harmonize internationally before we have harmonized our systems domestically, and this alone should provide some urgency to developing a more rational basis for our food safety system today.

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[25] *Preparing for the Twenty-First Century*, p. 27.

[26] *Agreement on the Application of Sanitary and Phytosanitary Measures,* Article 3, GATT Doc. MTN/FA II-A1A-4 (Dec. 15, 1993) in *Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations*, GATT Doc. MTN/FA (Dec. 15, 1993) 33 I.L.M. 9 (1994).

[27] *Preparing for the Twenty-First Century*, pp. 26-27.

These problems are just some of the disparities that exist because of the fractured structure of food safety regulation. These types of problems are why we called upon President Clinton last April to consider combining food safety oversight functions into a single independent food safety agency. Washington insiders say creating an independent food safety administration can't be done. Apparently, combining the current hodge-podge of federal agencies in order to make food protections more effective would offend too many high ranking government officials and Congressional committees. However, year-by-year, outbreak-by-outbreak, it is becoming clear that we can no longer afford to have government programs that protect Washington bureaucrats better than they protect consumers. The structure of federal food safety programs today is an obstacle to a safer food supply.

A combination of events have coalesced that convince us that the time to combine food safety functions is especially ripe right now. First, HACCP systems are being implemented at both the FDA and the USDA for seafood, meat and poultry. These systems are also being considered for juice, eggs and egg products. However, FDA's weak regulatory program is at risk of jeopardizing the credibility of HACCP with the American public. Seafood plants that have been inspected to date show that the results of HACCP implementation is distressingly low. Approximately 70% of seafood plants inspected by FDA so far this year were not fully in compliance with FDA's seafood HACCP rule. FDA has indicated in public meetings that their goal is to get compliance up to 50% next year.

Secondly, imports have increased dramatically in the last few years due to several trade agreements which have expanded food trade with our closest neighbors. This is creating a tremendous problem especially for the Food and Drug Administration because of the acute lack of resources directed to food safety at that agency. For example, FDA has less than 200

inspector devoted to food safety inspections of imports. Several major outbreaks in the last few years have demonstrated the weaknesses in FDA's system of inspecting imports.

Finally, there are many discussions in Washington about how to better utilize our existing inspection force. Technological innovation may make our current system of inspecting meat and pooultry obsolete within the next few years. Those inspectors are urgently needed to provide inspections at the tens of thousands of food plants under FDA's jurisdiction. However, you cannot simply transfer resources across agencies. Appropriate, efficient and flexible utilization of the inspection resources in the next century requires the reorganization of the government structure.

Congress has begun to grapple with these questions. Both the House and the Senate have legislation pending calling on the President to develop a plan to consolidate the food safety functions into a single federal food safety agency. They have also appropriated money for the National Academy of Sciences to discuss several key questions. Legislation has also been filed that begins to examine the ways that the current statutes could be modernized. For example, a bill filed in April by Representative Frank Pallone (D-NJ), with 25 cosponsors, set out a division of labor for food safety between industry and government. The food industry, for example, would be responsible for implementing HACCP and other process control systems; for utilizing available technology to improve food safety; and to register with the government. The government would be responsible for doing appropriate inspection and enforcement activities; approving new technologies; inspecting imports; and monitoring the safety of the food supply. While these are not radical proposals, the bill puts the burden for food safety squarely on the shoulders of food producers and it mandates and encourages the use of HACCP systems and new

technologies. I guess that compared to the 1906 law that provides the current underpinning for most of our food safety laws, perhaps that is radical.

Partial Listing of Outbreaks Traced to Meat and Poultry, 1990-1998

	Date	Vehicle	Etiology	Reported Cases	States/ Provinces
1	1990	Turkey	Salmonella agona	851	1:SC
2	1990	Beef and chicken tacos	Clostridium perfringens	700	1:MO
3	1990	Prime rib	Clostridium perfringens	204	1:WI
4	April 1990	Turkey	Clostridium botulinum	7	1:PR
5	July 1990	Roast beef	E. coli O157:H7	65	1:ND
6	July - Sept. 1990	Pork sausage	Trichinella spiralis	90	1:IA
7	Nov. - Dec. 1990	Pork sausage	Trichinella spiralis	15	1:VA
8	1991	Chicken and beef fajitas	Salmonella heidelberg	673	1:CT
9	May 1991	Turkey	Clostridium perfringens	600	1:WI
10	Aug. 1991	Ground beef	E. coli O157:H7	2	1:WA
11	Sept. 1991	Ground beef	E. coli O157:H7	8	1:MN
12	Dec. 1992 - Feb. 1993	Ground beef	E. coli O157:H7	732	4:CA, ID, NV, WA
13	March 1993	Corned beef	Clostridium perfringens	156	1:OH
14	March 1993	Corned beef	Clostridium perfringens	86	1:VA
15	July 1993	Ground beef	E. coli O157:H7	10	1:MA
16	July 1993	Ground beef	E. coli O157:H7	10	1:CA
17	Aug. 1993	Ground beef	E. coli O157:H7	3	1:PA
18	Sept. 1993	Ground beef	E. coli O157:H7	23	1:CT
19	Sept. 1993	Ground beef	E. coli O157:H7	8	1:MT
20	Jan. 1994	Ground beef	E. coli O157:H7	21	2:OR, WA
21	Feb. 1994	Ground beef	E. coli O157:H7	8	1:MN
22	April 1994	Ground beef	E. coli O157:H7	24	1:NE
23	May 1994	Ground beef	E. coli O157:H7	33	1:ND
24	May 1994	Ground beef	E. coli O157:H7	9	1:CA
25	June 1994	Ground beef	E. coli O157:H7	19	1:NY
26	June 1994	Ground beef	E. coli O157:H7	2	1:CT
27	June 1994	Ground beef	E. coli O157:H7	4	1:PA
28	July - Aug. 1994	Ground beef	E. coli O157:H7	20	1:VA
29	Aug. - Sept. 1994	Chicken	Salmonella enteritidis	3	1:MD
30	Nov. - Dec. 1994	Salami	E. coli O157:H7	19	2:WA, CA
31	Dec. 1994 - Jan. 1995	Ground beef	Salmonella typhimurium	158	1:WI

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Partial Listing of Outbreaks Traced to Meat and Poultry, 1990-1998
Page 2

	Date	Vehicle	Etiology	Reported Cases	States/ Provinces
32	1994	Raw beef	Salmonella typhimurium	130	1:CA
33	Jan. - Feb. 1995	Beef jerky	Salmonella montevideo, Salmonella typhimurium, Salmonella kentucky	93	1:NM
34	Jan. - Feb. 1995	Cougar jerky	Trichinella nativa, Trichinella T6	10	1:ID
35	May 1995	Ground beef	E. coli O157:H7	2	1:MN
36	May 1995	Ground beef	E. coli O157:H7	4	1:MN
37	June 1995	Ground beef	E. coli O157:H7	3	1:SD
38	June 1995	Ground beef	E. coli O157:H7	8	2:GA, TN
39	July 1995	Ground beef	E. coli O157:H7	12	1:NY
40	July 1995	Ground beef	E. coli O157:H7	21	1:CO
41	July 1995	Ground beef	E. coli O157:H7	8	1:MA
42	Aug. 1995	Roast beef	E. coli O157:H7	31	1:MN
43	Sept. 1995	Ground beef	E. coli O157:H7	2	1:WA
44	Sept. 1995	Bologna	Salmonella typhimurium	50 (un-confirmed)	1:PA
45	Oct. 1995	Ground beef	E. coli O157:H7	2	1:NY
46	Nov. 1995	Venison jerky	E. coli O157:H7	11	1:OR
47	Nov. 1995	Ground beef	E. coli O157:H7	5	1:MN
48	April 1996	Ground beef	E. coli O157:H7	3	1:TX
49	July 1996	Ground beef	E. coli O157:H7	2	1:NV
50	Aug. 1996	Ground beef	E. coli O157:H7	9	1:PA
51	Sept. 1996	Ground beef	E. coli O157:H7	7	1:OR
52	Nov. 1996	Venison	E. coli O157: H7	2	1:IL
53	Dec. 1996	Venison	E. coli O157:H7	4	1:OR
54	June - Jul. 1997	Ground beef	E. coli O157:H7	15	1:CO
55	Nov. 1997	Ham	Salmonella	747	1:MD
56	Jan. 1998	Chicken	Vibrio parahaemolyticus	47	1:GU
57	Jan. 1998	Sliced beef	Clostridium perfringens	34	1:WI
58	May 1998	Ground beef	E. coli O157:H7	3	1:AZ
59	May - June 1998	Ground beef	E. coli O157:H7	7	1:MA
60	May - June 1998	Ground beef	E. coli O157:H7	5	1:ME
61	May - June 1998	Ground beef	E. coli O157:H7	7	1:NH
62	June 1998	Ground beef	E. coli O157:H7	4	1:VA

Compiled by CSPI
Updated August 27, 1998

Partial Listing of Outbreaks Traced to FDA-Regulated Foods, 1990-1998

	Date	Vehicle	Etiology	Reported Cases	States/ Provinces
1	1990	Tomatoes	Salmonella javiana	176	4
2	April - Sept. 1990	Strawberries	Hepatitis A	51	2:GA, MT
3	July 1990	Fish (surgeon)	Clostridium botulinum	3	1:HI
4	Aug. 1990	Hollandaise sauce	Salmonella enteritidis	42	1:KY
5	Oct. 1990	Bread pudding	Salmonella enteritidis	1,100	1:IL
6	Oct. 1990	Banana pudding	Salmonella enteritidis	6	1:TN
7	1991	Bread stuffing	Salmonella enteritidis	393	1:NY
8	April 1991	Crab meat	Vibrio cholerae	4	1:NY
9	April 1991	Crab meat	Vibrio cholerae	8	1:NJ
10	June - July 1991	Cantaloupe	Salmonella poona	>400	23/Can.
11	Aug. 1991	Coconut milk	Vibrio cholerae	4	1:MD
12	Nov. 1991	Apple cider	E. coli O157:H7	23	1:MA
13	1992	Oysters	Norwalk virus	250	Not available
14	1992	Imitation crabmeat pancakes	Salmonella enteritidis, Salmonella Group D	118	1:MD
15	April - May 1992	Fish (tuna)	Scombroid-fish poisoning	74	Not available
16	May 1992	Fish (salted whitefish)	Clostridium botulinum	4	1:NJ
17	July 1992	Monte Cristo sandwiches	Salmonella	65	1:MA
18	Aug. 1992	Mayonnaise	Salmonella enteritidis	120	1:NY
19	Sept. 1992	Egg salad	Salmonella	76	1:NH
20	1993	Oysters	Norwalk-like virus	27	1:NC
21	1993	Apple cider	Cryptosporidia	213	1:ME
22	1993	Tomatoes	Salmonella montevideo	100	4
23	Jan. 1993	Lemon meringue pie	Salmonella enteritidis	4	1:MD
24	Feb. 1993	Shellfish (primarily oysters)	Shigella	≈60	1:TX
25	July 1993	Fried rice	Bacillus cereus	14	1:VA
26	Aug. 1993	Cantaloupe	E. coli O157:H7	29	1:OR
27	Oct. 1993	Canned cheese sauce	Clostridium botulinum	8	1:GA
28	Nov. - Dec. 1993	Oysters	Norwalk-like virus (unconfirmed)	180	4
29	Feb. 1994	Limpets	Norwalk virus	31	2:MA, RI

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Updated September 30, 1998

	Date	Vehicle	Etiology	Reported Cases	States/ Provinces
30	Feb. - May 1994	Milk	E. coli O104:H21	18	1:MT
31	April 1994	Potatoes	Clostridium botulinum	29	1:TX
32	June 1994	Clam chowder	Clostridium botulinum	2	1:CA
33	June - Aug. 1994	Scallions	Shigella flexneri	72	2
34	July - Dec. 1994	Ice cream	Salmonella enteritidis	593	41
35	Aug. 1994	Hollandaise sauce	Salmonella enteritidis	56	1:DC
36	Fall 1994	Potato salad (unconfirmed)	Listeria monocytogenes	Not available	12
37	Sept. 1994	Bean dip	Clostridium botulinum	1	1:CA
38	Oct. 1994 - Jan. 1995	Peanut flavored savory snack	Salmonella agona	10/27/ 2200	US/UK/ Israel
39	Jan. 1995	Oysters	Norwalk-like virus	44	3:FL, TX, GA
40	March - July 1995	Alfalfa sprouts	Salmonella stanley	242	17/Finland
41	May - Aug. 1995	Orange juice	Salmonella hartford, Salmonella gaminara, Salmonella rubislaw	63	21
42	June 1995	Eggs	Salmonella enteritidis	39	1:IN
43	June 1995	Caesar salad	Salmonella enteritidis	28	1:NY
44	Summer 1995- Spring 1996	Alfalfa sprouts	Salmonella newport	133 (OR; BC)	7/Can./ Denmark
45	July 1995	Lettuce (leafy green, red, romaine)	E. coli O157:H7	70	1:MT
46	July 1995	"Jamaican malt" beverage	Salmonella enteritidis	3	1:NY
47	Sept. 1995	Lettuce (romaine)	E. coli O157:H7	20	1:ID
48	Sept. 1995	Lettuce (iceberg)	E. coli O157:H7	30	1:ME
49	Oct. 1995	Lettuce (iceberg)	E. coli O157:H7	11	1:OH
50	Jan. - Feb. 1996	Oysters	Not available	71	Not available
51	May - June 1996	Lettuce (mesclun; red leaf)	E. coli O157:H7	61	3:CT, IL, NY
52	May - June 1996	Raspberries	Cyclospora cayetanensis	1465	21/2:ONT, QUE
53	May-June 1996	Alfalfa and clover sprouts	Salmonella montevideo; Salmonella meleagridis	>600	1:CA
54	Aug. 1996	Lettuce	Campylobacter jejuni	14	1:OK

	Date	Vehicle	Etiology	Reported Cases	States/ Provinces
55	Oct. 1996	Apple cider	E. coli O157:H7	6	1:WA
56	Sept. 1996	Eggs	Salmonella enteritidis	250	1:SC
57	Sept. - Oct. 1996	Apple cider	Cryptosporidium parvum	31	1:NY
58	Oct. 1996	Apple cider	E. coli O157:H7	14	1:CT
59	Oct. 1996	Apple juice	E. coli O157:H7	70	3:WA, CA, CO/1:BC
60	Nov. 1996 - Jan. 1997	Cheese	Salmonella typhi Hepatitis A	9 14	1:FL
61	1997	Cheese	Salmonella	89	1:WA
62	Jan. 1997	Oysters	Norwalk virus	432	5
63	February - June 1997	Sprouts (Alfalfa and other varieties)	Salmonella infantis; Salmonella anatum	109	2:KS, MO
64	March - April 1997	Strawberries	Hepatitis A	236	1:MI
65	March - June 1997	Raspberries; Lettuce (mesclun)	Cyclospora	1450	8/1:ONT
66	June - July 1997	Basil	Cyclospora	260	3:MD, DC, VA
67	June - July 1997	Alfalfa sprouts	E. coli O157:H7	108	2:VA, MI
68	May 1997	Fish (blue marlin)	Scombroid-fish poisoning	28	1:DC
69	July - Aug. 1997	Oysters	Vibrio parahaemolyticus	209	Not available
70	Aug. 1997	Cole slaw	Hepatitis A	44	1:MI
71	Sept. - Oct. 1997	Fish (surgeon)	Ciguatoxin	12	1:HI
72	Sept. 1997 - July 1998	Alfalfa and clover sprouts	Salmonella senftenberg	52	2:CA, NV
73	Nov. 1997	Pasta dish	Staphylococcus aureus	≥200	1:TX
74	Jan. 1998	Fish (grouper)	Ciguatoxin	3	1:HI
75	Jan. 1998	Tiramisu	Salmonella enteritidis	8	1:MD
76	Jan. 1998	Turkey stuffing	Salmonella enteritidis	4	1:CA
77	Jan. 1998	Lasagna	Salmonella enteritidis	26	1:CA
78	Jan. 1998	Fish (mahi-mahi)	Scombroid-fish poisoning	2	1:HI
79	Jan. 1998	Fish (ahi)	Scombroid-fish poisoning	2	1:HI
80	Feb. 1998	Eggs	Salmonella enteritidis	12	1:CT
81	Feb. 1998	Pasta salad	Unknown	15	1:OR
82	Feb. 1998	Macaroni salad	Staphylococcus aureus	101	1:IN

	Date	Vehicle	Etiology	Reported Cases	States/ Provinces
83	March 1998	Breading mix	Staphylococcus aureus	5	1:OR
84	March 1998	Fish (ahi)	Scombroid-fish poisoning	6	1:CA
85	March 1998	Cornbread stuffing	Unknown	50	1:FL
86	March 1998	Cream pies	Salmonella enteritidis	20	1:VA
87	March 1998	Fish (omilu)	Ciguatoxin	2	1:HI
88	March 1998	Hollandaise sauce	Salmonella enteritidis	2	2:IL, WI
89	March 1998	Eggs	Salmonella montevideo	5	1:OH
90	April 1998	Fried rice	Salmonella enteritidis	5	1:UT
91	April - May 1998	Alfalfa sprouts	Salmonella havana	18	2:CA, AZ
92	April - May 1998	Toasted oats cereal	Salmonella agona	409	21
93	May 1998	Caesar salad	Salmonella enteritidis	4	1:UT
94	May 1998	Salad	E. coli O157:H7	2	1:CA
95	May - June 1998	Cole slaw	E. coli O157:H7	33	1:IN
96	June 1998	Alfalfa and clover sprouts	E. coli O157:non-motile	8	2:CA, NV
97	June 1998	Potato salad	E. coli O6:H16	6500	1:IL
98	June 1998	Cheese curds	E. coli O157:H7	40	1:WI
99	June 1998	Fruit salad	E. coli O157:H7	40	1:WI
100	June 1998	Oysters	Vibrio parahaemolyticus	322	6

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