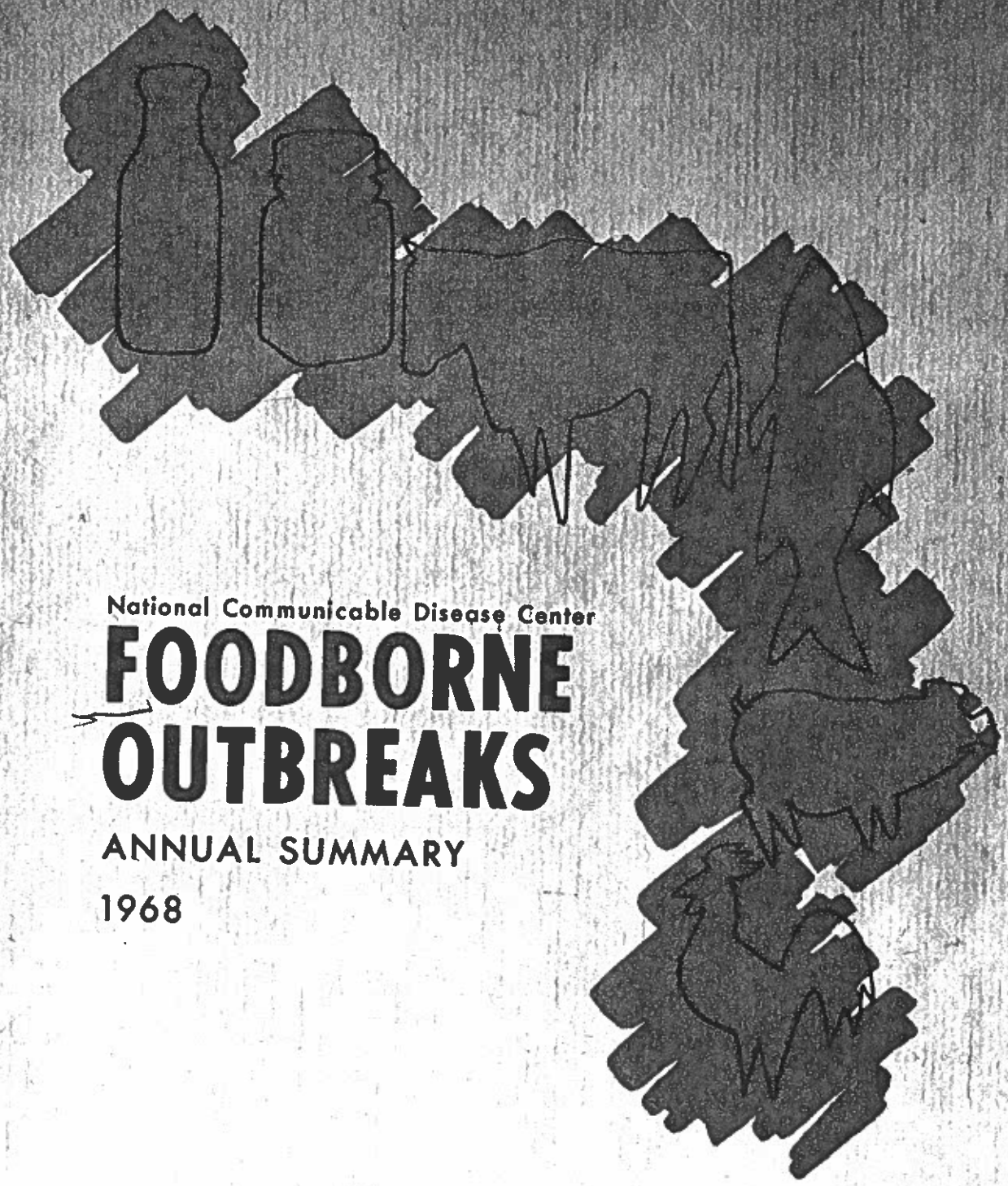

National Communicable Disease Center

FOODBORNE OUTBREAKS

ANNUAL SUMMARY

1968

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 1968." In addition, tabular comparisons of the 1967 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, 3,744 incidents of food poisoning were recorded in 1966, whereas only 181 incidents of food poisoning were reported to NCDC for the same period. The estimated number of episodes for the United States proportionate to the population in England and Wales is over 15,000. 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 incidents 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 C). This form is intended to serve as a check list of relevant parameters which describe and define an outbreak; it also serves as a means by which precise data can be tersely recorded and forwarded to NCDC for subsequent analysis.

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 report thus represent minimal numbers.

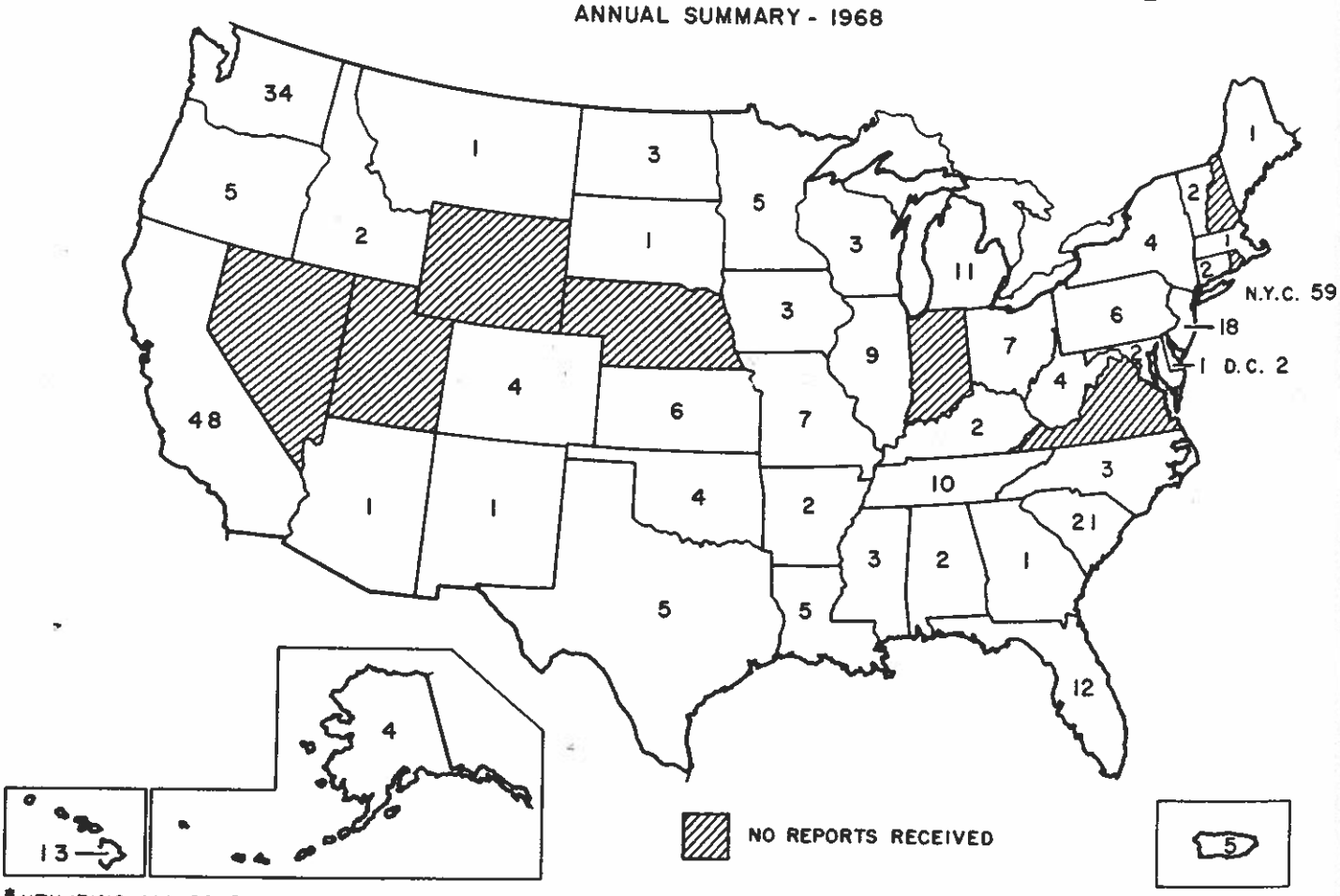
Episodes of food poisoning reported as individual cases have not been included in the tabulation of data -- except for botulism. These cases, however, have been line-listed separately in Section F. Similarly, reports of outbreaks which occurred in 1968 but which were received after the compilation of data, have been line-listed at the end of Section E. These also have not been included in the tabulation.

The following map (Figure 1) shows the geographic distribution of outbreaks in the United States during 1968. Utilizing all sources of information, there were no reports of outbreaks in eight states during this period. In 1967, nine states reported no outbreaks.

Figure 1

NUMBER OF OUTBREAKS* OF FOODBORNE ILLNESS BY STATE

ANNUAL SUMMARY - 1968



*UTILIZING ALL SOURCES OF INFORMATION

Table 1 presents the outbreaks and number of cases for each category of food poisoning. In this table cases of suspected etiology are included under the heading "unknown." Bacterial etiology accounted for 45 percent of the outbreaks and 69 percent of cases of foodborne illness. In all, more than 17,500 individuals suffered from food poisoning during the year.

Table 2 lists the sources which initially reported outbreaks to NCDC. The category, "Department of Health," includes monthly reports of EIS Officers located at state and local health departments. Of the 345 outbreaks recorded for 1968, 301 (87%) emanated from state or local health departments.

Table 3 indicates the number of outbreaks reported directly by state and local health departments for 1967 and 1968. New York City accounted for 19 percent, California for 14 percent. and Washington for 11 percent of the reports from this source. In 1968, 11 state health departments did not report -- compared to 13 in 1967.

Table 4-A 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-B compares 1967 and 1968 data. In 1968, staphylococcal food poisoning was the most common type reported and accounted for nearly one-fourth of all outbreaks and one-fourth of all patients. In 1967, staphylococcus accounted for approximately one-fourth of the outbreaks, but only 9 percent of total cases. Clostridium perfringens food poisoning was the second most commonly reported etiology representing 16 percent of total outbreaks and 34 percent of all patients. In 1967, the respective figures were 14 percent and 16 percent. Salmonella was in third place causing 12 percent of reported outbreaks and 7 percent of cases.

Table 5 lists the mean and range of the number of persons involved in all of the confirmed and unconfirmed outbreaks for 1967 and 1968. In general, outbreaks of C. perfringens and E. coli involved large numbers of individuals in both 1967 and 1968, and staphylococcus involved small groups of people both years. Interestingly, the number of people involved in outbreaks of salmonellosis in 1968 decreased markedly from the 1967 figure. This is due, however, to several large outbreaks of salmonellosis in 1967.

Table 6 lists the attack rates by specific etiology. In the confirmed outbreaks, attack rates were exceedingly high ($\geq$80%) for E. coli and chemical food poisoning, moderately high (>20%) for C. perfringens, salmonella, shigella, staphylococcal, and streptococcal food poisoning, and low (<10%) for hepatitis food poisoning.

Table 7 categorizes the total of confirmed and unconfirmed outbreaks by the number of cases reported and by etiology. It is apparent, for instance, that staphylococcal food poisoning involved smaller groups of people than C. perfringens food poisoning. In 1968, 71 percent of outbreaks involved less than 30 individuals while in 1967, only 58 percent of the outbreaks affected groups of 30 or less. In 1968, there was only one outbreak affecting a group of more than 1,000 people; in 1967, there were two.

Table 8 lists the vehicles of infection by specific etiology. The three most commonly incriminated vehicles in decreasing order of frequency were beef, pork, and turkey. This is consistent with the 1967 results.

Figure 2 is a graph depicting the progressive decrease of milk and waterborne outbreaks with respect to the total number of outbreaks. Perhaps this underscores the existence of tighter control measures insuring the wholesomeness of both water, which is usually chlorinated, and milk, which is usually pasteurized.

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 occurring during food processing in a commercial establishment 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. The vehicles in the etiologic category "unknown" were omitted from this table. Over 43 percent of the vehicles were improperly handled during processing in a commercial eating place, while 6 percent were improperly handled in preparation for marketing. The homemaker was culpable about 9 percent of the time. Unfortunately, the site of improper food handling could not be determined approximately 40 percent of the time. No data are available for comparison with 1967.

Table 10 lists the place at which the suspect food was ingested according to specific etiology. It is apparent that the majority of foodborne outbreaks (60%) occurred in homes and restaurants; however, this represented only 28 percent of the total people ill. While food poisoning in schools accounted for 13 percent of the outbreaks, nearly 40 percent of all persons affected were school children. Illness due to brucella, C. botulinum, and Trichinella spiralis, tended to be caused by foods eaten at home, that due to C. perfringens and S. aureus by foods served in public facilities.

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. Although the total monthly incidence of food poisoning appears to be rather uniform, a rise in staphylococcal food poisoning was noted during the warmer months.

In this report several tables are presented depicting comparable data for the past two years. These data differ from those recorded in the 1967 annual report. In that report incidents of food poisoning -- i.e., individual case reports of food poisoning -- were included in the tabular data. Since the legitimacy of such "outbreaks" are difficult to validate, their contribution to the tables have been extracted and the latter have been amended to allow a strict comparison with the 1968 data.

TABLE I

Etiology of foodborne illness reported to NCDC from all sources
Annual Summary - 1968

	Outbreaks		Cases	
	#	%	#	%
BACTERIAL	156	45.2	12,180	69.3
Brucella	3	.9	10	.1
C. botulinum	3	.9	4	-
C. perfringens	40	11.6	4,878	27.8
E. coli	1	.3	360	2.0
Salmonella	40	11.6	1,280	7.3
Shigella	6	1.7	407	2.3
Staphylococcus	51	14.8	3,994	22.7
Streptococcus	12	3.5	1,247	7.1
PARASITIC				
Trichinella spiralis	8	2.3	80	.5
VIRAL				
Hepatitis	6	1.7	238	1.4
CHEMICAL	13	3.8	81	.5
Miscellaneous	2	.6	71	.4
Unknown *	160	46.4	4,917	28.0
Total	345	100.00	17,567	100.00

*Includes all outbreaks due to unknown and unconfirmed etiology.

TABLE 2

Initial reporting source of foodborne illness
Annual Summary - 1968

Number of reports	Reporters		
301	DH	-	Department of health, state or local; includes reports of EIS Officers located at state and local health departments.
11	FDA	-	Food and Drug Administration
6	Salm.	-	Salmonellosis Unit including Salmonella Surveillance Report, Epidemiology Program, NCDC.
6	AF	-	Armed Forces installation and U.S. Public Health Service, Bureau of Indian Affairs.
2	Ind.	-	Direct report from individual.
4	Bruc.	-	Brucellosis Surveillance Activity, Veterinary Public Health Section, Epidemiology Program, NCDC.
5	Para.	-	Parasitology Unit, Epidemiology Program, NCDC.
8	MMWR	-	Morbidity and Mortality Weekly Report, NCDC.
2	ECA	-	Environmental Control Administration *
345	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 3

Outbreaks of foodborne illness reported by state and local health departments 1967 - 1968

	1967	1968		1967	1968
Alabama	1	0	Missouri	1	3
Alaska	2	4	Montana	0	1
Arizona	0	1	Nebraska	1	0
Arkansas	6	2	Nevada	1	0
California	21	43	New Hampshire	0	0
Colorado	1	3	New Jersey	8	18
Connecticut	1	2	New Mexico	2	1
Delaware	0	1	New York City	47	56
District of Columbia	1	0	New York State	5	2
Florida	3	12	North Carolina	0	2
Georgia	0	1	North Dakota	0	1
Hawaii	3	12	Ohio	3	6
Idaho	1	2	Oklahoma	1	3
Illinois	6	9	Oregon	5	5
Indiana	2	0	Pennsylvania	7	5
Iowa	0	2	Puerto Rico	0	5
Kansas	2	2	Rhode Island	1	0
Kentucky	2	1	South Carolina	1	21
Louisiana	4	3	South Dakota	0	1
Maine	3	1	Tennessee	0	9
Maryland	2	2	Texas	1	2
Massachusetts	0	0	Utah	2	0
Michigan	3	10	Vermont	1	1
Minnesota	3	5	Virginia	1	0
Mississippi	1	2	Washington	9	33
			West Virginia	2	4
			Wisconsin	0	2
			Wyoming	0	0
Subtotal	68	120	Subtotal	99	181

1967 Total - 167

1968 Total - 301

TABLE 4-A

Division by specific etiology of confirmed and unconfirmed outbreaks of foodborne illness
Annual Summary - 1968

	Outbreaks						Patients					
	Confirmed		Unconfirmed		Total		Confirmed		Unconfirmed		Total	
	#	%*	#	%*	#	%*	#	%*	#	%*	#	%*
BACTERIAL	156	84.3	64	85.3	220	84.6	12,180	96.3	2,437	98.4	14,617	96.6
Brucella	3	1.6	1	1.3	4	1.5	10	.1	2	.1	12	.1
C. botulinum	3	1.6	6	8.0	9	3.5	4	0	6	.2	10	.1
C. perfringens	40	21.6	16	21.3	56	21.5	4,878	38.6	1,088	43.9	5,966	39.4
E. coli	1	0.5	5	6.7	6	2.3	360	2.8	874	35.3	1,234	8.2
Salmonella	40	21.6	2	2.7	42	16.2	1,280	10.1	7	.3	1,287	8.5
Shigella	6	3.2	0	0	6	2.3	407	3.2	0	0	407	2.7
Staphylococcus	51	27.6	31	41.3	82	31.5	3,994	31.6	425	17.2	4,419	29.2
Streptococcus	12	6.5	3	4.0	15	5.8	1,247	9.9	35	1.4	1,282	8.5
PARASITIC												
Trichinella spiralis	8	4.3	1	1.3	9	3.5	80	.6	2	.1	82	.5
VIRAL												
Hepatitis	6	3.2	0	0	6	2.3	238	1.9	0	0	238	1.6
CHEMICAL	13	7.0	9	12.0	22	8.5	81	.6	32	1.3	113	.7
Miscellaneous	2	1.1	1	1.3	3	1.2	71	.6	5	.2	76	.5
Unknown			85		85				2,441		2,441	
Total	185	100.0	75	100.0	260	100.0	12,650	100.0	2,476	100.0	15,126	100.0

*Unknown etiology excluded

TABLE 4-B

Division by specific etiology of the total of confirmed and unconfirmed outbreaks of foodborne illness - 1967-1968

	1967				1968			
	Total Outbreaks		Total Patients		Total Outbreaks		Total Patients	
	#	%	#	%	#	%	#	%
BACTERIAL	140	68.6	19,757	89.4	220	63.8	14,617	83.2
Brucella	1	.5	2	0	4	1.2	12	.1
C. botulinum	3	1.5	6	0	9	2.6	10	.1
C. perfringens	28	13.7	3,492	15.8	56	16.2	5,966	34.0
E. coli	5	2.5	819	3.7	6	1.7	1,234	7.0
Salmonella	39	19.1	12,889	58.3	42	12.2	1,287	7.3
Shigella	6	2.9	586	2.7	6	1.7	407	2.3
Staphylococcus	53	26.0	1,912	8.7	82	23.8	4,419	25.2
Streptococcus	5	2.5	51	.2	15	4.3	1,282	7.3
PARASITIC								
Trichinella spiralis	3	1.5	8	0	9	2.6	82	.5
VIRAL								
Hepatitis	9	4.4	196	.9	6	1.7	238	1.4
CHEMICAL	6	2.9	32	.1	22	6.4	113	.6
Miscellaneous	6	2.9	231	1.0	3	.9	76	.4
Unknown	40	19.6	1,878	8.5	85	24.6	2,441	13.9
Total	204	100.0	22,102	100.0	345	100.0	17,567	100.0

TABLE 5

Size (number of people) of outbreaks of foodborne illness of specific etiology - 1967-1968

	1967		1968	
	Mean	Range	Mean	Range
BACTERIAL				
Brucella	2	-	3	2-5
C. botulinum	2	1-3	1	1-2
C. perfringens	125	2-495	107	2-560
E. coli	164	14-700	206	3-477
Salmonella	330	2-9,000	31	2-400
Shigella	98	39-220	68	3-195
Staphylococcus	36	2-401	54	2-1,364
Streptococcus	10	5-23	85	3-600
PARASITIC				
Trichinella spiralis	3	2-3	9	2-47
VIRAL				
Hepatitis	22	3-68	40	5-76
CHEMICAL	5	3-12	5	2-17
Miscellaneous	38	3-177	25	5-66
Unknown	47	3-300	29	2-575
Total	108	1-9,000	51	1-1,364

TABLE 6

Attack rates of foodborne illness
(number ill/number exposed)
Annual Summary - 1968

	Confirmed	Unconfirmed	Total
BACTERIAL			
Brucella	-	-	-
C. botulinum	-	-	-
C. perfringens	31.3	53.8	33.9
E. coli	80.0	26.2	38.6
Salmonella	26.4	-	26.4
Shigella	38.2	-	38.2
Staphylococcus	20.4	33.8	18.0
Streptococcus	27.9	24.1	27.8
PARASITIC			
Trichinella spiralis	39.2	-	39.2
VIRAL			
Hepatitis	8.4	-	8.4
CHEMICAL	90.4	55.2	70.0
Miscellaneous	-	-	-
Unknown	-	-	31.0
Total	25.8	38.6	27.0

Blank spaces indicate insufficient data to calculate attack rates.

TABLE 7

Division of foodborne illness of specific etiology into outbreaks of specific size*
Annual Summary 1968
Selected comparative data 1967

	Size of outbreak							
	1-3	4-10	11-30	31-100	101-300	301-1000	1000+	Unknown
BACTERIAL								
Brucella	3	1						
C. botulinum	9							
C. perfringens	5	11	10	6	20	4		
E. coli	1	2				3		
Salmonella	11	8	12	9	1	1		
Shigella	1		2	2	1			
Staphylococcus	24	24	12	11	9	1	1	
Streptococcus	3	5	4		1	2		
PARASITIC								
Trichinella spiralis	3	5		1				
VIRAL								
Hepatitis		1	1	4				
CHEMICAL	8	12	2					
Miscellaneous		2		1				
Unknown**	23	26	18	12	4	1		
Total 1968	91	97	61	46	36	12	1	
Total 1967	41	43	34	45	24	8	2	7

* Number of people
**Number ill unknown for one outbreak

TABLE 8

Vehicles associated with foodborne illness of specific etiology[1]
Annual Summary 1968
Selected comparative data 1967

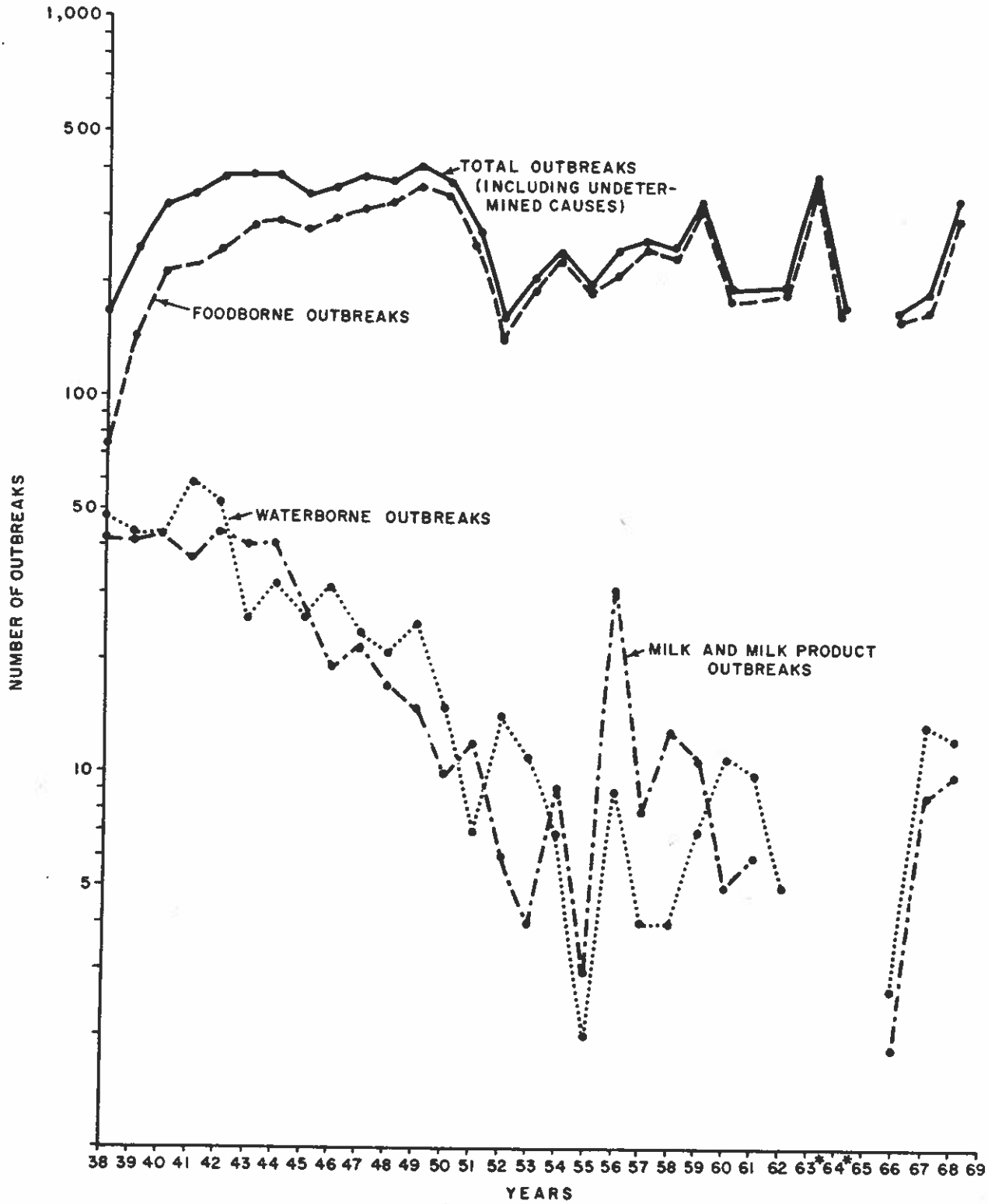
	Turkey*	Chicken*	Egg	Milk	Beef*	Pork	Other meat	Vegetable and fruit	Shellfish	Other fish	Water	Other	Unknown
BACTERIAL													
Brucella				4									
C. botulinum		2			1		1	2		1			2
C. perfringens[2]	17	6			24	2	1	3	1	3		2	2
E. coli			1				1				3	1	
Salmonella[3]	10	2	4		4	4	1	6	1		2	4	6
Shigella[5]		2						2					3
Staphylococcus[4]	8	6	3	4	13	24	2	9	4	3		8	6
Streptococcus[3]	1		3		4	3	1	3	1				1
PARASITIC													
Trichinella spiralis					1	7	1						
VIRAL													
Hepatitis				1							4	1	
CHEMICAL[5]		2	1		2	1		3		3	2	9	
Miscellaneous				1	1	1							
Unknown[6]	7	6	4	1	15	10	2	7	5	4	2	3	23
Total 1968	43	26	16	11	65	52	10	35	12	14	13	28	43
Total 1967	16	7	5	9	35	13	14	11	9	10	15	29	43

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

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

Figure 2

RELATIVE IMPORTANCE OF FOODBORNE vs MILK- AND WATER-BORNE DISEASE OUTBREAKS IN THE UNITED STATES, 1938 – 1968



*DATA INCOMPLETE

TABLE 9

Place where food was mishandled in foodborne outbreaks reported by specific etiology
Annual Summary - 1968

	Food processing establishments	Food service establishments	Homes	Unknown - Unspecified
BACTERIAL				
Brucella		1	3	
C. botulinum	2*		3	4
C. perfringens	2	18	2	34
E. coli	1	3	1	1
Salmonella	3	16	4	19
Shigella		3		3
Staphylococcus	1	43	3	35
Streptococcus		13		2
PARASITIC				
Trichinella spiralis	5	1	3	
VIRAL				
Hepatitis	1	2	2	1
CHEMICAL	1	12	2	7
Miscellaneous		2	1	
Total	16	114	24	106

* 1 vehicle suspected, not proven

TABLE 10

Places of acquisition of foodborne illness of specific etiology
Annual Summary 1968
Selected comparative data 1967

	Home	Restaurant	Banquet	School	Store	Medical Institution	Other	Unknown	Total
BACTERIAL									
Brucella	3	1							4
C. botulinum	7	1	1						9
C. perfringens	6	23	8	14	1	1	2	1	56
E. coli	1	2	1				2		6
Salmonella	15	12	6	1	2	1	5		42
Shigella	1	1	1	1		1	1		6
Staphylococcus	17	27	10	10	10	2	6		82
Streptococcus	6	3		2	3		1		15
PARASITIC									
Trichinella spiralis	9								9
VIRAL									
Hepatitis				3	2		1		6
CHEMICAL	10	8			2		2		22
Miscellaneous	2						1		3
Unknown	19	37	8	13	3	2	3		85
Total outbreaks 1968	96	115	35	44	23	7	24	1	345
Number of persons ill 1968	1,720	3,165	2,768	6,959	343	440	2,168	4	17,567
Total outbreaks 1967	45	57	25	35	10	5	21	6	204
Number of persons ill 1967	274	1,374	11,373	4,129	282	335	4,018	317	22,102

TABLE 11

Monthly occurrence of outbreaks of foodborne illness of specific etiology
Annual Summary 1968
Selected comparative data 1967

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
BACTERIAL													
Brucella	1			1	1				1				4
C. botulinum		1		1	2	1	1	1		2			9
C. perfringens	2	7	6	4	5	7	4	1	4	6	8	2	56
E. coli		1	1		3		1						6
Salmonella	3	3	3	2	4	9	3	3	2	3	6	1	42
Shigella			1	2			1	1	1				6
Staphylococcus	4	5	7	3	11	10	5	12	8	9	7	1	82
Streptococcus		1	1	4	1	1	4	-	-	1	1	1	15
PARASITIC													
Trichinella spiralis			1	1	3		-	1	1	-	-	2	9
VIRAL													
Hepatitis	1				2		1	1	1	-	-	-	6
CHEMICAL	3	2	2	1		3	1	1	4	3	1	1	22
Miscellaneous				1			1	-	-	1	-	-	3
Unknown	8	6	9	6	5	8	5	7	5	14	6	6	85
Total 1968	22	26	31	26	37	39	27	28	27	39	29	14	345
Total 1967*	4	11	9	18	18	16	16	23	23	24	27	11	204

*Four outbreaks - dates unknown

Section D - 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.

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
F - fever
H - headache
A - anorexia
O - other

Reporter - see Table 2 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 establishments" - 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.

ANNUAL SUMMARY

Line listing of foodborne outbreaks reported to the National Communicable Disease Center during 1968*
(*This line listing excludes those reports previously listed in the Foodborne Outbreak Status Report - January-June 1968)

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												
BRUCELLA												
Brucella	1-?	California	unpast. milk	+	-	-	2				Bruc.	raw cow & goat milk in Italy (C)
Brucella	4-15	North Dakota	unpast. milk	+	-	-	3				Bruc.	raw milk (C)
Brucella	9-23	California	cheese	+	-	-	5			N,V,F,chills, weakness	Bruc.	cheese in Mexico (B)
CLOSTRIDIUM BOTULINUM												
C. botulinum type B	7-22	St. Joseph, Mich.	chicken & chicken soup	+			2(2)	~ 4 dy.		1 death	FDA	Home (C)
C. botulinum type A	10-17	Los Angeles, Calif.	chopped chicken liver		+		1	3-5 dy.		death	DH	home (A)
Prob. botulism	6-11	Muskegon, Mich.	rare hamburger				1(2)	24 hr.		recovery	DH	home (D)
Prob. botulism	8-29	Orange County, Calif.	home-preserved fruit				1	24 hr.		recovery	DH	restaurant (D)
Prob. botulism	10-27	Huntington, Tenn.					1			recovery	DH	home (D)
CLOSTRIDIUM PERFRINGENS												
C. perfringens	1-?	Richland, S.C.	hamburger		+		4(15)				DH	(D)
C. perfringens	2-8	Ann Arbor, Mich.	beef		+		194(500)	7-26 hr. med. 18 hr.		N,C,D, chills	DH	school (D)
C. perfringens	2-?	Sumter, S. C.	chicken stew		+		130(650)	13 hr.		N,C,D	DH	school (D)
C. perfringens	3-31	Hawaii		+			89(170)	$\bar{x}$ 13.8	1-2 dy.	H,N,C,D,F	DH	commercial luau (D)

C. perfringens	7-8	Towtowa, N.J.	lamb	+	+		148(260)	3-16 hr.		D	DH	school (B)
C. perfringens hobbs type 1	7-18	Chester, Conn.	meat loaf	+	+		2			D	DH	camp (D)
C. perfringens hobbs type 10	7-26	Hawaii	chicken gravy	+			6(7)	9-15 hr.	1-2 dy.	N,C,D	DH	restaurant (D)
C. perfringens	7-31	Tracy, Calif.	beef enchiladas		+		29 (1,400)	2-13 hr.	2-5 hr.	C,D,N,	DH	vocational institution (B)
C. perfringens	9-14	New York City	roast beef		+		>560 (1,800)	2-26 hr. $\bar{x}$ 15 hr.	12-24 hr.	C,D,N,V,F	DH	banquet (B)
C. perfringens PS 38, PS 80	9-25	Mendenhall, Miss.	turkey		+		191 (273)	18-22 hr. $\bar{x}$ 20 hr.	$\bar{x}$ 6 hr.	C,D	DH	school (D)
C. perfringens	9-20	New York City	roast beef, ham, corned beef, pastrami		+		7	7-24 hr.	4-27 hr.	C,D	DH	restaurant (B)
C. perfringens type PS 17	10-6	Greenville, Tenn.	tuna salad	+			160 (212)	9-48 hr.		N,V,D,F,C,H	DH	school (D)
C. perfringens	10-9	Lackland, Tex.	mushroom sauce	+	+		400 (900)	8 hr	24 hr.	C,D,N	AF	military base (B)
C. perfringens hobbs type 13 and PS 30	10-16	Whitley City, Ky.	turkey	+		+	141 (613)	$\bar{x}$ 11 hr.		C,D,V,F	DH	school (B)
C. perfringens	10-16	Seattle, Wash.	roast beef	+	+		8(60)	2-18½ hr. $\bar{x}$ 12 hr.	$\bar{x}$ 6 hr.	N,D,C,H	DH	restaurant (D)
C. perfringens	11-12	Fort Sill, Okla.	pork	+			124 (~ 500)	9-12 hr.	36 hr.	D,C	AF	cafeteria (D)
C. perfringens	11-17	Worden, Wash.	beef tongue	+	+		15 (25)	11-13 hr.	12 hr.	D,C,N,H	DH	home (D)
C. perfringens	11-26	New York City	pot roast		+		10 (500)	$\bar{x}$ 14 hr.	$\bar{x}$ 30 hr.	D,N,V,C	DH	restaurant (B)
C. perfringens	11-27	W. Palm Beach, Fla.	turkey		+		6	8 hr.	24 hr.	D, weakness, prostration	DH	restaurant (B)
C. perfringens	11-28	Hickory, N.C.	turkey and/or gravy		+		218 (448)	7-15 hr. $\bar{x}$ 9 hr.	$\bar{x}$ 18 hr.	N,V,D	DH	caterer (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
C. perfringens	11-7	York, S.C.	hash		+		15	18 hr.		C,D	DH	church group (D)
C. perfringens	12-9	Davidson County, Tenn.	beef	+		+	108 (230)	6-14 hr.	6-12 hr.	C,D,N	DH	restaurant (D)
C. perfringens	12-18	Pauls Valley, Okla.	turkey & dressing				22 (25)	$\bar{x}$ 13 hr.	$\bar{x}$ 22 hr.	C,D,N,V	DH	restaurant (D)
Prob. C. perfringens	4-18	Seattle, Wash.	roast beef and/or gravy	+			2	12-14 hr.	<24 hr.	N,V,C,D	DH	restaurant (D)
Prob. C. perfringens	5-13	Flemington, N.J.	turkey gravy				~200	$\bar{x}$ 14 hr.	$\bar{x}$ 10 hr.	D,C,N	DH	restaurant (B)
Prob. C. perfringens	6-8	Long Beach, Calif.	mushroom-meat gravy				151 (371)	2.5-20.5 hr. $\bar{x}$ 12.5	$\bar{x}$ 5-10	D,C,N,H	DH	restaurant (D)
Prob. C. perfringens	6-17	Chesilhurst, N.J.	turkey gravy				16 (21)	med. 12 hr.	med. 18 hr.	C,D	DH	restaurant (D)
Prob. C. perfringens	6-23	Tacoma, Wash.	meat loaf and/or gravy	+			8 (9)	12-13½ hr. $\bar{x}$ 12 hr.	12 hr.	N,C,D	DH	restaurant (D)
Prob. C. perfringens	6-24	Seattle, Wash.	chinese food	+			3	10½-11½ hr.		C,D	DH	restaurant (D)
Prob. C. perfringens	8-21	Edmond, Okla.	roast beef hash				25 (93)	7-23 hr. $\bar{x}$ 10-12 hr.	15 hr.	D,C,N,V	DH	school (D)
? C. perfringens	9-9	Seattle, Wash.	clam chowder				2	$\bar{x}$ 13 hr.	12-24 hr.	C,D,V	DH	restaurant (B)
? C. perfringens	10-2	Seattle, Wash.	fish balls				15 (20)	9½-19½ hr. $\bar{x}$ 11½ hr	med. 12 hr.	C,D	DH	caterer (D)
? C. perfringens	10-9	Bloomington, Minn.	chicken base gravy	+			112 (257)	8-16 hr.		D,C	DH	school (B)
? C. perfringens	11-26	New York City	?roast beef				80 (125)	12-20 hr. $\bar{x}$ 12 hr.		C,D,N	DH	caterer (D)

? *C. perfringens*	11-29	Winston-Salem, N.C.	turkey or dressing				4(4)	10-12 hr.	12 hr.	C,D	Ind.	restaurant (D)
ESCHERICHIA COLI												
? coliforms	5-31	New Jersey	water		+		477		x̄ 48 hr.	D,V,N,C,H,F	DH	floods contaminating water system (A)
? coliforms	7-28	Lincoln County, Ore.	water		+		>375 (1,391)	5-72 hr. x̄ 36-48 hr.	1-5 dy.	F,N,V,C,D, chills	DH	defective well, private camp (B)
SALMONELLA												
S. typhi-murium	1-21	Everett, Wash.	?salad	+		+	2			D,F,C	DH	hospital (B)
S. blockley	3-2	Seattle, Wash.	turkey	+			4(5)	20-28 hr.	48 hr.-3 wk.	N,V,D,H	DH	home (D)
S. newport	5-25	Fort Walton, Fla.	turkey	+		+	30(60)	18-48 hr.			DH	caterer (D)
S. newport	5-27	Fort Walton Beach, Fla.	turkey	+		+	20(49)	~24 hr.			DH	caterer (D)
S. braenderup	6-8	Canton, Kan.	salad	+		+	7(13)	~24 hr.		D,C,N,F	FDA Salm.	restaurant (B)
S. braenderup	6-10	McPherson, Kan.	salad	+		+	19(25)	~24 hr.		D,N,F,C	FDA Salm.	restaurant (B)
S. oranienburg	6-16	Pennsylvania		+			13(42)			N,V,C,D	Salm.	restaurant (D)
S. infantis	6-23	Hawaii		+			2 (400)	13-14 hr.		N,V,C,D,F	DH	caterer (D)
S. typhi	6-28	Yakima, Wash.	?water in soda	+			3	19-21 hr.	10-14 hr.	F,D,N	DH	rodeo on Indian reservation (D)
S. braenderup	7-19	New York City	turkey	+	+	+	3(3)	7-14 hr.	3-5 dy.	C,D,N,V,F	DH	restaurant (B)
S. thompson	7-23	Los Angeles, Calif.	egg roll, won tons, soybean cakes	+		+	6(10)	< 24 hr.		D,C,F	DH Salm.	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. enteritidis	8-8	Troy, Ohio	ice cream	+	+		12(12)	8-20 hr. x̄ 10 hr.	x̄ 6 dy.	N,V,D,F, weakness	DH	home (C)
S. typhi phage type C-1	8-25	Audrain County, Mo.	?water	+		+	26(189)	12 dy.		H,C,F, myalgia, malaise	DH	camp (B)
S. typhi-murium var. copenhagen	8-?	New Jersey	cake		+	+	2(3)	18 hr.		F,C,D, weakness, chills	DH	home (C)
S. enteriditis	9-3	Cambridge, Mass.	cake	+	+		3(3)	24 hr.		D,C,H,F	ECA	home (D)
S. orion	9-7	Gleenwood Springs, Col.	ham & beef sandwiches	+	+	+	23(37)	x̄ 16-18 hr.		D,C,N,V,F	DH	picnic (B)
S. St. paul	10-6	Heidlersburg, Pa.	turkey	+		+	>112 (600)	7.5-103.8 hr. med. 29.3 hr.		C,N,V,F,D	DH	restaurant (B)
S. St. paul	10-16	Shelby County, Tenn.	turkey	+	+		98 (116)	med. 23 hr.		D,C,F,N,V	MMWR	church banquet (A)
S. give	10-26	Hawaii	packaged lau lau	+			2(5)	12-18 hr.	3-4 dy.	H,N,D,C,F	DH	store (D)
S. enteriditis	11-14	Grand Forks, N.D.		+			~16 (~80)			F,C,D	DH	college (D)
S. reading	11-23	Walla Walla, Wash.	turkey	+			33 (42)	13-52 hr.	x̄ 5.1 dy.	D,C,F,N	DH	banquet (A)
S. typhi-murium	11-27	Appanoose County, Iowa	ice cream	+			21 (~30)	24 hr.	1-27 dy.	F,V,D, chills	Salm.	church group homemade ice cream (D)
S. enteriditis	11-28	Jersey City, N.J.	turkey and/ or stuffing	+	+		17 (18)	3-18 hr. x̄ 8.3 hr.		N,V,D,F	DH	home stuffing-contained sausage-2 deaths (D)
S. bareilly	11-?	Wilmington, Del.		+		+	>49 (133)	7½ hr.-3 dy.		N,V,F,D,C	DH Salm.	hotel (D)
S. typhi-murium	12-7	Emmett, Idaho		+			38 (325)	3-48 hr.		F,C,D	DH	smorgasbord (D)

salmonella	6-23	Kansas City, Mo.	chopped liver				40	20-30 hr.		C,D,V	FDA	caterer (D)
salmonella group B	7-15	Phoenixville, Md.	shrimp and/or hollandaise sauce	+			2(4)	30 hr.		N,C,F,V, prostration	DH ECA	restaurant (D)
? salmonella	11-29	Seattle, Wash.	turkey				4(6)	21-36 hr.	1-3 dy.	N,V,C,D,H,F	DH	home (D)
SHIGELLA												
S. flexneri 2a	3-18	Hawaii		+			30	30-45 hr.		H,N,C,D,F	DH	college (D)
S. flexneri	4-2	White Swan, Wash.	potato salad	+			60 (105)	$\bar{x}$ 48 hr.		C,D,V,F	AF	church dinner (B)
S. sonnei	7-15	York County, Pa.	chicken and/or potato salad	+			3(8)	25 hr.		N,V,C,D,F, prostration	DH, ECA	picnic (D)
S. sonnei	8-28	New York City		+			21(234)		3-5 dy.	D	DH	hospital (D)
S. sonnei	9-24	Dayton, Ohio	chicken and potato salad	+		+	98 (130)	12-70 hr.		D,F,C,N,V	DH	caterer (B)
STAPHYLOCOCCUS												
S. aureus phage type 53	2-28	Miami, Fla.	turkey gravy		+	+	140 (669)	$\bar{x}$ 3-5 hr.	<24 hr.	N,V,D,weakness, prostration	DH	school (B)
S. aureus	4-14	Hawaii	chicken	+			5(7)	4-5 hr.		N,V,C,D	DH	store (D)
S. aureus	5-16	Bellvue, Wash.	chopped salami in salad		+		2	1½-2 hr.		D,N,V,C	DH	restaurant (D)
S. aureus phage type 80/81/42E	5-21	Miami, Fla.	cake		+	+	15	2 3/4 hr.		N,V,D	DH	bakery (B)
S. aureus	5-?	Richland, S.C.	pork		+		3(8)	3 hr.		N,V,D	DH	restaurant (D)
S. aureus	6-16	New York City	hamburger		+		3(6)	2½-7½ hr.	24-72 hr.	N,V,C,D	DH	restaurant (B)

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
S. aureus	7-1	Bozeman, Montana	shrimp		+		2(2)	1-6 hr.	2-12 hr.	C,V,D,N	DH	store (D)
S. aureus	7-20	Des Moines, Iowa	beef	+		+	30(270)	3½ hr.		N,V,C,D	DH	banquet (B)
S. aureus phage type type 6/47/53	8-1	Coldwater, Kan.	potato salad--ham	+	+		22(95)			V,D,C, weakness, diaphoresis	FDA	banquet (B)
S. aureus	8-8	Charleston, W. Va.	cheese		+		2(3)	3 hr.	3-12 hr.	N,V,D	DH	restaurant (D)
S. aureus phage type 6/7/42E/47/53/54/73/75/81/83/B	8-14	New York City	ham		+	+	3	3 hr.		N,V,D	DH	restaurant (B)
S. aureus type 85	8-21	Miami, Fla.	submarine sandwich	+	+		5(8)	2-6 hr. $\bar{x}$ 3.5 hr.		C,V,D,N	DH	home (B)
S. aureus	8-22	Brandon, Fla.	ham	+	+	+	44(56)	2.8 hr.	<24 hr.	N,V,C,D	DH	picnic (B)
S. aureus	8-24	Elmira, N.Y.	roast beef	+	+		~200 (~4,500)	$\bar{x}$ 4 hr.		V,D,C	FDA	catered picnic (B)
S. aureus	8-25	Nashville, Tenn.	ham and/or beans, potatoes		+		14(50)	1½-6 hr.		N,V	DH, FDA	church supper (D)
S. aureus	8-29	San Jose, Calif.	corned beef			+	6	2½-5½ hr.	$\bar{x}$ 15 hr.	N,V,D	DH	restaurant (B)
S. aureus	9-3	Ponce, P.R.	ham	+	+		~140 (~446)	$\bar{x}$ 4 hr.		V,D,C,H	DH	catered food in hospital (B)
S. aureus phage type 53	9-12	Pittsburg, Pa.	ham loaf		+	+	4	$\bar{x}$ 3½ hr.	24 hr.	N,V,D,C	DH	store (B)
S. aureus phage type 86/42E/47/53/75/42D/81 Enterotoxins A & C	9-12	Morton, Miss.	eggs in tuna salad		+	+	406 (1,241)	1-9 hr. $\bar{x}$ 3½ hr.	$\bar{x}$ 6 hr.	V,D	DH	school (B)
S. aureus	9-17	Walsenburg, Col.	beef and pork hash		+		79 (297)	4-6 hr.		N,V,D	DH	school (D)
S. aureus	10-15	Plantation, Fla.	ham		+		>90 (160)	3-5 hr.		N,V,D	DH	banquet (B)

S. aureus phage type 6/47/53/85 Enterotoxins A & D	10-17	Seattle, Wash.	turkey	+	+	+	78(300)	1½-6 hr. med. 3½ hr.	14 hr.-3 dy.	N,V,D,C,H, chills	DH	bazaar (B)
S. aureus	10-?	Newberry, S. C.	pork		+		15(300)	4 hr.		N,V,D	DH	school (D)
S. aureus phage type 47/54/75/77 Enterotoxin A	11-10	Waukesha Co., Wisconsin	ham	+	+	+	28	1¼-3 hr.		V,D, prostration	DH	store, 1 death (B)
S. aureus	11-12	Washington, D.C.	corned beef		+		52	3-5 hr.	12-24 hr.	N,C,V,D	AF	cafeteria (B)
S. aureus	11-18	Stockton, Calif.	custard cake		+		4 (6)	4-5½ hr.	6-24 hr.	N,V, chills, malaise	DH	home (B)
S. aureus phage type 42E/77+	11-22	Prairie Village, Kansas	corned beef and roast beef		+	+	17	4-6 hr.		N,V,C,D,	DH	restaurant (B)
S. aureus	11-25	Memphis, Tenn.	pork		+	+	59(150)	$\bar{x}$ 5.1 hr.	$\bar{x}$ 12 hr.	N,V,C,D	DH	school (B)
S. aureus phage type 53	11-26	Hialeah, Fla.	turkey	+	+	+	207 (890)	2-8 hr. $\bar{x}$ 4-5 hr.	4.1 hr.	N,V,D,C,H, weakness	DH	school (B)
S. aureus	12-20	Ponce, P. R.	pork		+		2	½ hr.		V,C,H, dizziness	DH	hospital (D)
Prob. S. aureus	5-23	Seattle, Wash.	crab		+		2	1½ - 3 hr.	4 hr.	N,V,C,	DH	restaurant (D)
Prob. S. aureus	6-9	Lakewood, N.J.	eggs				8 (15)	$\bar{x}$ 3 hr.	< 24 hr.	N,V,D	DH	home (C)
Prob. S. aureus	7-5	New York City	Chinese fried rice			+	9 (10)	½ - 1½ hr.	$\bar{x}$ 36 hr.	N,V,D,C	DH	restaurant (B)
Prob. S. aureus	7-19	San Diego, Calif.	shrimp				3 (3)	2½-4½ hr.	$\bar{x}$ 3 hr.	N,V,C,D	DH	home (B)
Prob. S. aureus	8-16	Mt. View, Calif.	barbeque ham				2	3½ hr.	12 hr.	N,V,D	DH	restaurant (D)
? Staph	5-7	New York City	cream cake		+		3 (3)	2-6½ hr.	24-36 hr.	N,V,D,C	DH	home (D)
? Staph	6-26	Sacramento, Calif.	?eggs				3 (4)	2-11½		N,V,C	DH	restaurant (D)
? Staph	6-?	Oak Harbor, Wash.	?chocolate candy				9 (11)	5 hr.	7-10 hr.	C,N,D	DH	home (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		
? Staph	7-26	Illinois	ham				3 (4)	1-4 hr. $\bar{x}$ 2½ hr.		N,C,D	DH	restaurant (D)
? Staph	8-11	Blue Creek, W. Va.	ham				3 (3)	1 hr.	$\bar{x}$ 36 hr.	N,V,C,D	DH	food eaten in field (D)
? Staph	8-26	Morgantown, W. Va.	turkey		+		199 (315)	$\bar{x}$ 8 hr.	$\bar{x}$ 1½ hr.	N,V,C, weakness, myalgia	DH	school (B)
? Staph	8-?	Olympia, Wash.	green beans				7 (9)	$\bar{x}$ 3.9	several hours	N,V,D,C	DH	home (D)
? Staph	9-8	New York City					3 (3)	1½ - 4 hr.	48 hr.	D,C,N,V,H	DH	restaurant (B)
? Staph	9-26	Mayaguez, P. R.	codfish salad				23(25)	2-4½ hr.	3-10 hr.	C,V,D,H,F	DH	prison (D)
? Staph	9-31	Miami, Fla.	salad dressing				2	2 hr.		N,V,D,C	DH	restaurant (D)
? Staph	9-?	Port Huron, Mich.	custard buns				36	~4 hr.		C,D,N,V	DH	bakery (B)
? Staph	10-7	New York City	lamb chops and sauce				3 (4)	4 hr.		N,V,H	DH	home (D)
? Staph	10-17	Towtowa, N. J.					9 (45)	4-13 hr.	$\bar{x}$ 8 hr.	V,D,F	DH	school (D)
? Staph	10-22	Harrison, N. J.	chicken				2 (2)	1½ - 3 hr.	½ dy.	V,D	DH	home (D)
? Staph	10-22	Muskegon, Mich.	turkey and dressing				8 (11)	4-8 hr.	30-36 hr.	V,D	DH	home (D)
? Staph	10-24	Seattle, Wash.	rice and pork		+		3 (5)	3/4-1 1/4 hr. med. 1 hr.	$\bar{x}$ 4 hr.	N,V,C,D,H	DH	restaurant (D)
? Staph	10-?	Ephrata, Wash.					4 (5)	5-10 hr.		N,V,C,D	DH	home (D)
? Staph	11-?	Olympia, Wash.					7 (13)	1-7 hr.	5 hr.	H,N,C,D	DH	home (D)

STREPTOCOCCUS											
Group G	10-16	Vermont	egg salad	+			172 (502)	~3 dy.		H,F, pharyngitis chills	MMWR	school (D)
Group A beta hemolytic	11-15	Pratt, Kan.	egg salad	+		+	~400 (850)	x̄ 20-30 hr.		H,F,V, pharyngitis chills	DH	school (B)
Enterococcus	4-29	New York City	roast beef		+		22 (45)	14 hr.		C,D	DH	caterer (B)
Enterococcus	6-22	New York City	shrimp		+		5 (5)	8-21 hr.		N,V,D,C	DH	home (B)
Enterococcus	7-15	New York City	macaroni salad and ham		+		3 (3)	2½-3 hr.		N,C,D	FDA, DH	store (B)
Enterococcus	7-18	New York City	roast beef and sausage		+		3(3)	2-5 hr.		N,V,C,D	DH	restaurant (B)
Enterococcus	7-23	New York City	ham		+		4 (6)	5½ hr.		N,V,C	FDA,DH	home (B)
Enterococcus	7-25	New York City	roast beef		+		3 (8)	12-21 hr.	2 dy.	D,C,N,V	DH	store (B)
? Enterococcus	3-24	New York City	manicotti		+		25(120)	3½-16½ hr. x̄12 hr.	12-72 hr. 18 hr.	C,D	DH	restaurant (B)
? Enterococcus	12-31	New York City					4 (4)	5½-7½ hr. x̄ 6½ hr.	24 hr.	N,V,C	DH	restaurant (B)
CHEMICAL											
Histamine	1-16	Hawaii	frozen taiwan mahimahi	+			6	15-30 m.	1-2 dy.	H,C,D,flushing chills	DH	home (D)
Zinc	6-20	Port Arthur, Tex.	ice	+	+		17	20-30 m.		C,V, prostration	DH	restaurant (D)
Scombroid fish poisoning histamine-like substance	7-19	New York City	tuna fish		+		8 (9)	30 m.	1-4 hr.	N,D,C,H, flushing, urticarial rash conjunctivitis	DH	home (B)
Carbophenothion (Trithion)	8-19	Brookshire, Tex.	tortillas		+		6	1-7 hr.		N,V,C,D,F, leg cramps, miosis, respiratory distress	MMWR	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
Monosodium Glutamate (Chinese food poisoning)	9-27	Seattle, Wash.	Chinese food				3 (5)	15-30 m. $\bar{x}$ 15 m.	$\bar{x}$ ½ hr.	Paresthesias of neck and extremities, blurred vision, tachypnea, palpitations	DH	restaurant (B)
Histamine-like substance (Scombroid fish poisoning)	10-4	New York City	tuna fish				5 (5)	20-30 m.	2-6 hr.	D,C, rash palpitations	DH	home (C)
Monosodium Glutamate (Chinese food poisoning)	10-17	Pompano Beach, Fla.	won ton soup				3 (5)	10-15 m.	$\bar{x}$ 1 hr.	H, flushing paresthesias	DH	restaurant (B)
Prob. Chinese food poisoning	9-12	New York City	?egg drop soup				3 (3)	20 m.	3-18 hr.	H, paresthesias of face and neck, neck pain	DH	restaurant (B)
Prob. copper poisoning	9-13	New York City	soda				5 (25)	5 m.	3 hr.	N,V,C	DH	store (B)
? Chemical	9-8	Anchorage, Alaska	asparagus in rusty can				2 (2)	2½ hr.		H,N,V, malaise dizziness	DH	camping (A)
? Chemical	10-8	New York City	chicken noodle soup				3 (4)	30 m.	7 hr.	V,C	DH	home (D)
? Chemical	11-11	Chicago, Ill.	pancakes				6 (10)	1 hr.		C,N,V,H, dizziness	DH	home (D)
? Chemical	12-6	Trenton, N. J.	sausage				3 (4)	2 hr.	6 hr.	N,F,V, prostration	DH	home (D)
PARASITIC												
Trichinella spiralis	5-9	Syracuse, N. Y.	pork	+			4 (4)	2½ wk.		periorbital edema, eosinophilia	Para.	home (A)
Trichinella spiralis	5-?	New Berlin, Wisc.	raw hamburger	+			8	1 wk.		eosinophilia	MMWR	home (B)
Trichinella spiralis	8-1	Anchorage, Alaska	black bear	+	+		8 (30)	~20 dy.		F, myalgia, periorbital edema, eosinophilia	DH	home (C)

Trichinella spiralis	9-4	New York City	pork	+		2	24 hr.		peri. edema eosinophilia	Para.	home (A)
Trichinella spiralis	12-28	Washington, Mo.	raw pork sausage	+	+	47			H,F, peri. edema eosinophilia, myalgia, conjunctivitis	MMWR	home (A)
Trichinella spiralis	12-?	Washington, Miss.	pork	+	+	4 (10)	9 dy.		F,V,D, myalgia periorbital edema, eosinophilia	MMWR	home (C)
VIRAL											
Hepatitis	7-28	Cuyahoga Co., Ohio	?water			5 (16)	13-33 dy.		jaundice, bilirubinuria, abnormal LFT's	DH	picnic (C)
Hepatitis	8-10	San Pedro, Calif.	cream cakes			76	$\bar{x}$ 28.1 dy.		anorexia, N,C, icterus, SGOT	DH	bakery (B)
Hepatitis	9-9	Limestone Co., Ala.	?water			21 (~750)			jaundice, bilirubinuria, SGOT	MMWR	school (D)
OTHER											
Bacillus cereus	7-9	Brookfield, Vermont	meat casserole		+	66 (100)	11-21 hr. $\bar{x}$ 16½ hr.	1-48 hr. $\bar{x}$ 11.3 hr.	D,N,C	DH	camp (B)
Mycobacterium bovis	10-?	Wayne Co., Ohio	unpast. milk	+	+	5			Positive tuberculin skin test	DH	farm tuberculosis cows (C)
UNKNOWN											
	1-?	Chehalis, Wash.				5 (6)	36 hr.	2-3 dy.	C,N,V,D	DH	restaurant (D)
	1-?	Beaufort, S. C.	chicken			2 (2)			N,D	DH	restaurant (D)
	1-?	Richland, S. C.	pancake and eggs			2 (2)	24 hr.		N,C	DH	restaurant (D)
	1-?	Richland, S. C.	hamburger			2 (3)	5 hr.		N,C,D	DH	restaurant (D)
	1-?	Jasper, S. C.	hamburger			24(32)	25 hr.		N,V,F	DH	restaurant (D)
	1-?	Richland, S. C.	shrimp			15(113)	11 hr.		C,D	DH	restaurant (D)
	2-?	Clarendon, S. C.	turkey			575 (900)	14 hr.		N,C,D	DH	school (D)

ETIOLOGY	ONSET	REPORTED FROM	VEHICLE	LAB DATA P.	V.	H.	CLINICAL DATA # ill (at risk)	incub. period (hrs.)	Duration of dis. (hrs.)	Symptoms	REPORTER	COMMENT
	2-28	Coral Gables, Fla.					30(730)	$\bar{x}$10-18 hr.		N,V,D, leukocytosis	DH	school (D)
	3-18	Hawaii					10	24 -36 hr.	1-3 dy.	N,V,C,D, chills	DH	restaurant (D)
	3-26	New York City					26			N,V,C,D	DH	hospital (D)
	3-?	Spokane, Wash.					6 (6)	10 - 14 hr.		C,N,V,D	DH	home (D)
	3-?	Barnwell, S.C.	chicken				65(700)	13 hr.		D	DH	school (D)
	3-?	Greenwood, S.C.	hot dogs				3(3)	1½ hr.		N,D	DH	restaurant (D)
	3-?	Richland, S. C.	hot dogs				4(4)	7 hr.		N,V,C	DH	restaurant (D)
	5-13	Seattle, Wash.	chicken liver				2 (9)	$\bar{x}$ 2½ hr.		D,C,V, chills	DH	restaurant (D)
	5-20	New York City					3 (3)	9-20 hr.	2-3 dy.	N,V,D,C	DH	home (D)
	6-3	New York City	?roast beef				3 (3)			C,D	DH	restaurant (D)
	6-9	New York City	?tongue and chopped liver				~20 (130)	3-17 hr.		D,C	DH	caterer (B)
	6-15	Aurora, Ill.	?beef				3	2-2½ hr.			DH	home (D)
	6-26	New York City	shrimp or steak				3 (3)	½-5 hr.		D,C,N,V,F	DH	restaurant (D)
	6-27	Independence, Mo.	frankfurters				4 (4)			V,D,F	FDA, DH	home (D)
	6-?	Georgetown, S.C.	seafood				5(300)	3 hr.		N,V,C	DH	restaurant (D)
	7-6	Coyote, Calif.	steak				28(48)	12-50 hr. med. 30 hr.		N,V,C,F, myalgia	DH	banquet (D)

7-10	San Jose, Calif.	beef	5 (6)	8-10 hr.	$\bar{x}$ 12 hr.	C,D	DH	restaurant (D)
7-19	Lynwood, Wash.	egg salad and ham	60(65)	$\bar{x}$ 31 hr.	$\bar{x}$ 24 hr.	N,V,D,H,F, myalgia	DH	home (D)
7-20	Sedalia, Mo.	hamburger	18(48)	4-10 hr.		V,C,D	FDA, DH	store (D)
7-?	Olympia, Wash.	?water	15	12-60 hr.	6-12 hr.	N,V,D	DH	picnic (D)
8-2	Kansas City, Mo.	roast beef	4 (10)	3½-5 hr.		V,D,N, prostration	ECA	restaurant (D)
8-27	Carmichael, Calif.	ice cream	6 (6)	8-12 hr.	~12 hr.	N,V,D	FDA	home (D)
8-28	Oakland, Calif.	prosciutto ham	6 (6)	24-48 hr.	$\bar{x}$ 1 dy.	N,V,D,C,F	DH	home (D)
8-29	Arkansas		60(480)			C,N,V	DH	picnic (D)
8-?	Lexington, S. C.	macaroni salad	2(2)			N	DH	restaurant (D)
8-?	Richland, S. C.	chicken	4(7)	4 hr.		N,V,C,D	DH	restaurant (D)
8-?	Spokane, Wash.		2	1 hr.	18 hr.	N,V, dizziness	DH	restaurant (D)
9-11	New York City		13(16)	21-44 hr. med. 33½ hr.	48 hr.	H,N,V,C,D	DH	restaurant (D)
9-24	New York City	?lamb	4(5)	6 hr.	2-6 dy.	N,V,C,D	DH	home (D)
9-28	Hawaii	kalua pork or chicken long rice	17(235)	10-16 hr.	1-2 dy.	C,D, chills	DH	commercial luau (D)
9-?	Bremerton, Wash.		5(5)	8-9½ hr.	12 hr.	H,N,V	DH	home (D)
9-?	Lancaster, S. C.	turkey	226 (548)	18 hr.		N,V,C,D	DH	school (D)
10-2	San Jose, Calif.	cake	5(9)	2½-4 hr.	$\bar{x}$ 12 hr.	N,D,C	DH	home (D)

ETIOLOGY	ONSET	REPORTED FROM	VEHICLE	LAB DATA P. V. H.	CLINICAL DATA # ill (at risk)	incub. period (hrs.)	Duration of dis. (hrs.)	Symptoms	REPORTER	COMMENT
	10-2	Saratoga, Calif.	?macaroni salad, ?eggs		4(4)	7-10 hr.		C,D,V,F,H	DH	restaurant (D)
	10-5	Mt. Vernon, N. Y.			2	3 hr.	5 hr.	N,V,C,D	DH	banquet (D)
	10-10	Greenfield, Mo.	turkey		150	12-21 hr.		D,N,V,C, chills	FDA	school (D)
	10-10	Ranson, W. Va.	turkey		109 (204)	6-24 hr. $\bar{x}$ 10	$\bar{x}$ 24 hr.	N,V,C,D,F	DH	school (D)
	10-13	Newport, Oregon			>24 (180)	~30-36 hr.		N,V,D,F,C	DH	banquet (D)
	10-16	Stanton, Calif.	imitation milk		7 (7)	12-24 hr.	$\bar{x}$ 12 hr.	N,V,F,D	DH	home (A)
	10-18	Sunnyvale, Calif.	chicken		5 (5)	½-12 hr.		C,D,V	DH	cafeteria (D)
	10-20	Campbell, Calif.	roast beef		2 (3)	3½ -4 hr.	1-2 dy.	C,V,D	DH	restaurant (D)
	10-22	San Jose, Calif.	fishburger		2 (2)	4 hr.	3½ hr.	C,N,D	DH	restaurant (D)
	10-23	St. Paul, Minn.	meat loaf and gravy		46 (409)	$\bar{x}$ 8.4 hr.		C,D	DH	school (D)
	10-?	Sumter, S. C.	cookies		3(3)	6 hr.		N,V	DH	store (D)
	10-?	Lexington, S. C.	turkey		70(233)	22 hr.		N,D	DH	school (D)
	10-?	Pickens, S. C.	ham		20(182)	4 hr.		N,V,C	DH	school (D)
	11-5	Hawaii	roast beef		34 (36)	8-15 hr.	1-2 dy.	C,D	DH	restaurant (D)
	11-10	San Antonio, Tex.			6				DH	hospital (D)
	11-14	Stringtown, Ill.	weiners and macaroni		35(65)	med. 8 hr.		D,V,C,N,F	DH	school (D)

	11-16	New Haven, Conn.	raw clams		17(23)	31-53 hr. x̄ 38.9 hr.		N,V,F,D	DH	restaurant (D)
	11-20	Renton, Wash.			69(100)	20-65 hr. med. 37 hr.	mode > 2½ dy.	N,V,D,F, chills	DH	church dinner (D)
	11-28	Belvedere, Calif.	turkey		19(28)	6-60 hr.	x̄ 24 hr.	D,V,C	DH	home (D)
	12-5	Selma, Ala.	pork					N,D	FDA	school (D)
	12-14	New York City			3 (6)	2-4 hr.	12-24 hr.	N,V,C,D	DH	restaurant (D)
	12-16	Denver, Colo.			3 (4)	12 hr.		N,V,D	DH	restaurant (D)
	12-17	Hawaii	mahimahi		3 (3)	1 hr.		H,N,D, flushing, tingling of lips	DH	restaurant (D)
	12-19	San Jose, Calif.	chili hot dog		2 (2)	2-5 hr.		C,V, shock	DH	restaurant (D)
	12-?	Tumwater, Wash.			100 (200)	30-36 hr.	24 hr.	F,N,V,D	DH	church dinner (D)

The following outbreaks were not received in time for inclusion in the preceding tabulations.

Infectious hepatitis	11-?	Buckley, Wash.	water		5 (9)		jaundice, abnormal liver function tests	DH	home (C)
Chemical - copper	11-10	New York City	soda	+	3 (3)	Few minutes	N,V	DH	vending machine in theater (A)
S. sonnei	11-11	Snohomish County, Wash.	water	+	20 (24)		D,V,F	DH	cabin (C)

Section F

Line listing of episodes of food poisoning not included in the tabular data.

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												
B. melitensis	3-25	California	unpast. goat milk	+			1				Bruc.	raw goat milk in Mexico (C)
Brucella	3-27	California	unpast. milk	+			1				Bruc.	raw milk in Mexico (C)
Brucella	4-?	Illinois	unpast. milk	+			1				Bruc.	raw milk (C)
Brucella	6-?	Oklahoma	unpast. milk	+			1				Bruc.	raw milk (C)
Brucella	7-5	Mississippi	unpast. milk	+			1				Bruc.	raw milk (C)
Brucella	7-6	California	unpast. milk	+			1				Bruc.	raw milk (C)
Brucella	7-15	California	cheese	+			1				Bruc.	cheese in Mexico (C)
Brucella	7-16	Mississippi	unpast. milk	+			1				Bruc.	raw milk (C)
Brucella	8-3	Illinois	unpast. milk	+			1				Bruc.	raw milk in Mexico (C)
Brucella	8-5	Mississippi	unpast. milk	+			1				Bruc.	raw milk (C)
Brucella	8-7	North Dakota	unpast. milk	+			1				Bruc.	raw milk (C)
Brucella	10-?	Utah	unpast. milk	+			1				Bruc.	raw milk (C)
Brucella	12-4	North Dakota	unpast. milk	+			1				Bruc.	raw milk (C)
S. aureus	9-?	Clarksville, Tenn.	sausage		+		1			V,D	FDA	restaurant (A)

Prob. S. aureus	3-?	Richland, S. C.	meat		1 (2)	4 hr.	N,V,C	DH	restaurant (D)
PARASITIC									
Trichinella spiralis	2-22	Harker Heights, Tex.	pork	+	1		periorbital edema, eosinophilia	Para.	(D)
Trichinella spiralis	4-7	Cleveland, Ohio	pork	+	1	3 wk.	periorbital edema, eosinophilia	Para.	home (D)
Trichinella spiralis	5-1	Fairborn, Ohio	pork	+	1		periorbital edema, eosinophilia	Para.	home (A)
Trichinella spiralis	5-?	Chicopee, Mass.		+	1		periorbital edema, eosinophilia	Para.	home (D)
Trichinella spiralis	6-1	New York City	pork	+	1		eosinophilia	Para.	restaurant (A)
Trichinella spiralis	6-10	San Diego, Calif.	pork	+	1	2 wk.	C, eosinophilia, myalgia	Para.	home (A)
Trichinella spiralis	6-29	Summersville, W. Va.	sausage	+	1		eosinophilia	Para.	home (A)
Trichinella spiralis	7-2	Cleveland, Ohio	pork	+	1		eosinophilia	Para.	home (A)
Trichinella spiralis	7-8	Whately, Mass.	sausage	+	1	3 dy.	periorbital edema, eosinophilia	Para.	home (A)
Trichinella spiralis	7-9	Adkins, Iowa		+	1		periorbital edema, eosinophilia	Para.	(D)
Trichinella spiralis	7-13	Bald Knob, W. Va.	sausage	+	1	10 dy.	periorbital edema, eosinophilia	Para.	home (A)
Trichinella spiralis	7-16	Providence, R.I.	pork	+	1	2 dy.	periorbital edema, eosinophilia	Para.	home (A)

ETIOLOGY	ONSET	REPORTED FROM	VEHICLE	LAB DATA P.	V.	H.	# ill (at risk)	incub. period (hrs.)	Duration of dis. (hrs.)	Symptoms	REPORTER	COMMENT
Trichinella spiralis	9-22	Philadelphia, Pa.	pork	+			1			periorbital edema, eosinophilia	Para.	home (A)
Trichinella spiralis	10-14	Detroit, Mich.	pork	+			1			periorbital edema,	Para.	home (A)
Trichinella spiralis	12-6	Westerly, R. I.	pork sausage	+			1	1 wk.		eosinophilia	Para.	home (A)
Trichinella spiralis	12-17	Westerly, R. I.	sausage	+			1	2 dy.		periorbital edema, eosinophilia	Para.	home (D)
UNKNOWN												
	1-?	Sumter, S. C.	ice cream				1	6 hr.		N,V,C,D	DH	restaurant (D)
	2-?	Richland, S. C.	hamburger				1 (1)	6 hr.		N,V,D,F	DH	restaurant (D)
	3-?	Charleston, S.C.	meat				1 (1)	24 hr.		N,F,D,C	DH	restaurant (D)
	5-?	Sumter, S. C.	orange juice				1 (1)	4 hr.		V,C	DH	store (D)
	7-24	Casey, Ill.	?ham				1	3 hr.	48 hr.	N,V,D	DH	home (D)
	10-?	Aiken, S. C.	meat					8 hr.		N,C	DH	caterer (D)
	11-?	Anderson, S. C.	hot dog				1 (1)	8 hr.		N,V	DH	restaurant (D)

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
_____
_____

HSM 4.245 (NCDC)
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 _____
Chemical _____
Other _____

Suspected ☐ 1 (79)
Confirmed ☐ 2
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.