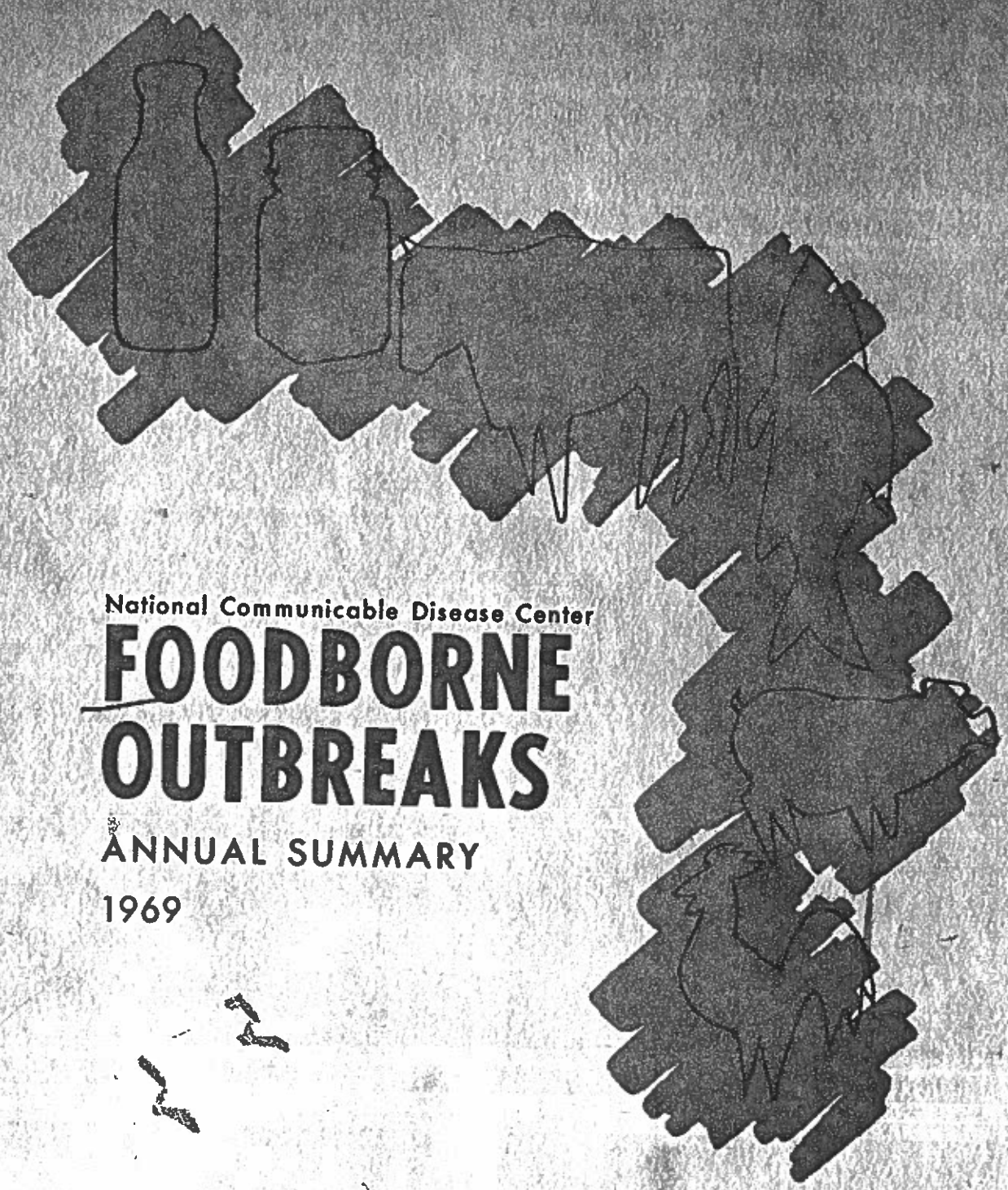

National Communicable Disease Center

FOODBORNE OUTBREAKS

ANNUAL SUMMARY

1969

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

PUBLIC HEALTH SERVICE

PREFACE

Summarized in this report is information received from state and city health departments, Food and Drug Administration, and other pertinent sources. Much of the information is preliminary. It is intended primarily for the use of those with responsibility for disease control activities. Anyone desiring to quote this report should contact the Enteric Diseases Section for confirmation and interpretation.

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Key to all disease surveillance activities are the physicians who serve as State epidemiologists. They are responsible for collecting, interpreting, and transmitting data and epidemiological information from their individual States; their contributions to this report are gratefully acknowledged. In addition, valuable contributions are made by State Laboratory Directors; we are indebted to them for their valuable support.

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SECTION A. FOODBORNE OUTBREAKS

The annual summary of foodborne disease outbreaks in the United States is based upon our analysis of data compiled from various sources. This report complements and summarizes data included in the previous report, "Foodborne Outbreaks Status Report - January - June 1969". In addition, tabular comparisons of the 1968 annual data are presented. As defined in this report, foodborne disease is synonomous with food poisoning and is defined as disease caused by ingestion of a pathogenic organism or noxious agent contained in a water or a food vehicle.

As is readily apparent from the line listing of outbreaks, there is considerable variation in the completeness and depth of reports. In 46 percent of the outbreaks, the etiology was not specified or was unconfirmed. Some health authorities are thorough in reporting; others do not report at all. The data are therefore, not representative. Consequently, in our judgment, it is difficult to draw definitive conclusions about patterns of foodborne illnesses from these data. Nevertheless, the predominance of certain etiologies over others and various trends within these etiologies are discernable.

Food poisoning in the United States is grossly under reported. In England and Wales, where food poisoning surveillance has been well developed, 705 outbreaks of food poisoning were recorded in 1967, whereas only 345 outbreaks of food poisoning were reported to NCDC for the same period. The estimated number of outbreaks for the United States proportionate to the population in England and Wales is over 2,800. This figure serves to emphasize the probable scope of involvement of food poisoning in this country and the gross discrepancy between the expected and actual number of foodborne disease outbreaks reported.

This report also stresses the need to improve the quality and quantity of primary data so that it can be more useful to all interested persons. To accomplish this, standardization of reported data pertinent to each foodborne outbreak is necessary. Accordingly, a copy of a newly revised form for summarizing outbreaks is included in this report (Section D). This form has been approved for general use at the last meeting of the State and Territorial Epidemiologists. It is intended to serve as a check list of relevant parameters which describe and define an outbreak; it serves as a means by which precise data can be tersely recorded and forwarded to NCDC for subsequent analysis; and it has been devised to allow computerization of the data which will allow more timely issuance of surveillance reports.

In this report a distinction has been made between confirmed and unconfirmed outbreaks. Confirmation in almost all instances refers to laboratory support of epidemiologic evidence--a major exception being infectious hepatitis. Unconfirmed outbreaks refer to those outbreaks in which epidemiologic evidence is not supported by laboratory data.

For each outbreak in which more than one number was reported for the number ill or exposed, the lowest number was always used. The total numbers in the reports thus represent minimal numbers.

Episodes of food poisoning reported as individual cases have not been included in the tabulation of data--except for botulism and mushroom poisoning.

The following map (Figure 1) shows the geographic distribution of outbreaks in the United States during 1969. Utilizing all sources of information, there were no reports of outbreaks in 10 states during this period. In 1968, 8 states reported no outbreaks.

FIGURE 1 NUMBER OF OUTBREAKS OF FOODBORNE ILLNESS BY STATE, 1969

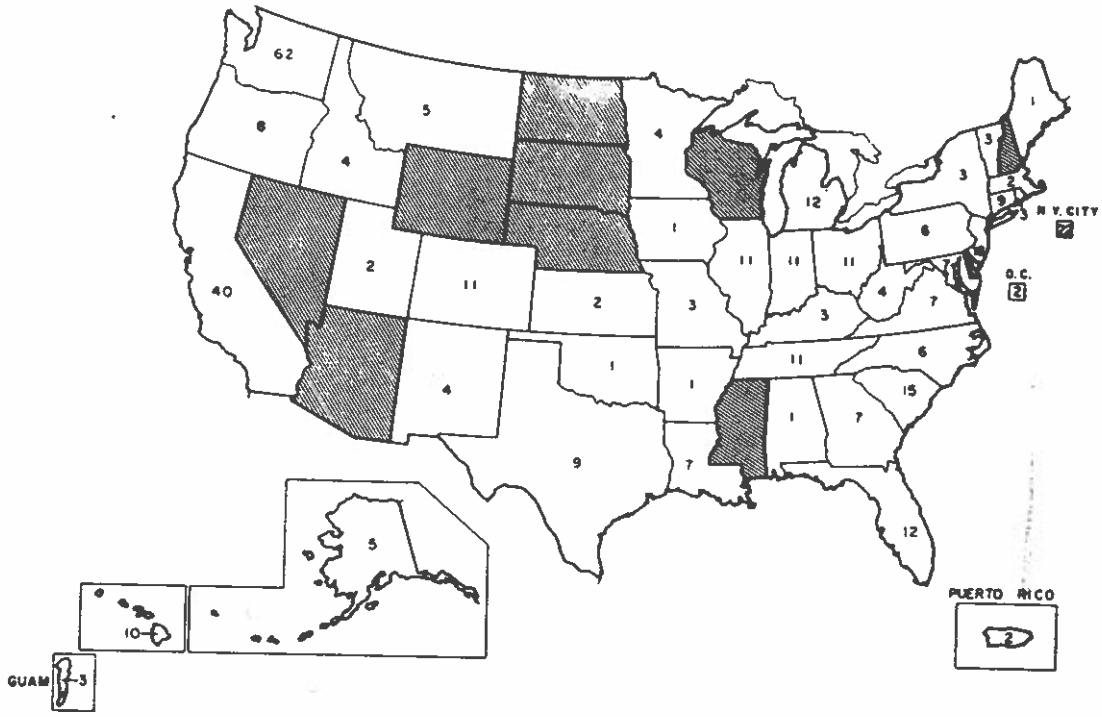


Figure 2 is a pie diagram depicting the major etiologic categories responsible for outbreaks of food poisoning and their relative percents reported to NCDC from all sources during 1969. There were a total of 371 outbreaks in 1969 compared to 345 for 1968. Bacterial etiology predictably accounted for the majority of all foodborne outbreaks of known etiology followed by chemical food poisoning. Parasitic and viral agents were incriminated in less than 7 percent of the outbreaks of known etiology. In 22 percent of outbreaks, no etiology could be ascribed. The subcategory "Other" under the "Bacterial" heading includes outbreaks attributed to Bacillus cereus, Escherichia coli, streptococcus, Vibrio parahemolyticus, and one outbreak reportedly caused by multiple bacterial etiologies.

FIGURE 2 FOODBORNE DISEASE OUTBREAKS (CONFIRMED AND UNCONFIRMED), BY CAUSATIVE ORGANISM UNITED STATES, ANNUAL SUMMARY, 1969

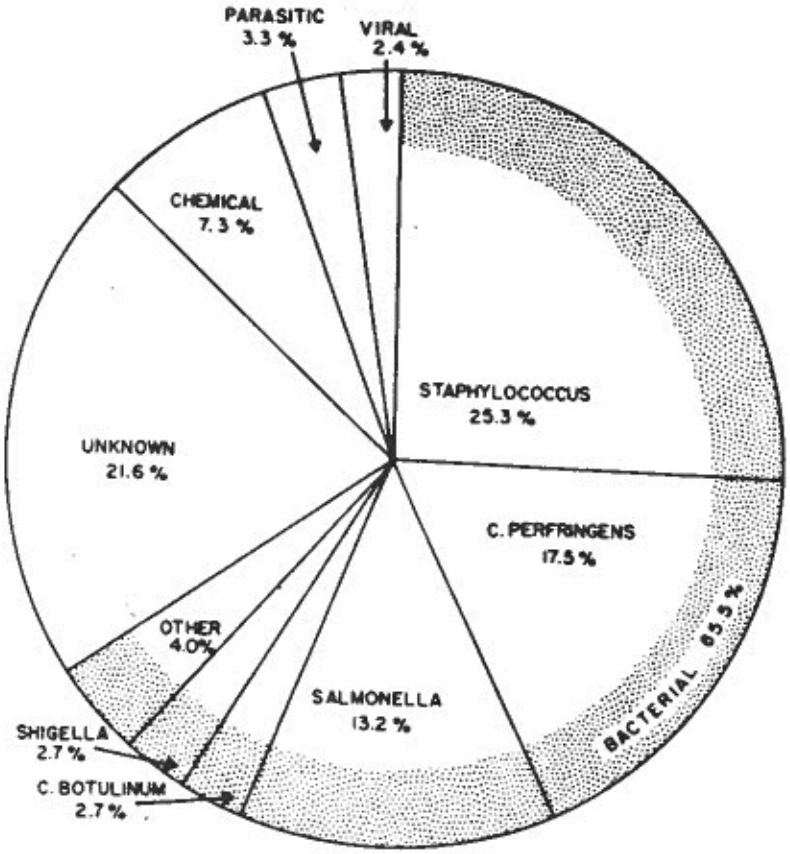
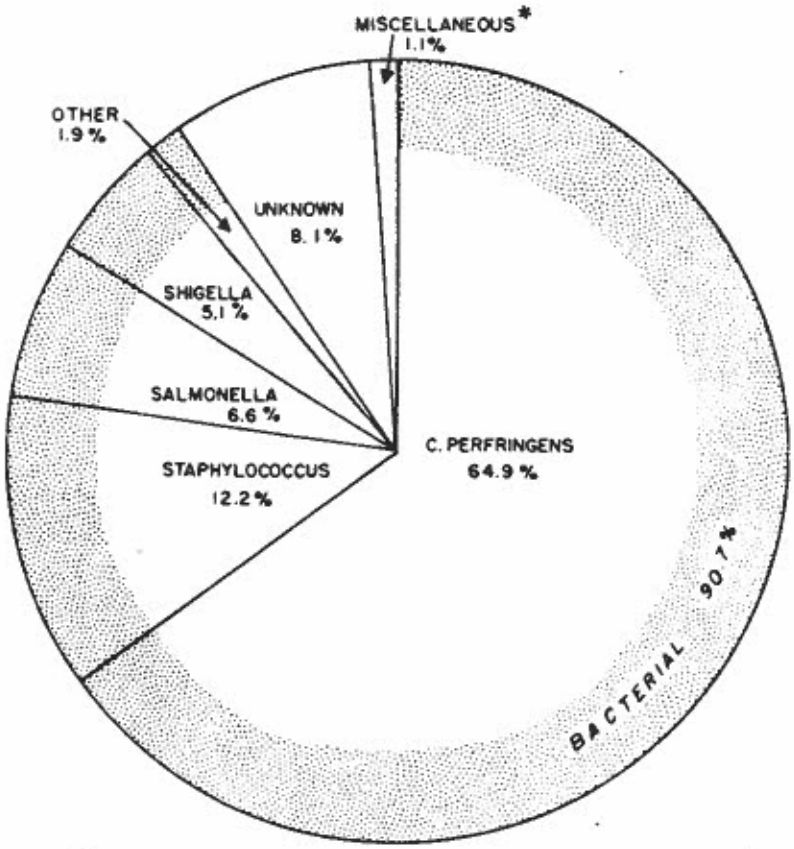


Figure 3 is a pie diagram illustrating the relative percents of individuals involved in the major etiologic categories of food poisoning for 1969. A total of 28,563 individuals developed food poisoning during 1969, compared to 17,567 during the previous year. Over 90 percent of individuals experienced food poisoning of bacterial etiology. Clostridium perfringens food poisoning affected nearly 65 percent of all patients, followed by staphylococcal gastroenteritis (12.2%), salmonellosis (6.6%), and shigellosis (5.1%). The remaining bacterial etiologies (Bacillus cereus, Clostridium botulinum, Escherichia coli, streptococcus, and Vibrio parahemolyticus), affected less than 2 percent of all patients. Parasitic, chemical, and viral food poisoning involved only 1 percent of all patients. Eight percent of all individuals suffered from food poisoning of unknown etiology.

FIGURE 3 INDIVIDUALS INVOLVED IN FOODBORNE DISEASE OUTBREAKS (CONFIRMED AND UNCONFIRMED), BY CAUSATIVE ORGANISM UNITED STATES, ANNUAL SUMMARY, 1969



* INCLUDES - PARASITIC, VIRAL, AND CHEMICAL FOOD POISONINGS

Table 1 lists the sources which initially reported outbreaks to NCDC. The category, "Department of Health," includes monthly reports of EIS Officers at state and local health departments. Of the 371 outbreaks recorded for 1969, 341 (92%) emanated from state, local, or territorial health departments, 19 (5.1%) were reported directly from other federal agencies such as Food and Drug Administration, United States Department of Agriculture, and United States Armed Forces.

Table 2 indicates the number of outbreaks reported directly by state, local, and territorial health departments for 1968 and 1969. The three health departments contributing the most reports for 1969 were Washington State (18%), California (12%), and New York City (6%). In 1968, the three leading health departments were New York City (19%), California (14%), and Washington State (11%). In 1969, 13 state health departments did not report, compared to 10 in 1968. These figures in no way indicate the prevalence of foodborne disease in the respective areas, but rather reflect the interest of the various health departments in national reporting.

Table 3 records the number of confirmed, unconfirmed, and total outbreaks and cases by etiology and the percentage of confirmed and unconfirmed outbreaks and cases. Table 4 compares the 1968 and 1969 data. In 1969, C. perfringens accounted for 65 percent of all patients and 18 percent of all outbreaks. In 1968, C. perfringens was implicated in only 34 percent of food poisoning cases and was responsible for 16 percent of all outbreaks. These figures are biased by one large outbreak of C. perfringens in 1969 involving over 13,000 school children. In 1969, staphylococcus accounted for 12 percent of all patients and 25 percent of all outbreaks. In 1968, staphylococcal enterotoxins caused illness in 25 percent of all individuals and 24 percent of all outbreaks. The third most common etiology in cases of food poisoning in 1969 was salmonella, involving 7 percent of all individuals and 13 percent of all outbreaks. The data for salmonellosis when compared to the previous year has remained essentially unchanged--7 percent of cases--12 percent of outbreaks. For 1969, the above three etiologies were responsible for 84 percent of all ill individuals and 56 percent of all outbreaks; in 1968, the corresponding figures were 67 percent and 52 percent. Considering all etiologies, 28,563 persons suffered from food poisoning during 1969 and 17,567 during 1968.

Table 5 lists the median and range of the number of persons involved in all of the confirmed and unconfirmed outbreaks for 1968 and 1969. In general, outbreaks of C. botulinum, staphylococcus, streptococcus, parasitic, chemical, and unknown etiology food poisoning involved small groups of persons (<10) both years. The median number of persons involved in salmonella and shigella foodborne outbreaks remained similar over the past two years, while the size of C. perfringens, E. coli, and viral outbreaks decreased in 1969. Of interest, the median number of persons involved in a foodborne outbreak considering all etiologies has remained constant over the past two years--8 for 1968 and 8 for 1969.

Table 6 lists the median attack rate and range of attack rates by specific etiology. Attack rates were exceedingly high (>75%) for B. cereus, C. botulinum, streptococcus, Trichinella spiralis, and chemical food poisoning; moderately high (>50%) for C. perfringens, E. coli, salmonella, staphylococcus, and unknown etiology food poisoning; and low (<50%) for shigella, V. parahemolyticus, and viral food poisoning. In some etiologic categories, the number of outbreaks are too small to draw significant conclusions.

Table 7 categorizes the total of confirmed and unconfirmed outbreaks by the number of cases reported and by etiology. It is apparent that C. perfringens, E. coli, salmonella, shigella, and staphylococcal food poisoning tended to involve larger groups of people than C. botulinum, streptococcus, parasitic, viral, and chemical food poisoning. Over 67 percent of outbreaks of unknown etiology involved groups of 10 or less. In both 1968 and 1969, 73 percent of outbreaks affected less than 30 individuals. In both years, there was one outbreak involving more than 1,000 people.

Table 8 lists the vehicles of infection by specific etiology. The three most commonly incriminated vehicles in decreasing order of frequency were beef, fowl, and pork. Other vehicles of importance were vegetables and fruits, fish, and bakery products. Vegetables and fruits tended to be associated with C. botulinum outbreaks, beef and turkey with C. perfringens food poisoning, fowl with salmonella, pork, fowl, and beef with staphylococcus, and water with infectious hepatitis food poisoning.

Table 9 delineates the various places where improper food handling occurred which allowed the reported outbreaks to materialize. The heading, "Food Processing Establishments", refers to the place or site of improper food handling in preparation for marketing. The heading, "Food Service Establishments", refers to the place or site of improper food handling that occurs during food processing in a commerical establishments for public consumption in contradistinction to the heading, "Homes", which refers to mishandled food in the home itself. The column, "Unknown-Unspecified", includes those outbreaks reported with insufficient information which precluded specific classification. In 1969, 31 percent of the vehicles were improperly handled during processing in a commercial eating place, while only 8 percent were improperly handled in preparation for marketing. This is in contrast to 44 percent and 6 percent for 1968. The homemaker was culpable 13 percent of the time--9 percent in 1968. Unfortunately, the site of improper food handling could not be determined 48 percent of the time in 1969 and in 41 percent of the outbreaks in 1968. The newly revised reporting form attempts to define more precisely breaches in proper food handling Hopefully, this will provide more specific information upon which to base control measures.

Table 10 lists the place at which the suspect food was ingested according to specific etiology. It is again apparent that the majority of foodborne outbreaks, 70 percent, occurred in homes and restaurants; however, this represented only 15 percent of the total people ill. While food poisoning in schools accounted for only 10 percent of the outbreaks, nearly 70 percent of all persons affected were school children. Illness due to C. botulinum, salmonella, T. spiralis, infectious hepatitis, and mushroom toxins tended to be caused by foods eaten at home, those due to C. perfringens and E. coli in public facilities, and those due to staphylococcus in both public facilities and at home.

Table 11 lists the monthly incidence of all outbreaks by specific etiology. An outbreak is assigned to a particular month according to the date of onset of the first case. Outbreaks of food poisoning are distributed over the calendar year. No seasonal trends are apparent.

TABLE 1

Initial Reporting Source of Foodborne Illness
Annual Summary - 1969

Number of reports	Reporters		
341	DH	-	Department of health, state or local; includes reports of EIS Officers located at state and local health departments
16	FDA & ECA*	-	Food and Drug Administration, Environmental Control Administration*
2	Salm.	-	Salmonellosis Unit, including Salmonella Surveillance Report, Epidemiology Program, NCDC
2	AF	-	Armed Forces installation and U.S. Public Health Service, Bureau of Indian Affairs
3	Ind.	-	Direct report from individual
2	Para.	-	Parasitology Unit, Epidemiology Program, NCDC
3	MMWR	-	Morbidity and Mortality Weekly Report, NCDC
1	USDA	-	United States Department of Agriculture
1	Other		
371	Total		

*Division, Food, Milk and Interstate Travel Sanitation, Bureau of Community Environmental Management - performs functions previously handled by the National Center for Urban and Industrial Health.

TABLE 2

Outbreaks of Foodborne Illness Reported By
State, Local, and Territorial Health Departments
Annual Summaries 1968 and 1969

	1968	1969
Alabama	0	1
Alaska	4	5
Arizona	1	0
Arkansas	2	1
California	43	40
Colorado	3	8
Connecticut	2	8
Delaware	1	0
District of Columbia	0	2
Florida	12	12
Georgia	1	5
Hawaii	12	10
Idaho	2	4
Illinois	9	11
Indiana	0	11
Iowa	2	0
Kansas	2	1
Kentucky	1	3
Louisiana	3	7
Maine	1	1
Maryland	2	6
Massachusetts	0	0
Michigan	10	11
Minnesota	5	3
Mississippi	2	0
Other		
Virgin Islands	0	0
Guam and Trust Territories	0	3

	1968	1969
Missouri	3	2
Montana	1	5
Nebraska	0	0
Nevada	0	0
New Hampshire	0	0
New Jersey	18	16
New Mexico	1	4
New York City	56	22
New York State	2	3
North Carolina	2	5
North Dakota	1	0
Ohio	6	11
Oklahoma	3	1
Oregon	5	8
Pennsylvania	5	5
Puerto Rico	5	2
Rhode Island	0	2
South Carolina	21	13
South Dakota	1	0
Tennessee	9	10
Texas	2	4
Utah	0	0
Vermont	1	3
Virginia	0	7
Washington	33	62
West Virginia	4	3
Wisconsin	2	0
Wyoming	0	0

1968 Total 301

1969 Total 341

TABLE 3

Division by Specific Etiology of Confirmed and Unconfirmed Outbreaks of Foodborne Illness
Annual Summary - 1969

	Confirmed		Unconfirmed		Total		Confirmed		Unconfirmed		Total	
	#	%	#	%	#	%	#	%	#	%	#	%
BACTERIAL	158	79.4	85	49.4	243	65.5	23,215	98.7	2,696	53.5	25,911	90.7
B. cereus	3	1.5			3	0.8	14	0.1			14	*
C. botulinum	9	4.5	1	0.6	10	2.7	15	0.1	2	*	17	0.1
C. perfringens	36	18.1	29	16.9	65	17.5	16,825	71.5	1,702	33.8	18,527	64.9
E. coli	2	1.0	3	1.7	5	1.3	276	1.2	122	2.4	398	1.4
Salmonella	40	20.1	9	5.2	49	13.2	1,770	7.5	122	2.4	1,892	6.6
Shigella	10	5.0			10	2.7	1,444	6.1			1,444	5.1
Staphylococcus	55	27.6	39	22.7	94	25.3	2,809	11.9	672	13.3	3,481	12.2
Streptococcus	2	1.0	2	1.2	4	1.1	32	0.1	5	0.1	37	0.1
Vibrio parahemolyticus			2	1.2	2	0.5			71	1.4	71	0.2
Multiple etiologies	1	0.5			1	0.3	30	0.1			30	0.1
PARASITIC												
Giardia lamblia	1	0.5			1	0.3	19	0.1			19	0.1
Trichinella spiralis	11	5.5			11	3.0	35	0.1			35	0.1
VIRAL												
Hepatitis	9	4.5			9	2.4	116	0.5			116	0.4
CHEMICAL												
Chinese restaurant syndrome (MSG)	2	1.0			2	0.5	6	*			6	*
Mushroom	2	1.0	2	1.2	4	1.1	6	*	3	0.1	9	*
Other chemical	16	8.0	5	2.9	21	5.7	125	0.5	32	0.6	157	0.5
Unknown			80	46.5	80	21.6			2,310	45.8	2,310	8.1
Total	199	100.0	172	100.0	371	100.0	23,522	100.0	5,041	100.0	28,563	100.0

*Values less than 0.05 have been omitted.

TABLE 4

Division by Specific Etiology of the Total of Confirmed and Unconfirmed Outbreaks of Foodborne Illness
Annual Summaries 1968 and 1969

	1968				1969			
	Total Outbreaks #	Total Outbreaks %	Total Patients #	Total Patients %	Total Outbreaks #	Total Outbreaks %	Total Patients #	Total Patients %
BACTERIAL	220	63.8	14,617	83.2	243	65.5	25,911	90.7
B. cereus					3	0.8	14	*
Brucella	4	1.2	12	.1				
C. botulinum	9	2.6	10	.1	10	2.7	17	0.1
C. perfringens	56	16.2	5,966	34.0	65	17.5	18,527	64.9
E. coli	6	1.7	1,234	7.0	5	1.3	398	1.4
Salmonella	42	12.2	1,287	7.3	49	13.2	1,892	6.6
Shigella	6	1.7	407	2.3	10	2.7	1,444	5.1
Staphylococcus	82	23.8	4,419	25.2	94	25.3	3,481	12.2
Streptococcus	15	4.3	1,282	7.3	4	1.1	37	0.1
Vibrio parahemolyticus					2	0.5	71	0.2
Multiple etiologies					1	0.3	30	0.1
PARASITIC								
Giardia lamblia					1	0.3	19	0.1
Trichinella spiralis	9	2.6	82	.5	11	3.0	35	0.1
VIRAL								
Hepatitis	6	1.7	238	1.4	9	2.4	116	0.4
CHEMICAL								
Chinese restaurant syndrome (MSG)	5	1.4	15	0.1	2	0.5	6	*
Mushroom					4	1.1	9	*
Other chemical	17	4.9	98	0.6	21	5.7	157	0.5
Miscellaneous	3	.1	76	.7				
Unknown	85	24.6	2,441	13.9	80	21.6	2,310	8.1
Total	345	100.0	17,567	100.0	371	100.0	28,563	100.0

* Values less than 0.05 have been omitted.

TABLE 5

Size (number of people ill) of Outbreaks of Foodborne Illness of Specific Etiology Annual Summaries 1968 and 1969

	1968			1969		
	Median	Range	Number of Outbreaks	Median	Range	Number of Outbreaks
BACTERIAL						
B. cereus	66		1	5	4-5	3
Brucella	2		1	-	-	-
C. botulinum	1	1-2	9	1	1-6	10
C. perfringens	55.5	2-560	56	23	2-13,500	65
E. coli	185	3-477	6	36	2-250	5
Salmonella	14.5	2-400	42	12.5	3-400	48
Shigella	45	3-195	6	45.5	10-900	10
Staphylococcus	7	2-1,364	82	7.5	2-500	94
Streptococcus	6	3-600	15	3	2-29	4
V. parahemolyticus				35.5	23-48	2
Multiple etiologies				30		1
PARASITIC						
Giardia lamblia				19		1
Trichinella spiralis	4	2-47	9	2	2-7	11
VIRAL						
Hepatitis	31.5	5-76	6	6	4-59	9
CHEMICAL						
Chinese restaurant syndrome (MSG)	3	2-4	5	3	2-4	2
Mushroom	-	-	-	2	1-4	4
Other chemical	5	2-17	17	3	1-43	21
Unknown	6	2-575	84	7	2-325	80
Total	8	1-1,364	339	8	1-13,500	370

TABLE 6

Median Attack Rate, Range of Attack Rates, and Number of Outbreaks of Foodborne Illness of Specific Etiology
Annual Summary - 1969

	Median attack rate	Range of attack rates	Number of outbreaks
BACTERIAL			
B. cereus	83.3	44.4-100.0	3
C. botulinum	100.0	24.0-100.0	7
C. perfringens	57.3	20.0-100.0	51
E. coli	52.8	13.0-73.5	3
Salmonella	61.1	10.0-100.0	35
Shigella	48.0	7.7-86.1	8
Staphylococcus	71.0	5.0-100.0	72
Streptococcus	80.0	12.2-100.0	4
Vibrio parahemolyticus	14.2	9.2-19.1	2
Multiple etiologies	62.5		1
PARASITIC			
Giardia lamblia	56.5		1
Trichinella spiralis	100.0	40.0-100.0	6
VIRAL			
Hepatitis	44.4	8.9-90.8	7
CHEMICAL			
Chinese restaurant syndrome (MSG)	78.6	57.1-100.0	2
Mushroom	100.0	50.0-100.0	4
Other chemical	83.3	16.5-100.0	19
Unknown	68.9	1.2-100.0	70

TABLE 7

Division of Foodborne Illness of Specific Etiology into Outbreaks of Specific Size
Annual Summary - 1969
Selective Comparative Data, Annual Summary - 1968

	Size of Outbreak								
	1-3	4-10	11-30	31-100	101-300	301-1000	1000+	Unknown	Total
BACTERIAL									
B. cereus		3							3
C. botulinum	9	1							10
C. perfringens	9	13	15	16	7	4	1		65
E. coli	1		1	2	1				5
Salmonella	6	15	11	11	4	1		1	49
Shigella		1	1	6	1	1			10
Staphylococcus	21	35	13	14	10	1			94
Streptococcus	3		1						4
V. parahemolyticus			1	1					2
Multiple etiologies			1						1
PARASITIC									
Giardia lamblia			1						1
Trichinella spiralis	8	3							11
VIRAL									
Hepatitis		6	2	1					9
CHEMICAL									
Chinese restaurant syndrome (MSG)	1	1							2
Mushroom	3	1							4
Other chemical	13	4	3	1					21
Unknown	24	30	9	9	7	1			80
Total 1969	98	113	59	61	30	8	1	1	371
Total 1968	91	97	61	46	36	12	1		344

TABLE 8

Vehicles Associated with Foodborne Illness of Specific Etiology[1]
Annual Summary - 1969

	Turkey*	Chicken*	Beef*	Pork*	Other meat*	Egg	Milk	Cheese	Other dairy products	Shellfish	Other fish	Vegetables & fruit	Mushrooms	Bakery products	Chinese food	Water	Other	Unknown	Total
BACTERIAL																			
B. cereus										1				1				1	3
C. botulinum												6	1					3	10
C. perfringens[2]	16	4	34	3			1	4		1		7						2	72
E. coli	1		1							1						2			5
Salmonella[3]	11	7	6	2		3			1		1	4		5		1	1	11	53
Shigella												2				4		4	10
Staphylococcus[4]	12	7	16	31		3	1		1	5	2	8		9	1		3	5	104
Streptococcus			2	1						1									4
Vibrio parahemolyticus										2									2
Multiple etiologies				1															1
PARASITIC																			
Giardia lamblia																1			1
Trichinella spiralis				11															11
VIRAL																			
Hepatitis[5]	1		2							1						5		2	11
CHEMICAL																			
Chinese restaurant syndrome (MSG)															2				2
Mushroom													4						4
Other chemical[6]			1	3						2	2	8			1		4	1	22
Unknown[7]	6	5	10	11				2		4	2	6		6	2	2	3	24	83
Total 1969	47	23	72	63		6	2	6	2	18	7	41	5	21	6	15	11	53	398

1 - Includes suspected as well as proven vehicles.
2 - Includes 2 outbreaks with 2 vehicles, 1 outbreak with 3 vehicles and 1 outbreak with 4 vehicles.
3 - Includes 4 outbreaks with 2 vehicles.
4 - Includes 4 outbreaks with 2 vehicles, and 3 outbreaks with 3 vehicles.
5 - Includes 1 outbreak with 3 vehicles.
6 - Includes 1 outbreak with 2 vehicles.
7 - Includes 3 outbreaks with 2 vehicles.

*Includes some outbreaks due to meat and/or gravy and/or dressing

TABLE 9

Place Where Food was Mishandled in Foodborne
Outbreaks Reported by Specific Etiology
Annual Summary - 1969
Selective Comparative Data, Annual Summary - 1968

	Food processing establishments	Food service establishments	Homes	Unknown-Unspecified	Total
BACTERIAL					
B. cereus		1		2	3
C. botulinum			7	3	10
C. perfringens	5	28	1	31	65
E. coli	2	2		1	5
Salmonella	4	20	6	19	49
Shigella	1	4	1	4	10
Staphylococcus	3	42	11	38	94
Streptococcus	1	1		2	4
V. parahemolyticus			2		2
Multiple etiologies			1		1
PARASITIC					
Giardia lamblia	1				1
Trichinella spiralis	9	1		1	11
VIRAL					
Hepatitis		3	4	2	9
CHEMICAL					
Chinese restaurant syndrome (MSG)		2			2
Mushroom			4		4
Other chemical	5	3	7	6	21
Unknown		7	4	69	80
Total 1969	31	114	48	178	371
Total 1968	16	114	24	106	260

TABLE 10

Place of Acquisition of Foodborne
Illness of Specific Etiology
Annual Summary - 1969

	Restaurant	Delicatessen	Cafeteria	Home	Picnic	School	Church	Camp	Other	Total
BACTERIAL										
B. cereus	2			1						3
C. botulinum	1			8					1	10
C. perfringens	30	1	3	8		17		1	5	65
E. coli	3		1			1				5
Salmonella	7			26		3	3	2	8	49
Shigella	1			4		2	1		2	10
Staphylococcus	26		1	39	3	5	2	2	16	94
Streptococcus	2			2						4
V. parahemolyticus								2		2
Multiple etiologies				1						1
PARASITIC										
Giardia lamblia				1						1
Trichinella spiralis	2			9						11
VIRAL										
Hepatitis				7		1		1		9
CHEMICAL										
Chinese restaurant syndrome (MSG)	1			1						2
Mushroom				4						4
Other chemical	5			12		1			3	21
Unknown	24		1	34		8	2	3	8	80
Total 1969	104	1	6	157	3	38	8	11	43	371
Number of persons ill - 1969	2,922	6	982	1,373	681	19,842	527	416	1,814	28,563

TABLE 11

Monthly Occurrence of Outbreaks of Foodborne Illness of Specific Etiology
Annual Summary - 1969
Selective Comparative Data, Annual Summary - 1968

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
BACTERIAL													
B. cereus					1					1		1	3
C. botulinum		1	4				1		1		1	2	10
C. perfringens	3	9	6	6	12	3	3	6	2	5	6	4	65
E. coli	1			1				2				1	5
Salmonella	2	3	2	6	4	3	6	3	5	2	9	4	49
Shigella			1		3		2		1	2	1		10
Staphylococcus	2	4	7	12	9	8	4	14	9	9	10	6	94
Streptococcus					1	1						2	4
V. parahemolyticus							1	1					2
Multiple etiologies			1										1
PARASITIC													
Giardia lamblia								1					1
Trichinella spiralis	2		2	2		3				1	1		11
VIRAL													
Hepatitis	1	1	1					3	2	1			9
CHEMICAL													
Chinese restaurant syndrome (MSG)			1								1		2
Mushroom			1		1					1	1		4
Other chemical		1		2	4	1	1	3	3	1	1	4	21
Unknown	7	4	7	7	10	4	10	2	5	6	9	9	80
Total 1969	18	23	33	36	45	23	28	35	28	29	40	33	371
Total 1968	22	26	31	26	37	39	27	28	27	39	29	14	345

SECTION D

REVISED FOODBORNE OUTBREAKS SURVEILLANCE REPORTING FORM

FORM APPROVED
BUDGET BUREAU NO. 68-R1034

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
Health Services and Mental Health Administration
NATIONAL COMMUNICABLE DISEASE CENTER
EPIDEMIOLOGY PROGRAM
ATLANTA, GEORGIA 30333

INVESTIGATION OF A FOODBORNE OUTBREAK

1. Where did the outbreak occur?
State _____ (1,2) City or Town _____ County _____

2. Date of outbreak: (Date of onset 1st case)
_____ (3-8)

3. Indicate actual (a) or estimated (e) numbers
Persons exposed _____ (9-11)
Persons ill _____ (12-14)
Hospitalized _____ (15-16)
Fatal cases _____ (17)

4. History of Exposed Persons:
No. histories obtained _____ (18-20)
No. persons with symptoms _____ (21-23)
Nausea _____ (24-26) Diarrhea _____ (33-35)
Vomiting _____ (27-29) Fever _____ (36-38)
Cramps _____ (30-32) Other, specify _____
_____ (39)

5. Incubation period (hours):
Shortest _____ (40-42) Longest _____ (43-45)
Approx. for majority _____ (46-48)

6. Duration of Illness (hours):
Shortest _____ (49-51) Longest _____ (52-54)
Approx. for majority _____ (55-57)

7. Food-specific attack rates: (58)

Food Items Served	Number of persons who ATE specified food				Number who did NOT eat specified food			
	Ill	Not Ill	Total	Percent Ill	Ill	Not Ill	Total	Percent Ill

8. Vehicle responsible (food item incriminated by epidemiological evidence): (59,60) _____

9. Manner in which incriminated food was marketed: (Check all applicable)

(a) Food Industry (61)
- Raw ☐ 1
- Processed ☐ 2

Home Produced
- Raw ☐ 3
- Processed ☐ 4

(b) Vending Machine ☐ 1 (62)

(c) Not wrapped ☐ 1 (63)
- Ordinary Wrapping ☐ 2
- Canned ☐ 3
- Canned–Vacuum Sealed ☐ 4
- Other (specify) ☐ 5

(d) Room Temperature ☐ 1 (64)
- Refrigerated ☐ 2
- Frozen ☐ 3
- Heated ☐ 4

If a commercial product, indicate brand name and lot number
_____

10. Place of Preparation of Contaminated Item: (65)
- Restaurant ☐ 1
- Delicatessen ☐ 2
- Cafeteria ☐ 3
- Private Home ☐ 4
- Caterer ☐ 5

Institution:
- School ☐ 6
- Church ☐ 7
- Camp ☐ 8

Other, specify ☐ 9
_____
_____

11. Place where eaten: (66)
- Restaurant ☐ 1
- Delicatessen ☐ 2
- Cafeteria ☐ 3
- Private Home ☐ 4
- Picnic ☐ 5

Institution:
- School ☐ 6
- Church ☐ 7
- Camp ☐ 8

Other, specify ☐ 9
_____
_____

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Rev. 3-69

(Over)

LABORATORY FINDINGS (Include Negative Results)

12. Food specimens examined: (67)

Specify by "X" whether food examined was original (eaten at time of outbreak) or check-up (prepared in similar manner but not involved in outbreak)

Item	Orig.	Check up	Findings Qualitative	Quantitative
Example: beef	X		C. perfringens, Hobbs type 10	$2X10^6$/gm

13. Environmental specimens examined: (68)

Item	Findings
Example: meat grinder	C. perfringens, Hobbs Type 10

14. Specimens from patients examined (stool, vomitus, etc.): (69)

Item	No. Persons	Findings
Example: stool	11	C. perfringens, Hobbs Type 10

15. Specimens from food handlers (stool, lesions, etc.): (70)

Item	Findings
Example: lesion	C. perfringens, Hobbs type 10

16. Factors contributing to outbreak (check all applicable):

	Yes	No	
1. Improper storage or holding temperature	☐ 1	☐ 2	(71)
2. Inadequate cooking	☐ 1	☐ 2	(72)
3. Contaminated equipment or working surfaces	☐ 1	☐ 2	(73)
4. Food obtained from unsafe source	☐ 1	☐ 2	(74)
5. Poor personal hygiene of food handler	☐ 1	☐ 2	(75)
6. Other, specify _____	☐ 1	☐ 2	(76)

17. Etiology: (77, 78)

Pathogen _____ Suspected ☐ 1 (79)

Chemical _____ Confirmed ☐ 2

Other _____ Unknown ☐ 3

18. Remarks: Briefly describe aspects of the investigation not covered above, such as unusual age or sex distribution; unusual circumstances leading to contamination of food, water; epidemic curve; etc. (Attach additional page if necessary)

Name of reporting agency (80)

Investigating official | Date of investigation.

NOTE: Epidemic and Laboratory Assistance for the investigation of a foodborne outbreak is available upon request by the State Health Department to the National Communicable Disease Center, Atlanta, Georgia 30333.

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Section E - Line Listing of Foodborne Outbreaks

Explanation of line listing:

Listing is by specific etiology. Under each etiology confirmed outbreaks are listed first in chronological order. Unconfirmed outbreaks are listed next in chronological order, denoted by the prefix "probable" (prob.).

For all instances in which there was any question as to the accuracy of information, a question mark is included.

Onset - the month is followed by the day of the month. In some outbreaks involving continual exposure over a period of time, the onset is expressed as a range between onset of the first and last case.

Lab data - usually refers to cultural confirmation.

P - patient
V - vehicle
H - food handler

Symptoms:

N - nausea
V - vomiting
C - cramps, abdominal pain
D - diarrhea
H - headache
F - fever
A - anorexia
O - other
LFT - liver function tests

Reporter - see Table 1 for explanation of abbreviations

Other symbols and abbreviations:

$\bar{x}$ - mean
med.- median
$\sim$ - approximately

Explanation of code letters in parentheses - (A), (B), (C), (D) - in line listing under column headed "Comment". These letters refer to data presented in Table 9.

(A) "Food processing establishements" - Site or place of food improperly handled in preparation for marketing.
(B) "Food service establishments" - Site or place of food improperly handled during food processing in a commercial establishment for public consumption.
(C) "Homes" - food mishandled in homes.
(D) "Unknown-Unspecified" - Information lacking, precluding classification.

SECTION F

ETIOLOGY	ONSET	REPORTED FROM	VEHICLE	LAB DATA			CLINICAL DATA				REPORTER	COMMENT
				P.	V.	H.	# ill (at risk)	incub. period (hrs.)	Duration of dis. (hrs.)	Symptoms		
BACTERIAL												
Bacillus cereus	10-19	Spokane, Wash.	doughnuts		+		5(5)	2-9($\bar{x}$ 6)		N,V,D	DH	Restaurant (B)
Bacillus cereus	12-22	Evansville, Ind.	oysters		+		4(9)	$\bar{x}$ 5½		N,C,D	DH	Home (D)
CLOSTRIDIUM BOTULINUM												
C. botulinum	7-2	Seattle, Wash.		+			1			Dizziness, blurred vision, resp. distress, symmetric cranial and skeletal nerve paralysis	DH, MMWR	Home (D)
C. botulinum	9-18	South Bend, Ind.		+			1(1)			N,V,ptosis, dysphagia, dysarthria, resp. distress, weakness	DH	Home (C)
C. botulinum	11-26	Los Angeles, Calif.	home-canned figs				2(2)	24		N,V, weakness, diplopia, dysphagia, dysarthria, resp. distress	DH	Home (C) (1 death)
C. botulinum type B	12-19	Denver, Colo.	home-canned chili peppers	+			1			Dysphagia, dysarthria, resp. distress, cranial nerve and skeletal muscle weakness		Home (C) (death)
prob. C. botulinum	12-4	Clayton, Idaho	home-preserved applebutter				2(3)			Diplopia, dysphagia, ptosis, resp. insufficiency, dysarthria, skeletal muscle weakness		Home (C)
CLOSTRIDIUM PERFRINGENS												
C. perfringens hobbs type 13	3-13	Oahu, Hawaii	pork	+			40(61)	5½-19	36	C,D	DH	School (D)
C. perfringens	4-7	Oahu, Hawaii	chicken gravy	+			5(7)	14-18	24-48	C,D	DH	Restaurant (D)

C. perfringens	5-23	NYC, N.Y.	chicken		+		20(25)	6-21 ($\bar{x}$ 12)	$\bar{x}$ 24	C,D,N,V	DH	Home (B)
C. perfringens PS 75 PS 76	5-31	Philadelphia, Penn.	beef stew	+			175(700)	12	24	N,V,D	DH	Hospital (B)
C. perfringens	8-7	Jacksonville, Fla.	turkey		+		250(1,400)	8-24 ($\bar{x}$ 12)	5-6	C,D	DH	Cafeteria-catered (D)
C. perfringens	8-10	Houston, Tex.	beef		+		6(7)	18		C,D	DH	Home (D)
C. perfringens	8-18	Newington, Conn.	turkey		+		27(35)	$\bar{x}$ 12	$\bar{x}$ 8	C,D	DH	Home-catered (D)
C. perfringens hobbs 8/PS 72/78/81A/38	8-27	Atlanta, Ga.	salad and/or potato	+			5(5)	$\bar{x}$ 8	$\bar{x}$ 8	C,D,N	Ind.	Restaurant (B)
C. perfringens	9-12	Spokane, Wash.	beef gravy	+			21(50)	3-48 ($\bar{x}$ 15)	$\bar{x}$ 24	C,D,N,F	DH	Restaurant (B)
C. perfringens hobbs type 3	9-27	Pullman, Wash.	burritos	+	+		90(100)	4-12 ($\bar{x}$ 9)	$\bar{x}$ 18	C,D,chills	DH	School (B)
C. perfringens	10-22	Memphis, Tenn.	braised beef on rice	+	+		13,500 (67,188)	3-18 ($\bar{x}$ 11)	4-48 ($\bar{x}$ 18)	C,D	DH	School (B)
C. perfringens PS 40	11-1	Memphis, Tenn.	roast beef	+			7(100)	12-24 ($\bar{x}$ 13)	$\bar{x}$ 6	C,D,H	DH	Restaurant (B)
C. perfringens	11-2	Los Angeles, Calif.	turkey and/or gravy	+			57(100)	$\bar{x}$ 11	$\bar{x}$ 12	C,D,N	DH	Hospital (B)
C. perfringens hobbs type 11	11-12	Cumming, Ga.	turkey	+		+	590(750)	9-10	4-6 dy.	N,C,D,F,V	DH	School (D)
C. perfringens	11-22	Clarksville, Tenn.	macaroni and cheese	+	+	+	200(700)	$\bar{x}$9-13	$\bar{x}$ 24	N,C,D	DH	Cafeteria (B)
C. perfringens	12-1	Memphis, Tenn.	rice	+			3(30)	4-13	4-24	C,D	DH	Restaurant (B)
prob. C. perfringens	3-18	Terre Haute, Ind.	pork gravy				153(1,167)	5-19	$\bar{x}$ 13	D	DH	School (B)
prob. C. perfringens	5-17	Atco, N.J.	roast beef and gravy				23(70)	7-15 ($\bar{x}$ 11)	$\bar{x}$ 18	C,D,N,V	DH	Home (D)

ETIOLOGY	ONSET	REPORTED FROM	VEHICLE	LAB DATA P.	LAB DATA V.	LAB DATA H.	CLINICAL DATA # ill (at risk)	CLINICAL DATA incub. period (hrs.)	CLINICAL DATA Duration of dis. (hrs.)	CLINICAL DATA Symptoms	REPORTER	COMMENT
prob. C. perfringens	5-18	Jersey City, N.J.	prob. turkey				22(36)	5-16 ($\bar{x}$ 12)	$\bar{x}$ 24	C,D	DH	Restaurant (D)
prob. C. perfringens	7-1	Woodstock, Conn.	turkey pie				69(250)	10-18 ($\bar{x}$ 14)	$\bar{x}$ 4	C,D,V	DH	Camp (D)
prob. C. perfringens	7-1	Columbus, Ohio	chicken a la king				~83(850)	10-16 ($\bar{x}$ 13½)	$\bar{x}$ 12	C,D	DH	School cafeteria(B)
prob. C. perfringens	7-26	Madison Township, N.J.	turkey				>18(160)	9-16 ($\bar{x}$ 11)	6-30	N,V,D,F,C	DH	Caterer- (D) Restaurant
prob. C. perfringens	8-2	Long Beach, Calif.	prime ribs				38(109)	10-24 ($\bar{x}$ 15)	$\bar{x}$ 17	C,D,N,V	DH	Private club (B)
prob. C. perfringens	8-12	Cocoa Beach, Fla.	roast beef and/or corned beef				2(2)	$\bar{x}$ 12½	$\bar{x}$ 24	C,D	DH	Home (B)
prob. C. perfringens	10-3	Missoula, Mont.	olives				3(5)	7-8		C,D	DH	Home (D)
prob. C. perfringens	10-8	San Jose, Calif.	roast beef				2(5)	16	24	D,C	DH	Restaurant (D)
prob. C. perfringens	10-8	Memphis, Tenn.	turkey and noodles				720(1,200)	4-14 ($\bar{x}$ 9)	$\bar{x}$ 18	C,D,N	DH	School (D)
prob. C. perfringens	10-31	Oahu, Hawaii	roast beef				38(43)	8-18	24-48	C,D	DH	Restaurant (D)
prob. C. perfringens	11-15	Seattle, Wash.	macaroni-cheese-beef casserole				17(17)	$\bar{x}$ 12	$\bar{x}$ 6	C,D	DH	Institution (B)
prob. C. perfringens	11-19	Toledo, Ohio	turkey gravy				58(182)	6-7	$\bar{x}$ 24-36	C,D	DH	Restaurant (B)
prob. C. perfringens	12-5	Renton, Wash.	roast beef	+			2	10	12-48	C,D,N	DH	Restaurant (B)
prob. C. perfringens	12-7	Redmond, Wash.	turkey	+			18(1,000)	4-19 ($\bar{x}$ 11½)	<24	C,D	DH	Restaurant (B)
prob. C. perfringens	12-19	Bloxom, Va.	turkey				>25(296)	8-24		V,C,D	DH	School (D)
ESCHERICHIA COLI												
E. coli	8-7	Jacksonville, Fla.	turkey		+		~ 250(~1,400)	5-24 ($\bar{x}$ 12)	$\bar{x}$ 5-6	C,D,N,V	DH	Factory cafeteria(D)
E. coli	8-23	Eureka Springs, Ark.	prob. water		+		84(>159)	15-48		N,V,D	DH	Restaurant (A)
prob. coliforms	12-16	Seattle, Wash.	raw oysters		+		2	$\bar{x}$ 5	$\bar{x}$ 5	N,V,C,D	DH	Restaurant (B)

SALMONELLA

S. typhi-murium	5-31	Cleveland, Ohio	custard doughnuts	+	+		4(4)	24-48		D,V,F	DH	Bakery-Home (B)
S. infantis	5-26	Paramus, N.J.		+			9(1,100)			V,C,D,F	DH	Hospital (D)
S. typhi-murium var. copenhagen	6-13	New York State	custard cake	+			100	12-36		N,V,C,D,F	DH	Bakery-Home (D)
S. enteriditis	7-1	Fairlee, Vt.		+		+	38(240)			F,N,D,C,H	DH	Camp (B)
S. typhi-murium	7-2	Fresno County, Calif.		+			30 families			N,V,C,D,F,H	DH	Camp (B)
S. enteriditis	7-8	Kauai, Hawaii		+			32(185)	15-20		N,V,C,D,F	DH	Restaurant (D)
S. typhi phage F1	7-11	Hartford, Conn.	meatballs	+		+	4			F,H,D	Salm.	Delicatessen-Home (B)
S. muenchen	7-26	NYC, N.Y.	roast beef	+	+		19(29)	15-72 ($\bar{x}$ 17)	$\bar{x}$ 24	C,D,N,V,F	DH	Caterer-Home (B)
S. berta	July 1969	Tuscola County, Mich.	chicken	+	+		24	9-20		N,V,D,C,F	DH	Home (B)
S. enteriditis	8-8	Tanunak, Alaska	whale	+	+		95(99)	8-16		H,F,N,V,C,D	DH	Home (C)
S. thompson	8-11	Gettysburg, Ohio	ice cream	+			18(21)	$\bar{x}$ 16	48	N,V,C,D,F	DH	Home (C)
S. enteriditis	8-17	Pike County, Mo.	cream pie	+			10			D,V,F	FDA	Bakery-Home (B)
S. newport	9-5	Du Page County, Ill.	caesar salad	+		+	57(69)	15-72 ($\bar{x}$ 48)	$\bar{x}$ 72	N,D,F,C	DH	Banquet (B)
S. typhi-murium/ S. virchow	9-10	Floyd, Va.	coconut creme pie	+			21(38)	$\bar{x}$ 30	$\bar{x}$ 96	N,C,D,F	DH	School (B)
S. infantis	9-24	Houston, Tex.	chicken	+			3(3)	18		V,D,F	DH	Home (C)
S. panama	10-1	Des Moines, Iowa	turkey	+			122(1,900)	$\bar{x}$ 43	$\bar{x}$ 4.7 dy.	N,V,C,D,F	Salm.	Banquet (B)
Salmonella	10-6	Suisun, Calif.		+			3(3)			N,V,C,D	DH	Restaurant (B)
S. enteriditis	10-13	Cuyahoga Falls, Ohio		+			7(16)	56-64 ($\bar{x}$ 60)	$\bar{x}$ 36	D,F,prostration	DH	(D)
Salmonella	11-4	Cambridge, Mass.	roast beef	+			17			D	USDA	Restaurant (D)

ETIOLOGY	ONSET	REPORTED FROM	VEHICLE	LAB DATA			CLINICAL DATA				REPORTER	COMMENT
				P.	V.	H.	# ill (at risk)	incub. period (hrs.)	Duration of dis. (hrs.)	Symptoms		
S. blockley	11-12	Columbia, S.C.	chicken salad		+		35(146)	$\bar{x}$ 5	$\bar{x}$ 72	N,C,D,F	DH	Home (D)
S. typhi-murium	11-16	New Iberia, La.	chicken and/or eggs	+	+		90(115)			N,V,C,D,F	DH	Picnic (B)
S. infantis	11-20	New Orleans, La.	chicken and potato salad	+	+		201(>200)	$\bar{x}$ 7-12		D,V,F	DH	Church supper (B)
S. newport	11-28	Albuquerque, N.M.	turkey	+	+	+	12(35)	$\bar{x}$ 41		N,V,C,D	DH	Hospital (B)
S. san diego	12-14	Los Angeles, Calif.	turkey	+	+		128(400)	$\bar{x}$ 18		N,V,C,D,F	DH	Caterer-Home (B)
S. st. paul	12-25	Tacoma, Wash.	turkey	+	+		11(18)	16-57($\bar{x}$ 35)		N,C,D,F,V	DH	Home (A)
Arizona hinshawii	11-27	Rocky Mountains, Va.	turkey dressing	+			7(12)	$\bar{x}$ 9½	$\bar{x}$ 12	N,V,C,D,F	DH	Home (D)
prob. salmonella	6-13	Oakland, Calif.	roast beef and chicken				29(200)	$\bar{x}$ 20	48	N,V,C,F	DH	Restaurant (D)
prob. salmonella	9-6	Fort Richardson, Alaska	pound cake				17(21)	20-48	$\bar{x}$ 36	N,V,C,D,F, dizziness	DH	Home (B)
prob. salmonella	11-27	Lynwood, Wash.	turkey				5(6)	62-96 ($\bar{x}$ 75)	$\bar{x}$ 24	N,V,C,D,H	DH	Home (D)
prob. salmonella	11-28	San Leandro, Calif.		+			5	12		N,V,C,D,F	DH	Restaurant (D)
prob. salmonella	11-28	Spokane, Wash.	turkey				6(6)	12-16 ($\bar{x}$ 15)	$\bar{x}$ 48	N,V,D	DH	Home (C)
prob. salmonella	12-11	Edmonds, Wash.	fruit cake				4(9)	7-12 ($\bar{x}$ 8)	$\bar{x}$ 48	N,V,C,D,H	DH	Home (D)
prob. salmonella	12-21	Spokane, Wash.	turkey				3(3)	4-21	$\bar{x}$ 24	C,D,N,F	DH	Home (C)
SHIGELLA												
S. sonnei	March 1969	Prineville, Ore.	water	+	+		31(36)	1-7 dy.	med. 3 dy.	D,F,N,C,H,V, myalgia	DH	Home (B)

S. sonnei	7-15	Lexington, Ky.					10(30)		3 dy.	D,F,H,N,C,V, myalgia	DH	Church (D)
S. sonnei	7-23	Medford, Ore.	water (swimming pool)	+			37			F,D,C,H	DH	Swimming pool for children (B)
S. sonnei	9-9	Towtowa, N.J.		+			58(101)		$\bar{x}$ 4 dy.	F,D	DH	Institution (D)
S. sonnei	10-4	Cleveland, Ohio		+		+	242(640)		1-2 dy.	N,C,D,F, myalgia, H,V	DH	School (B)
S. flexneri 2b	10-13	Emmonak, Alaska	prob. water	+			33(430)			D,C,V,F,N, blood in stool	DH	Home (C)
S. sonnei	11-21	Columbia, Mo.		+		+	900(1,200)	24-72 ($\bar{x}$ 48)	$\bar{x}$ 36	N,V,C,D,F	DH	School (B)
STAPHYLOCOCCUS												
S. aureus	4-6	Jefferson, S.C.	ham		+		5(5)	$\bar{x}$ 5	$\bar{x}$ 24	N,V,C,D,F	DH	Home (A)
S. aureus	6-27	Michigan, Ind.	potato salad		+		19	$\bar{x}$ 3		N,V,C,D,F	DH	Cafeteria (B)
S. aureus	7-10	Hampton, S.C.	barbeque pork		+		40			N,D,V	DH	Restaurant (B)
S. aureus	7-12	Asan, Guam	ham	+	+		70(120)	$\bar{x}$ 4	$\bar{x}$ 6	N,V,D,C	DH	Restaurant (B)
S. aureus	8-3	Selma, Ala.	barbeque pork		+		~10(~50)	4-5	$\bar{x}$ 4½	N,V,C,D	DH	Home (B)
S. aureus	8-3	Edison, N.J.	potato, macaroni, and shrimp salad		+		6(10)	2½-9½ ($\bar{x}$ 3½)	$\bar{x}$ 8	N,V,D	DH	Picnic (C)
S. aureus	8-5	Bushkill, Penn.	turkey & stuffing		+		50(200)	$\bar{x}$ 7	48	C,D,H,V,weakness	DH	Restaurant (D)
S. aureus	8-14	Bloomington, Ill.	sausage		+		2	3	12-18	N,V,C,D	DH	Restaurant (B)
S. aureus (enterotoxin positive)	8-16	San Francisco, Calif.	cake		+		6(7)	$\bar{x}$ 6½	$\bar{x}$ 12	N,V,C,D,F	DH	Home (D)
S. aureus	8-19	Loon Lake, Calif.	ham		+		5(70)	$\bar{x}$ 4	$\bar{x}$ 8	N,V,D	DH	Camp (B)
S. aureus	8-27	Ridgecrest, Calif.	pizza		+		6(8)	2-4	48	D,C	DH	Restaurant-Home (D)
S. aureus	8-29	Calumet, Mich.	baked ham		+		9(50)	$\bar{x}$ 3.5		N,V,C,D	DH	Restaurant (B)
S. aureus phage type 53/77	9-11	Seattle, Wash.	shrimp	+	+	+	2	$\bar{x}$ 3		N,V,C,D	DH	Restaurant (B)

ETIOLOGY	ONSET	REPORTED FROM	VEHICLE	LAB DATA			CLINICAL DATA				REPORTER	COMMENT
				P.	V.	H.	# ill (at risk)	incub. period (hrs.)	Duration of dis. (hrs.)	Symptoms		
S. aureus	9-17	Palo Alto, Calif.	corned beef/ turkey		+		2	7	8-12	N,V,D,F	DH	Restaurant (B)
S. aureus	9-27	Seabrook, Tex.	ham		+		24(34)	4		N,D,V	FDA	Home-Party (D)
S. aureus phage type 29/52/52A/80/42E/47/ 53/54/75/77/81 (enterotoxin A)	9-28	Seattle, Wash.	custard cake	+	+	+	5(7)	$\bar{x}$ 7½	$\bar{x}$ 12	N,V,C,D,H	DH	Bakery-Home (B)
S. aureus	10-1	Harmon, Guam	meatloaf		+	+	76(620)	$\bar{x}$ 6	$\bar{x}$ 12	N,V,C,D	DH	Camp (B)
S. aureus	10-4	Memphis, Tenn.	barbeque pork		+		>93(1,300)	$\bar{x}$ 4		N,V,C,D,chills	DH	Restaurant (B)
S. aureus	10-11	W. Columbia, S.C.	coconut cake		+		5(5)	4-8($\bar{x}$ 6)	$\bar{x}$ 24	N,V,C,D,F	DH	Bakery-Home (D)
S. aureus	10-25	Belvidere, N.J.	chicken gravy and stuffing		+		40(65)	$\bar{x}$ 4	$\bar{x}$ 5	N,V,C,D	DH	Banquet Hall Catered (B)
S. aureus	11-8	Yakima, Wash.	beef jerky		+		175(500)	1-6 ($\bar{x}$ 4)	$\bar{x}$ 7	N,V,C,D	DH	Home-Picnic (C)
S. aureus	11-9	Franklin County, Ohio	turkey	+	+	+	17	4-5	$\bar{x}$ 48	N,V,D	DH	Restaurant (B)
S. aureus	11-12	Marrero, La.	ham		+		8(8)	1-1½	$\bar{x}$ 24	N,V,C,D	DH	Home (D)
S. aureus	11-13	Freehold Boro, N.J.	turkey salad		+	+	84(350)	3-9 ($\bar{x}$ 5)		N,V,C,D	DH	Church (C)
S. aureus phage type 85 (enterotoxin A&D)	11-17	NYC, N.Y.	corned beef		+		9(28)	$\bar{x}$ 2-3	4-5	N,V,D,C	DH	Home (C)
S. aureus	11-20	Temple Terrace, Fla.	turkey and dressing		+	+	207(662)	$\bar{x}$ 4	$\bar{x}$ 12	V	DH	School (B)
S. aureus	11-20	Cresaptown, Md.	turkey and pineapple crunch	+	+	+	207(527)	1-6 ($\bar{x}$ 3)	2-3	N,V,C	DH	School (B)
S. aureus	11-20	Coldwater, Mich.	ham and egg salad and dressing		+		3(3)	2-3($\bar{x}$ 3)	$\bar{x}$ 24	N,V,C,D	DH	Restaurant (B)
S. aureus	11-28	NYC, N.Y.	roast turkey and stuffing		+		11(11)	4-9($\bar{x}$ 5)	$\bar{x}$ 48	N,V,C,D	DH	Home (D)

S. aureus	12-3	NYC, N.Y.	chicken and rice	+		5(5)	x̄ 4	x̄ 18	N,V,C,D	DH	Home (C)
S. aureus	12-11	Van Buren, Ohio	chicken salad	+		2(2)	3/4		N,V,D,F	DH	Restaurant-Auto. (B)
S. aureus	12-25	Evansville, Ind.	ham	+		10(10)	x̄ 23	x̄ 30	N,V	DH	Home (D)
S. aureus phage type 52/52A/80/53 (enterotoxin A&C)	12-30	St. Louis, Mo.	turkey dressing	+	+	27(48)	1-6	x̄ 2½	N,V,C,D,F	DH	Home-Factory (C)
S. aureus epidermidis coag. negative (enterotoxin +)	10-8	Denver, Colo.	beef	+	+	145(223)	1½-8	x̄ 3½	D,N,V,C	FDA/DH	Restaurant (B)
prob. staph.	2-28	Ridgeway, S.C.	beef pie or gravy			40	x̄ 4½	x̄ 24	N,V,C,D	DH	Nursing home (B)
prob. staph.	3-4	Greenville, S.C.	chili on hotdog			1(1)*	4	72	N,V,D	DH	Restaurant (D)
prob. staph.	3-24	Oahu, Hawaii	ham			3	2-4		N,V,C,chills	DH	Restaurant(D)
prob. staph.	4-28	Paso Robles, Calif.	hamburger			4	x̄ 6	x̄ 4	N,V,D	DH	Home (B)
prob. staph.	6-13	NYC, N.Y.	shrimp chow mein			6(6)	2-3	x̄ 2	N,V,C	DH	Restaurant (D)
prob. staph.	6-26	NYC, N.Y.				20(40)	2-4½		N,V,D	DH	Restaurant(B)
prob. staph.	7-22	Middletown, Ohio	macaroni salad			3(6)	3-12 (x̄ 6.3)	x̄ 12	N,V,C,D	DH	Home (D)
prob. staph.	7-23	Parris Island, S.C.	pork salad	+		101	5½		D,C,N,V,H	AF	Military Base (B)
prob. staph.	8-7	Carrollton, Ga.	barbeque pork			116(450)	x̄ 2½	x̄ 24	N,V,C,D,F	DH	Caterer-Factory (B)
prob. staph.	8-11	Pasco, Wash.	roast beef			2(2)	x̄ 5	x̄ 8½	N,V,D,H	DH	Restaurant(B)
prob. staph.	8-13	San Diego County, Calif.	balogna			100(480)		x̄ 5	N,V,D	DH	Camp (B)
prob. staph.	8-16	Mt. Ranier Park, Wash.	hamburger or potatoes			4(5)	2-8 (x̄ 5)	x̄ 24	N,V,C,D,H	DH	Restaurant(D)
prob. staph.	8-17	Elwood, N.J.	custard cake			10	2-4		C,V,D	DH	Bakery-Home (D)

*Excluded from tabulations

ETIOLOGY	ONSET	REPORTED FROM	VEHICLE	LAB DATA P.	LAB DATA V.	LAB DATA H.	CLINICAL DATA # ill (at risk)	CLINICAL DATA incub. period (hrs.)	CLINICAL DATA Duration of dis. (hrs.)	CLINICAL DATA Symptoms	REPORTER	COMMENT
prob. staph.	8-24	Clinton, Wash.	chicken				4(5)	4-6 (x 6)	40	V,C,D,F,H	DH	Home (D)
prob. staph.	9-1	Seattle, Wash.	Chinese food			+	2	3-3½		N,V,D	DH	Restaurant(B)
prob. staph.	9-7	Butner, N.C.	ham				52	2½-3	12	V,D	DH	Institution(B)
prob. staph.	9-7	Raleigh, N.C.	ground ham				51	x̄ 2-3	10-14	N,V,D	DH	School-Mental Institution(B)
prob. staph.	9-17	Topeka, Kan.	cherry cream pie				4	3-9		N,V,D	DH	Restaurant(B)
prob. staph.	9-?	Yakima County, Wash.	TV dinner				2(2)	3-4	12-24	N,V,D	DH	Home (D)
prob. staph.	10-22	Springer, N.M.	balogna				2(3)	1-2 (x̄ 1½)	x̄ 12	N,V,C	DH	School (B)
prob. staph.	10-28	NYC, N.Y.	turkey, gravy, noodles				7(8)	x̄ 1½	x̄ 7	V,N,D,C	DH	Home (C)
prob. staph.	11-10	Orangeburg, S.C.					38(450)	x̄ 2½	x̄ 1-4 dy.	N,V,D	DH	Caterer-Banquet (B)
prob. staph.	11-16	Spokane, Wash.	tartar sauce or fish and chips				4(5)	1-5 (x̄ 5)	x̄ 24	N,V,C,D	DH	Restaurant (B)
prob. staph.	11-19	Willowbrook, Colo.	lasagna				2(2)	5-7½	x̄ 12	N,V,H,D	FDA	Home (D)
prob. staph.	12-?	Ephrata, Wash.	fruit cake				2(6)	1½-4 (x̄ 2)	x̄ 10	N,V,C,D	DH	Home (D)
STREPTOCOCCUS												
enterococcus	12-4	Chesterfield County, Va.	creamed shrimp		+		29(237)	6½-16½ (x̄ 13)	x̄ 6	D,C,N,V	DH	Restaurant (D)
prob. streptococcus	12-3	Murphysboro, Ill.	hamburger		+		2(2)	5½		N,V,C,D	DH	Home (D)
VIBRIO PARAHEMOLYTICUS												
prob. *Vibrio parahemolyticus*	7-25	Seabeck, Wash.	shellfish		+		48(251)	34-53 (x̄ 43)	x̄ 38	D,C,N,V,H,F	DH	Camp (C)
prob. *Vibrio parahemolyticus*	8-5	Seabeck, Wash.	shellfish		+		23(250)	14-66 (x̄ 39)	x̄ 18	N,V,C,D,F,H	DH	Camp (C)

CHEMICAL

chemical toxin	April 1969	Hardin, Mont.				3(3)			N,V,weakness, light headedness	DH	Home (D)
parathion poisoning	7-30	Trenton, N.J.	insecticide	+		4(4)	18-24		Resp. distress, myotic pupils, excessive salivation,	DH	Home (C)
organic phosphate poisoning	8-27	Aiea, Hawaii	oatmeal	+	+	3(3)	2-3	$\bar{x}$ 6	N,V,D,weakness, sweating	DH	Home (C)
ciguatera toxin	9-11	Harmon, Guam	fish		+	2	$\bar{x}$ 4	$\bar{x}$ 2 dy.	N,V,C,D,F, dry mouth, coma	DH	Home (C)
shellfish poisoning	9-21	Redway, Calif.	mussels			3(3)	½-3		Numbness, light-headedness, dysphagia	DH	Home (C)
organic phosphate poisoning	9-22	Aiea, Hawaii	oatmeal	+	+	5(6)	$\bar{x}$ 30 min.	3-6	N,V,C,ataxia	DH	Home (C)
copper poisoning	9-23	Kaneake, Hawaii	root beer		+	3(4)	$\bar{x}$ 1 min.	$\bar{x}$ 24	N,V	DH	Restaurant(B)
shellfish poisoning	10-7	Englewood, Colo.	oysters			3	20-30 min.	$\bar{x}$ 24	N,V,D, backache, dry mouth, blurred vision, paresthesias	DH	Restaurant(B)
mushroom poisoning	10-17	Queens, N.Y.	mushrooms (Clytocybe illudens)		+	4(4)	1½-2½	$\bar{x}$ 4	V,C	DH	Home (C)
Chinese restaurant syndrome-MSG	11-3	Hillcrest, N.Y.	Chinese food		+	2(2)	½		Paresthesias, light headedness, chest discomfort, swelling lips and breasts	DH	Restaurant (B)
scombroid poisoning	11-21	Oahu, Hawaii	mackeral			3(3)	3/4	24	H, erythema, urticaria, dizziness	DH	Restaurant (D)
copper poisoning	12-2	Lansing, Mich.	punch beverage		+	17(51)	30-45 min.		V,D,C	FDA	Party (B)
mercury poisoning	12-4	Alamogordo, N.M.	pork			3(9)	3½ months		Ataxia, blindness, agitation, proteinuria	DH	Home (C)
copper poisoning	12-5	Alderwood Manor, Wash.	bottled grape soda		+	8(10)	5-10 min. ($\bar{x}$ 5 min.)	$\bar{x}$ 1½	N,C,V	DH	Home (A)
prob. chemical toxin	8-4	Philadelphia,Pa.	pizza			10(12)	$\bar{x}$ 30		N,C,V,D	DH	Home (D)
prob. psilocybe mushroom poisoning	11-12	Burton, Wash.	mushrooms			1(2)	1	13	hallucination, hyperactivity, somnolence, twitching drooling	DH	Home (C)

ETIOLOGY	ONSET	REPORTED FROM	VEHICLE	LAB DATA			CLINICAL DATA				REPORTER	COMMENT
				P.	V.	H.	# ill (at risk)	incub. period (hrs.)	Duration of dis. (hrs.)	Symptoms		
prob. chemical toxin	12-15	Montpelier, Ind.	ham				3(3)	$\bar{x}$ ½	$\bar{x}$ 3	N,rash, flushing face and arms, pruritis, dilated pupils	DH	Caterer-Factory (D)
PARASITIC												
Giardia lamblia	Aug. 1969	Lookout Mountain, Colo.	water	+			19(33)		3 dy-months	D,C,N	DH	Home (A)
TRICHINELLA SPIRALIS												
Trichinella spiralis	1-8	Chicago, Ill.	home-made sausage	+			3(3)	~10 dy.		Myalgia, F periorbital edema	DH	Home (A)
Trichinella spiralis	1-9	Rochester, N.Y.	pork(raw)	+	+		2(2)	10 dy.		Periorbital edema	DH	Home (A)
Trichinella spiralis	6-7	Vermont State	pork		+		2(5)			F,H,myalgia, facial edema	DH	Home (A)
Trichinella spiralis	6-25	San Francisco, Calif.	pork	+			2(2)	3 wk.		F,H,myalgia, periorbital edema	DH	Restaurant (A)
Trichinella spiralis	July 1969	Cleveland, Ohio	smoked bacon	+			3(7)	2 wk.		Weakness, facial edema, F,D, myalgia,eosinophilia	MMWR	Home (A)
Trichinella spiralis	10-23	Johnston, R.I.	pork	+			2(2)	10 dy.		myalgia,F, malaise, periorbital edema, eosinophilia	DH	Home (A)
Trichinella spiralis	11-?	Harrisburg, Pa.	pork sausage	+			4			N,V,D,myalgia, periorbital edema, eosinophilia	DH	Home (A)
VIRAL												
infectious hepatitis	8-?	Oahu, Hawaii		+		+	5			Abnormal liver function test (LFT)	DH	Home (C)
infectious hepatitis	8-14	NYC, N.Y.	clams				6(60)	26-40 dy.		Jaundice,Abn. LFT	DH	Home (C)
infectious hepatitis	9-16	Sumter, S.C.	water	+			14(40)	1 month		F, anorexia, abn. LFT	MMWR	Camp (B)
infectious hepatitis	9-20	Worcester, Mass.	water	+			59(65)	25 dy.		F,N,C,icterus, abn. LFT	MMWR	School (B)

infectious hepatitis	9-29	Palo Alto, Calif.		+	4(45)	26-39		N,V,F, abn. LFT	DH	Home (D)
infectious hepatitis	10-4	Vernon, Tex.	well water	+	7(8)			F,N,V, abn. LFT	DH	Home (C)
UNKNOWN										
	3-2	Hendricks County, Ind.			9	9-17 ($\bar{x}$ 12)	10	C,D	DH	Restaurant (D)
	3-20	Indianapolis, Ind.			144(800)	$\bar{x}$ 11		D,N,V	DH	School (D)
	3-20	Charleston, W. Va.			9(22)	$\bar{x}$ 3		N,V,H	DH	Restaurant (D)
	4-11	Oak Brook, Ill.	chicken		90(115)	$\bar{x}$ 12	$\bar{x}$ 12	N,V,D,C	DH	Restaurant(D)
	4-16	Easley, S.C.	beef		2	10	72	N,V,D	DH	Restaurant(B)
	4-19	Oak Brook, Ill.	chicken		103(130)	$\bar{x}$ 12	$\bar{x}$ 24	N,C,D,V,F	DH	Restaurant(D)
	5-5	Columbia, S.C.	ham		2(3)	$\bar{x}$ 8	$\bar{x}$ 48	N,V,D	DH	Home (C)
	6-11	Greenwood, S.C.	bologna		2(3)	$\bar{x}$ 8	$\bar{x}$ 72	N,V	DH	Home (D)
	6-26	Concrete, Wash.	beef		3(3)	4-12 ($\bar{x}$ 7)	$\bar{x}$ 55	N,V,C,D,F	DH	Home (D)
	7-8	Madison, N.J.	turkey		200(490)	2-78 ($\bar{x}$ 12)	$\bar{x}$ 26	N,V,C,D,F	DH	School (D)
	7-8	W. Columbia,S.C.	pork		7	$\bar{x}$2½-4½	$\bar{x}$ 48	N,V,C,D,F	DH	Restaurant(B)
	7-9	Ridgeland, S.C.	chicken salad		6(30)	$\bar{x}$ 2-4	$\bar{x}$ 24	N,V,C,D	DH	Home-Plant(C)
	7-10	Washington, Ind.	?cream pie		10(11)	$\bar{x}$ 8	$\bar{x}$ 168	N,V,C,D,F	DH	Restaurant(B)
	7-16	Havana, Ill.			4(4)	2½	$\bar{x}$ 47	N,V,C,D	DH	Home (D)
	7-19	Camp McCall, S.C.	hamburger		10(17)	$\bar{x}$ 6	$\bar{x}$ 24	N,V	DH	Camp (D)
	7-22	Asheboro, N.C.			16(60)			C,N,V, D,H	DH	Camp (D)
	7-22	Fairlee, Vt.	water		93(240)			N,D,C,H,F,V	DH	Camp (B)
	7-27	Martinsburg, W. Va.	crab cakes		3(60)	9			FDA	Restaurant (D)
	7-25	Tacoma, Wash.	french-fried potatoes		3(4)	6-12 ($\bar{x}$ 8)	$\bar{x}$ 36	V,C,D	DH	Restaurant (D)

ETIOLOGY	ONSET	REPORTED FROM	VEHICLE	LAB DATA P.	LAB DATA V.	LAB DATA H.	CLINICAL DATA # ill (at risk)	CLINICAL DATA incub. period (hrs.)	CLINICAL DATA Duration of dis. (hrs.)	CLINICAL DATA Symptoms	REPORTER	COMMENT
	8-11	Kansas City, Kan.	turkey salad				3(3)	3½-4		V,D,C,H	FDA	Home (D)
	8-22	Sunnyvale, Calif.					8(26)	5-22 ($\bar{x}$ 5)		N,C,D	DH	Restaurant(B)
	9-7	Anchorage, Alaska					17(28)	20-48($\bar{x}$ 24)	$\bar{x}$ 36	N,V,C,D,F	DH	Home (D)
	9-11	Clemson, S.C.					84(103)	$\bar{x}$ 12		N,V,D,F,C	DH	School (D)
	9-15	Santa Clara, Calif.	steak and/or salad				121(400)	$\bar{x}$ 10-12	$\bar{x}$ 24-48	N,C,D,F,V	DH	Church picnic (D)
	9-30	Seattle, Wash.	chocolate candy				2	"immediate"		N,V,C,D	DH	Home (D)
	9-?	Indianapolis, Ind.					12(100)	6-12	$\bar{x}$ 9	D	DH	School (D)
	10-8	Hartford, Conn.	shrimp egg roll				3(4)	5-7($\bar{x}$ 6)		C,D,N,F	DH	Restaurant(D)
	10-12	Dallas, Tex.	Mexican food				6(6)	3		C,D,H,V,F	FDA	Home (D)
	10-15	Miami, Fla.	spinach				35(65)	$\bar{x}$ 4	24-30	N,V,C,D	DH	Restaurant(D)
	10-22	Juana Diaz, P.R.	fish				4(8)	½-3½	$\bar{x}$ 2	N,V,C,D	DH	Home (C)
	10-23	Lake Worth, Fla.					155(1,032)	$\bar{x}$ 12		C,D,N,V	DH	School (D)
	10-30	Memphis, Tenn.					8(2,000)	13-54 ($\bar{x}$ 30)	$\bar{x}$ 24	N,V,C,D,F	DH	Caterers-(D) Institution
	11-1	Ft. Wayne, Ind.	corned beef				5	$\bar{x}$ 34	$\bar{x}$ 72	N,C,D,H	DH	Club (D)
	11-2	Mt. View, Calif.					7(10)	4½-12 ($\bar{x}$ 5)	$\bar{x}$ 24	V,D,H	DH	Restaurant (D)
	11-2	Lakewood, Colo.	vegetable-noodle soup				3(3)	2½		C,N,H	FDA	Home (D)
	11-5	Atlanta, Ga.	turkey				86(528)	4-20 ($\bar{x}$ 13)	$\bar{x}$ 12	N,V,C,D,F	DH	School (B)
	11-7	Salt Lake City, Utah	ham dinner				3(3)	½		N,V	FDA	Home (D)
	11-15	Atlanta, Ga.					29(60)	13-73 ($\bar{x}$ 41)	$\bar{x}$ 24	N,V,C,D,F	DH	Fraternity house-school (D)

11-22	New Haven, Conn.		148(183)	12-48($\bar{x}$ 12-15)		C,D	DH	Restaurant(D)
11-27	Sacramento, Calif.	turkey	10(10)	6-19 ($\bar{x}$ 10)	$\bar{x}$ 48	N,V,C,F,H	DH	Home (D)
11-?	Denver, Colo.	stew	3(3)	2½	12-13	N,C,H	FDA	Home (D)
12-2	Abilene, Tex.	lemon pie	2(4)	6½		N,V,C,D	FDA	AFB (D)
12-4	Sebastopol, Calif.	frankfurter	2(2)	3	$\bar{x}$ 9	N,V,D	DH	Home (D)
12-6	Rialto, Calif.	Roquefort dressing	20(56)	$\bar{x}$ 8		N,V,C,D	DH	Restaurant(D)
12-8	San Jose, Calif.		4(4)	8-10	48-72	N,V,C,D	DH	Delicatessen-Home (D)
12-10	Houston, Tex.		5(5)	1-16	4-12	N,C,D	FDA	Home (D)
12-21	Bremerton, Wash.	cookies	5(11)	8-31 ($\bar{x}$ 19)	$\bar{x}$ 36	N,V,F,D	DH	Home (D)
12-26	San Jose, Calif.	cheese fondue	9(18)	11-44($\bar{x}$ 34)		N,V,C,D	DH	Home (D)
12-26	Stone Mountain, Ga.		12(12)	$\bar{x}$ 30	48	N,V,C,D,F	DH	Home (D)
12-26	Albonito, P.R.	roast pork	54(75)	12-41 ($\bar{x}$ 21)	$\bar{x}$ 48	N,D,F,V,C	DH	Fraternity House-School (C)