CENTER FOR DISEASE CONTROL

June 18, 1976 / Vol. 25 / No. 23

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

Occupational Lead Poisoning — Utah

Nineteen of 42 persons employed at a Salt Lake City secondary lead smelter during part or all of the period October 1975-January 1976 developed lead poisoning.* An additional 3 employees had probable lead poisoning.† The outbreak was related to inadequate ventilation of 2 rotary furnaces first used for lead processing in early December 1975.

The investigation, conducted by the Salt Lake City-County Health Department and the Utah State Division of Health, began following the hospitalization of 7 smelter employees for lead poisoning during a 4-week period in December 1975 and January 1976. These patients' illnesses were of relatively acute onset: gastrointestinal symptoms predominated, and 2 had possible encephalopathy.

When questionnaires were completed and blood and/or urine levels were performed on 36 employees who had worked at the smelter during part or all of the 4-month period from October through January,‡ the additional 15 cases were found. All but 2 of the total of 22 cases had onset of illness in the period from November 30, 1975-January 4, 1976 (Figure 1). The most frequent symptoms were headache, dizziness, anorexia, nausea, abdominal cramps, and diarrhea (Table 1). The mean duration of symptoms was 20.5 days.

These 22 cases had a mean whole blood lead concentration of 120.3 μg/100 ml (standard error ± 13.4 μg/100 ml) (*1*). By contrast, 7 asymptomatic employees had a mean blood lead level of 63.9±7.2 μg/100 ml (< .05, student's t test). Two cases had levels of 260 μg/100 ml and 280 μg/100 ml, respectively; 7 more had levels greater than 120 μg/100 ml. Thirteen cases were anemic, with a mean hemoglobin of 12.7 (± 1.1 gms). Urine and blood arsenic and antimony concentrations were not elevated in any of the 36 interviewed employees. Twenty of the cases received chelation therapy.

The smelter processed only [illegible] until August 1975, when it began lead production by [illegible] reduction of lead oxide in a reverberatory furnace (Figure 2). The fumes and

FIGURE 1. Lead poisoning cases in smelter workers by week of onset, Utah, 1975-76

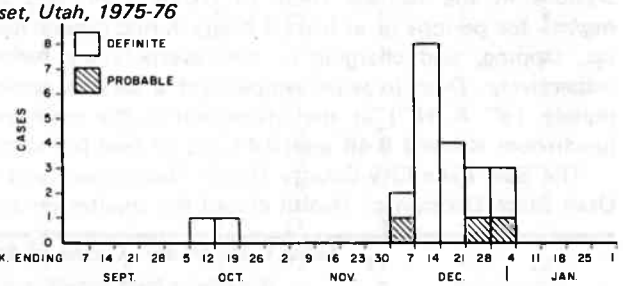

FIGURE 2. Amount of lead processed by month, Utah, 1975-76

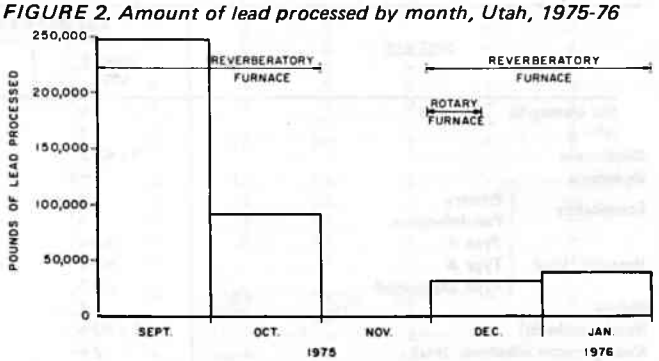

*TABLE 1. Frequency of symptoms among 22 cases of lead poisoning**

Symptom	Number Reporting	Percent
Abdominal cramps	19	86
Nausea	18	82
Diarrhea	12	55
Headache	12	55
Dizziness	12	55
Anorexia	12	55
Vomiting	9	41
Paresthesias	9	41
Constipation	8	36
Fatigueability	8	36
Myalgias	7	32
Weight loss (> 2 Kg)	6	27
Irritability	5	23
Chest pain	5	23
Specific muscle weakness	4	18
Tremor	4	18
Joint pains	4	18

*19 definite and 3 probable cases.

*Lead Poisoning: a blood lead level ⩾ 80 μg/100 ml and/or urine lead level of ⩾ 250 μg/l, plus symptoms compatible with lead toxicity which could not be otherwise explained.

†Probable lead poisoning: a blood lead level of 50-79 μg/100 ml plus compatible symptoms.

‡Twenty-two people are usually employed at the smelter, 11 as furnace workers. Employee turnover is considerable among the latter group. As a result, a total of 42 persons—including 6 temporary workers—filled smelter positions in the 4-month period described. Thirty-six of these employees were available for interview.

Lead Poisoning -- Continued

particles exited through a bag house and to a stack. In the first 2 weeks of December, the plant, in an attempt to increase lead production, added 2 small rotary furnaces previously used only for antimony.

When the confirmed lead poisoning cases were compared with asymptomatic employees, exposure to the smelter's furnace room was significantly associated with illness. All 13 workers who spent ⩾ 50% of their day in the furnace room became ill, while only 6 of 11 employees who spent less than 50% of their time there developed lead poisoning ($p = 0.01$, Fisher's exact). One of the latter cases was the company president, who had a blood lead level of 160 μg/100 ml. Although he spent less than 10% of his time in the furnace room, the air intake for the ventilation system for his office was adjacent to the furnace room. Two other cases were temporarily employed repairmen who worked in the furnace room in December. One, whose lead level was 81 μg/100 ml, spent a total of 9 hours in the smelter.

Environmental sampling in January revealed air concentrations in the furnace room of 0.079, 1.24, and 2.65 mg/m^3 for periods of at least 3 hours during general clean-up, tapping, and charging of the reverberatory furnace, respectively. Dust in wipe samples (of a surface approximately 18" X 18") in the office and in the employees' lunchroom showed 0.46 and 0.41 mg of lead per sample.

The Salt Lake City-County Health Department and the Utah State Division of Health closed the smelter on January 16, 1976, when air sampling showed excessive lead during normal operation, (that is, using the reverberatory furnace, only) and when deficiencies were not corrected. When engineering controls were instituted and personal industrial hygiene stressed, the smelter was reopened. Surveillance by air sampling and blood lead testing is continuing.

Reported by R Maddock, MD, S Sharp, MD, Salt Lake City; H Gibbons, MD, D Petersen, R Ranck, Salt Lake City-County Health Dept; D Dalley, T Fukushima, MD, State Epidemiologist, M Gortatowski, PhD, R Isaacs, J Oman, L Thatcher, J Throckmorton, Utah State Division of Health.

Editorial Note: Although the outbreak was caused primarily by the temporary use of inadequately ventilated furnaces (Figures 1 and 2), both the 2 cases with onsets in October as well as the environmental contamination found in the smelter during normal operation indicate an endemic problem. Antimony is less toxic than lead in a smelter setting (*2*). Therefore, when the process changed to lead from antimony, proper engineering controls for lead were not present. The excessive lead absorption by the repairmen who worked briefly in early December suggests that air lead concentrations were very high.

References

1. Keenan RG, Byers DH, Saltzman BE, Hyslop FL: The "USPHS" method for determining lead in air and in biological materials. *Am Ind Hyg Assoc J* 24:481-491, 1963

2. Elkins HB: The Chemistry of Industrial Toxicology. New York, John Wiley, 1959, p 256

Table I. Summary--Cases of Specified Notifiable Diseases: United States

[Cumulative totals include revised and delayed reports through previous weeks]

DISEASE	23rd WEEK ENDING		MEDIAN	CUMULATIVE, FIRST 23 WEEKS		
	June 12, 1976	June 7, 1975	1971–1975	June 12, 1976	June 7, 1975	MEDIAN 1971–1975
Aseptic meningitis	34	50	52	800	873	870
Brucellosis	3	3	4	104	81	62
Chickenpox	5,492	4,383	---	131,276	101,299	---
Diphtheria	-	2	3	100	186	93
Encephalitis, Primary	13	20	19	325	294	370
Encephalitis, Post-Infectious	3	8	10	128	133	132
Hepatitis, Viral, Type B	304	203	190	6,416	4,865	4,039
Hepatitis, Viral, Type A	639	611	1,038	15,696	15,867	22,866
Hepatitis, Viral, Type unspecified	203	142		3,947	3,557	
Malaria	13	12	7	153	124	124
Measles (rubeola)	1,504	1,191	1,191	28,225	16,840	20,552
Meningococcal infections, total	24	22	20	860	753	753
Civilian	24	22	24	854	736	736
Military	-	-	-	6	17	21
Mumps	1,033	1,769	1,794	28,296	38,351	46,197
Pertussis	10	18	---	413	532	---
Rubella (German measles)	364	873	743	9,062	13,003	17,849
Tetanus	1	1	1	18	28	35
Tuberculosis	656	708	---	14,536	14,161	---
Tularemia	5	6	4	52	46	45
Typhoid fever	9	6	7	134	110	128
Typhus, tick-borne (Rky. Mt. spotted fever)	32	45	45	179	180	144
Venereal Diseases:						
Gonorrhea, Civilian	19,470	18,555	---	424,045	413,554	---
Gonorrhea, Military	417	707	---	13,005	13,256	---
Syphilis, primary and secondary, Civilian	473	448	---	10,946	11,315	---
Syphilis, primary and secondary, Military	4	13	---	148	162	---
Rabies in animals	71	58	78	1,144	1,059	1,677

Table II. Notifiable Diseases of Low Frequency: United States

	CUM.		CUM.
Anthrax:	2	Poliomyelitis, total:	5
Botulism: Calif. 1	8	Paralytic:	5
Congenital rubella syndrome:	11	Psittacosis:	21
Leprosy:	62	Rabies in man:	-
Leptospirosis:	17	Trichinosis:* N.Y.C. 1	54
Plague: Colo. 1, Ariz. 1	4	Typhus, murine:	9

*Delayed Report: Trichinosis: Ariz. add 1

Table III

Cases of Specified Notifiable Diseases: United States

Weeks Ending June 12, 1976 and June 7, 1975 — 23rd Week

AREA REPORTING	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKENPOX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS, VIRAL			MALARIA	
						Primary: Arthropod-borne and Unspecified		Post Infectious	Type B	Type A	Type Unspecified		
	1976	1976	1976	1976	CUM. 1976	1976	1975	1976	1976	1976	1976	1976	CUM. 1976
UNITED STATES	34	3	5,492	-	100	13	20	3	304	639	203	13	153
NEW ENGLAND	-	-	491	-	-	-	2	-	5	39	6	-	8
Maine*	-	-	13	-	-	-	-	-	-	1	-	-	-
New Hampshire	-	-	9	-	-	-	-	-	-	1	-	-	-
Vermont	-	-	7	-	-	-	1	-	-	6	-	-	-
Massachusetts	-	-	294	-	-	-	1	-	3	6	6	-	4
Rhode Island	-	-	84	-	-	-	-	-	-	2	-	-	1
Connecticut	-	-	84	-	-	-	-	-	2	23	-	-	3
MIDDLE ATLANTIC	4	-	613	-	-	1	2	-	64	67	54	2	27
Upstate New York	3	-	268	-	-	1	-	-	22	27	8	-	5
New York City	-	-	247	-	-	-	1	-	13	12	-	2	15
New Jersey	-	-	NN	-	-	-	1	-	29	28	46	-	-
Pennsylvania	1	-	98	-	-	-	-	-	NA	NA	NA	-	7
EAST NORTH CENTRAL	3	-	2,476	-	-	1	5	-	36	88	15	2	12
Ohio	1	-	354	-	-	-	1	-	10	26	-	-	5
Indiana*	-	-	138	-	-	-	-	-	-	4	3	-	-
Illinois	-	-	587	-	-	1	2	-	6	26	6	1	2
Michigan	2	-	859	-	-	-	1	-	15	25	5	1	5
Wisconsin	-	-	498	-	-	-	1	-	5	7	1	-	-
WEST NORTH CENTRAL	3	-	606	-	4	1	1	-	21	59	11	1	5
Minnesota	-	-	-	-	-	-	-	-	12	11	-	-	3
Iowa*	2	-	96	-	-	-	-	-	3	6	-	-	-
Missouri*	-	-	56	-	1	1	-	-	1	19	7	-	-
North Dakota	-	-	-	-	-	-	-	-	-	2	-	-	-
South Dakota	-	-	-	-	3	-	-	-	-	4	-	-	1
Nebraska	-	-	20	-	-	-	-	-	2	1	1	1	1
Kansas*	1	-	434	-	-	-	1	-	3	16	3	-	-
SOUTH ATLANTIC	2	2	401	-	-	1	2	2	41	101	21	-	22
Delaware	-	-	12	-	-	-	-	-	-	-	-	-	-
Maryland	-	-	22	-	-	-	-	-	11	14	3	-	3
District of Columbia*	-	-	15	-	-	-	-	-	2	1	-	-	2
Virginia	-	1	33	-	-	-	-	-	5	8	4	-	6
West Virginia	-	-	153	-	-	-	-	-	2	9	-	-	-
North Carolina	1	-	NN	-	-	-	1	-	4	5	2	-	3
South Carolina	-	-	-	-	-	-	-	2	4	1	3	-	1
Georgia	-	1	-	-	-	-	-	-	-	33	-	-	1
Florida	1	-	166	-	-	1	1	-	13	30	9	-	6
EAST SOUTH CENTRAL	4	-	170	-	-	2	1	1	17	55	2	-	1
Kentucky	-	-	132	-	-	-	-	1	4	16	1	-	-
Tennessee	2	-	NN	-	-	-	1	-	6	25	1	-	-
Alabama	2	-	33	-	-	-	-	-	7	10	-	-	-
Mississippi	-	-	5	-	-	2	-	-	-	4	-	-	1
WEST SOUTH CENTRAL	7	1	404	-	1	1	4	-	23	51	31	-	6
Arkansas	-	-	2	-	-	-	-	-	1	10	8	-	-
Louisiana	1	-	NN	-	-	-	2	-	2	1	2	-	-
Oklahoma	-	1	28	-	-	-	-	-	4	9	2	-	-
Texas	6	-	374	-	1	1	2	-	16	31	19	-	6
MOUNTAIN	-	-	92	-	3	-	-	-	11	20	16	-	7
Montana	-	-	16	-	-	-	-	-	-	-	-	-	-
Idaho*	-	-	1	-	-	-	-	-	-	-	2	-	-
Wyoming	-	-	-	-	-	-	-	-	-	1	-	-	-
Colorado	-	-	52	-	3	-	-	-	4	7	5	-	4
New Mexico	-	-	2	-	-	-	-	-	1	3	1	-	1
Arizona*	-	-	-	-	-	-	-	-	4	2	-	-	1
Utah	-	-	21	-	-	-	-	-	-	5	8	-	-
Nevada	-	-	-	-	-	-	-	-	2	2	-	-	1
PACIFIC	11	-	239	-	92	6	3	-	86	159	47	8	65
Washington	-	-	174	-	90	-	-	-	3	21	6	-	2
Oregon	2	-	1	-	-	-	1	-	3	4	6	-	5
California*	8	-	-	-	1	4	2	-	80	132	35	8	57
Alaska	-	-	11	-	1	2	-	-	-	-	-	-	-
Hawaii	1	-	53	-	-	-	-	-	-	2	-	-	1
Guam	-	-	-	-	-	-	-	-	-	-	-	-	-
Puerto Rico	-	-	18	-	-	-	-	-	2	8	-	-	1
Virgin Islands	-	-	-	-	-	-	-	-	-	-	-	-	-

NN: Not Notifiable NA: Not Available

*Delayed Reports: Asep. Meng.: Iowa add 4, Mo. delete 1; Chickenpox: Maine add 19, Mo. delete 1, D.C. delete 170, Idaho add 100, Calif. add 165; Post Enceph. Mumps: Kansas add 1; Post Enceph. Other: Kansas delete 1, Idaho add 1; Hep. B: Mo. delete 1; Hep. A: Mo. delete 1, D.C. delete 24, Ariz. add 1; Hep. Unsp.: Indiana delete 10, Mo. delete 1, Ariz. delete 1

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending June 12, 1976 and June 7, 1975 – 23rd Week

REPORTING AREA	MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1976	CUMULATIVE		1976	CUMULATIVE		1976	CUM. 1976	1976	1976	CUM. 1976	CUM. 1976
		1976	1975		1976	1975						
UNITED STATES	1,504	28,225	16,840	24	860	753	1,033	28,296	10	364	9,062	18
NEW ENGLAND	11	225	211	–	37	42	38	1,042	1	13	243	–
Maine	–	3	10	–	–	5	2	88	–	–	3	–
New Hampshire	–	7	19	–	2	2	–	24	–	–	11	–
Vermont	–	–	39	–	3	–	–	5	–	–	1	–
Massachusetts	1	24	69	–	11	13	–	139	1	6	121	–
Rhode Island	–	14	1	–	4	3	19	384	–	–	5	–
Connecticut	10	177	73	–	17	19	17	402	–	7	102	–
MIDDLE ATLANTIC	343	5,571	1,081	4	115	79	190	2,321	3	95	1,923	–
Upstate New York	149	2,022	316	3	43	25	3	307	1	27	391	–
New York City	38	348	93	–	30	19	128	1,150	2	10	117	–
New Jersey	–	544	393	–	16	12	35	442	–	49	1,247	–
Pennsylvania	156	2,657	279	1	26	23	24	422	–	9	168	–
EAST NORTH CENTRAL	554	11,964	4,901	2	134	110	376	11,915	–	169	3,391	–
Ohio	33	422	90	2	77	21	73	1,686	–	6	244	–
Indiana	158	2,551	327	–	4	5	51	1,208	–	112	532	–
Illinois	36	1,221	1,162	–	10	18	52	1,613	–	8	1,079	–
Michigan	204	4,784	2,498	–	35	52	125	4,475	–	40	1,186	–
Wisconsin	123	2,986	824	–	8	14	75	2,933	–	3	350	–
WEST NORTH CENTRAL	138	967	4,629	–	56	37	106	3,151	–	18	331	2
Minnesota	43	321	180	–	11	8	–	538	–	–	25	–
Iowa*	–	16	409	–	8	5	7	1,124	–	2	39	–
Missouri*	–	12	207	–	17	19	31	274	–	–	29	1
North Dakota	–	1	1,014	–	3	–	5	118	–	–	1	1
South Dakota	–	2	351	–	1	1	–	4	–	2	16	–
Nebraska	–	40	362	–	2	1	25	89	–	–	3	–
Kansas	95	575	2,106	–	14	3	38	1,004	–	14	218	–
SOUTH ATLANTIC	47	1,683	198	4	161	151	81	2,138	–	9	1,155	7
Delaware	–	122	23	–	2	5	3	29	–	–	6	–
Maryland	22	665	17	–	15	16	15	554	–	–	1	2
District of Columbia	–	4	–	–	2	4	–	91	–	–	45	–
Virginia*	20	430	20	–	20	15	2	175	–	3	212	1
West Virginia	5	156	115	–	4	5	21	655	–	4	255	–
North Carolina	–	–	–	2	31	30	27	349	–	2	15	–
South Carolina	–	3	–	2	30	24	1	37	–	–	568	–
Georgia	–	–	2	–	13	8	–	–	–	–	1	–
Florida	–	303	21	–	44	44	12	248	–	–	52	4
EAST SOUTH CENTRAL	36	681	216	6	71	108	75	2,333	–	15	277	2
Kentucky	33	657	77	–	14	48	2	888	–	1	135	1
Tennessee	3	9	129	3	31	38	39	1,193	–	13	138	1
Alabama	–	–	3	3	19	14	32	218	–	1	1	–
Mississippi	–	15	7	–	7	8	2	34	–	–	3	–
WEST SOUTH CENTRAL	9	594	212	1	130	119	106	1,974	4	7	469	5
Arkansas	–	–	–	–	5	6	1	64	1	–	188	–
Louisiana	–	161	–	–	19	24	1	19	1	–	83	2
Oklahoma	5	272	90	–	18	8	7	598	1	1	52	–
Texas	4	161	122	1	88	81	97	1,293	1	6	146	3
MOUNTAIN	209	4,787	1,077	2	30	30	7	995	1	11	434	1
Montana	12	189	26	–	3	4	–	19	–	6	220	–
Idaho*	63	1,968	4	1	3	4	–	421	–	–	18	–
Wyoming	–	3	–	–	–	–	–	1	–	–	2	–
Colorado	–	261	973	–	10	9	3	191	–	–	18	–
New Mexico	–	14	7	–	2	4	–	124	–	–	31	–
Arizona	–	222	42	–	7	1	–	–	–	–	–	1
Utah	133	2,068	9	–	4	7	4	126	1	5	128	–
Nevada	1	62	16	1	1	1	–	113	–	–	17	–
PACIFIC	157	1,753	4,315	5	126	77	54	2,427	1	27	839	1
Washington	67	192	147	–	20	13	4	822	–	4	132	–
Oregon	11	118	186	–	10	4	11	299	–	1	110	1
California	79	1,441	3,933	3	85	59	39	1,272	1	21	585	–
Alaska	–	–	–	2	9	–	–	17	–	–	–	–
Hawaii	–	2	49	–	2	1	–	17	–	1	12	–
Guam	–	6	15	–	1	2	–	7	–	–	3	–
Puerto Rico	40	169	456	–	2	1	21	520	1	–	5	14
Virgin Islands	–	5	6	–	–	–	1	21	–	2	7	1

*Delayed Reports:
Measles: Iowa add 9, Va. delete 1, Idaho add 26; Mening. Inf.: Mo. add 1; Mumps: Idaho add 4; Rubella: Iowa add 39

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending June 12, 1976 and June 7, 1975 – 23rd Week

REPORTING AREA	TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS-FEVER TICK-BORNE (RMSF)		VENEREAL DISEASES (Civilian Cases Only)						RABIES IN ANIMALS
								GONORRHEA			SYPHILIS (Pri. & Sec.)			
	1976	CUM. 1976	CUM. 1976	1976	CUM. 1976	1976	CUM. 1976	1976	CUMULATIVE 1976	CUMULATIVE 1975	1976	CUMULATIVE 1976	CUMULATIVE 1975	CUM. 1976
UNITED STATES	656	14,536	52	9	134	32	179	19,470	424,045	413,554	473	10,946	11,315	1,144
NEW ENGLAND	26	523	-	-	17	-	2	613	11,608	11,080	8	324	397	19
Maine	4	38	-	-	-	-	-	59	984	748	-	8	9	13
New Hampshire	1	23	-	-	2	-	-	13	301	310	-	4	10	-
Vermont	-	14	-	-	-	-	-	14	271	257	-	2	4	-
Massachusetts	15	305	-	-	13	-	2	282	5,529	5,244	5	241	263	5
Rhode Island	4	40	-	-	-	-	-	64	775	860	1	12	5	1
Connecticut	2	103	-	-	2	-	-	181	3,748	3,661	2	57	106	-
MIDDLE ATLANTIC	100	2,706	-	4	24	-	5	2,584	47,184	48,558	57	1,838	2,072	10
Upstate New York	44	437	-	1	5	-	1	587	7,206	8,426	5	113	202	2
New York City	23	1,980	-	3	13	-	1	882	21,060	21,144	39	1,154	1,186	-
New Jersey	13	512	-	-	4	-	3	610	7,412	6,734	8	259	330	3
Pennsylvania	20	677	-	-	2	-	-	505	11,506	12,254	5	312	354	5
EAST NORTH CENTRAL	104	1,955	-	-	11	-	5	2,802	68,127	68,020	31	989	934	60
Ohio*	15	348	-	-	3	-	3	659	16,437	18,522	4	231	225	-
Indiana	9	261	-	-	-	-	-	452	6,366	6,278	1	52	59	14
Illinois	44	628	-	-	3	-	-	944	25,043	23,198	20	535	446	11
Michigan*	32	603	-	-	4	-	2	468	13,857	13,328	4	119	154	2
Wisconsin	4	115	-	-	1	-	-	279	6,424	6,694	2	52	50	33
WEST NORTH CENTRAL	28	534	13	-	5	3	4	1,108	21,669	20,287	8	196	256	272
Minnesota	5	105	3	-	2	-	-	174	4,006	4,201	2	43	53	69
Iowa	1	48	1	-	-	-	-	114	2,716	2,833	-	19	11	58
Missouri*	16	252	8	-	3	3	4	517	8,620	7,349	4	85	142	36
North Dakota	-	13	-	-	-	-	-	15	317	312	-	-	4	55
South Dakota	1	27	-	-	-	-	-	17	593	779	-	2	3	14
Nebraska*	-	24	-	-	-	-	-	108	1,851	1,788	-	13	4	7
Kansas*	5	65	1	-	-	-	-	163	3,566	3,025	2	34	39	33
SOUTH ATLANTIC	160	3,212	3	1	16	20	94	4,323	101,818	102,475	154	3,228	3,544	171
Delaware	1	41	-	-	-	-	-	39	1,359	1,426	1	41	41	-
Maryland*	16	459	1	-	-	-	4	580	14,125	11,430	17	265	263	11
District of Columbia	6	137	-	-	-	-	-	333	6,077	6,269	6	289	292	-
Virginia*	23	532	-	-	3	11	32	226	10,531	10,087	9	293	265	29
West Virginia	9	140	-	1	2	-	1	54	1,311	1,216	1	17	12	8
North Carolina*	47	573	2	-	1	7	36	576	15,165	14,645	32	626	468	1
South Carolina	17	248	-	-	1	2	17	763	10,002	9,612	11	171	237	2
Georgia	-	390	-	-	2	-	4	749	18,935	18,856	23	354	472	94
Florida	41	692	-	-	7	-	-	1,003	24,313	28,934	54	1,172	1,494	26
EAST SOUTH CENTRAL	53	1,230	11	1	7	4	31	1,532	38,128	34,170	10	442	491	67
Kentucky*	7	277	1	1	4	1	6	148	4,772	4,321	-	65	77	40
Tennessee	22	364	10	-	3	3	23	692	15,029	13,629	2	182	178	18
Alabama	17	359	-	-	-	-	1	464	10,863	9,332	4	86	121	9
Mississippi	7	230	-	-	-	-	1	228	7,464	6,888	4	109	115	-
WEST SOUTH CENTRAL	66	1,661	18	-	3	5	37	3,021	56,802	51,903	69	1,279	960	299
Arkansas*	9	226	8	-	-	1	8	530	5,503	5,374	4	43	27	76
Louisiana*	8	255	1	-	-	-	-	587	8,282	9,866	20	284	229	1
Oklahoma	11	156	6	-	-	4	27	206	5,162	4,781	2	50	42	74
Texas	38	1,024	3	-	3	-	2	1,698	37,855	31,882	43	902	662	148
MOUNTAIN	22	395	1	-	7	-	1	713	16,070	16,011	21	310	292	66
Montana	-	22	1	-	2	-	-	37	839	917	-	3	4	49
Idaho*	-	9	-	-	1	-	1	32	819	803	-	21	9	-
Wyoming	-	8	-	-	-	-	-	10	354	403	-	6	4	1
Colorado	1	81	-	-	1	-	-	214	4,134	4,089	-	71	53	4
New Mexico*	8	64	-	-	1	-	-	157	3,139	2,799	8	86	83	1
Arizona	8	178	-	-	2	-	-	211	4,702	4,305	8	85	102	11
Utah	5	19	-	-	-	-	-	12	833	991	1	16	9	-
Nevada	-	14	-	-	-	-	-	40	1,250	1,704	4	22	28	-
PACIFIC	97	2,320	6	3	44	-	-	2,774	62,639	61,050	115	2,340	2,369	180
Washington	5	220	2	-	2	-	-	219	5,326	5,564	-	62	85	1
Oregon	7	79	1	-	-	-	-	82	4,567	4,541	1	56	54	-
California	76	1,726	3	3	41	-	-	2,292	49,843	48,480	112	2,162	2,204	140
Alaska	-	25	-	-	-	-	-	161	1,750	1,500	1	13	1	39
Hawaii	9	270	-	-	1	-	-	20	1,153	965	1	47	25	-
Guam	-	24	-	-	-	-	-	-	148	208	-	1	3	-
Puerto Rico	6	145	-	-	-	-	-	45	1,175	1,333	8	248	337	17
Virgin Islands	-	2	-	-	-	-	-	3	120	73	1	34	16	-

*Delayed Reports:
TB: Ohio add 2, Mich. delete 1, Mo. delete 1, Kansas delete 1, No. Carol. delete 11, Ky. delete 11, Ark. delete 1, Idaho add 5, New Mex. add 1; GC (civ): Neb. delete 1, La. delete 4, Idaho add 29, New Mex. add 139; GC (mil.): Alaska add 1; Syphilis (civ.): Mo. delete 1, Delaware delete 6, La. delete 11; Syphilis (mil.): Va. add 1

Table IV
Deaths in 121 United States Cities*
Week Ending June 12, 1976 – 23rd Week

REPORTING AREA	ALL CAUSES					Pneumonia and Influenza
	ALL AGES	65 Years and Over	45-64 Years	25-44 Years	Under 1 Year	ALL AGES
NEW ENGLAND	586	356	148	46	20	32
Boston, Mass.	165	90	46	15	7	6
Bridgeport, Conn.	41	25	11	5	-	2
Cambridge, Mass.	22	11	9	1	1	2
Fall River, Mass.	16	14	1	1	-	1
Hartford, Conn.	47	28	14	2	2	1
Lowell, Mass.	22	14	6	2	-	1
Lynn, Mass.	14	7	7	-	-	-
New Bedford, Mass.	29	25	4	-	-	2
New Haven, Conn.	46	30	10	1	1	-
Providence, R.I.	54	28	12	9	3	9
Somerville, Mass.	9	4	4	1	-	-
Springfield, Mass.	35	19	9	3	2	2
Waterbury, Conn.	22	14	5	3	-	1
Worcester, Mass.	64	47	10	3	4	5
MIDDLE ATLANTIC	2,570	1,603	646	157	81	121
Albany, N. Y.	45	24	16	3	2	1
Allentown, Pa.	19	12	6	-	1	-
Buffalo, N. Y.	98	59	21	8	6	8
Camden, N. J.	34	22	8	-	3	1
Elizabeth, N. J.	21	13	8	-	-	-
Erie, Pa.	37	27	8	-	2	2
Jersey City, N. J.	47	27	14	3	2	1
Newark, N. J.	57	32	16	3	2	1
New York City, N. Y†	1,312	818	319	93	40	54
Paterson, N. J.	32	18	12	1	1	2
Philadelphia, Pa.	298	180	78	19	10	17
Pittsburgh, Pa.	168	87	55	15	9	9
Reading, Pa.	43	31	10	-	1	2
Rochester, N. Y.	146	99	32	5	-	6
Schenectady, N. Y.	24	17	6	1	-	1
Scranton, Pa.	26	19	6	1	-	4
Syracuse, N. Y.	70	51	14	4	-	2
Trenton, N. J.	47	27	11	1	2	6
Utica, N. Y.	18	17	1	-	-	1
Yonkers, N. Y.	28	23	5	-	-	3
EAST NORTH CENTRAL	2,313	1,330	641	145	102	59
Akron, Ohio	64	36	12	2	10	-
Canton, Ohio	33	24	4	2	1	3
Chicago, Ill.	549	315	151	40	24	12
Cincinnati, Ohio	181	102	58	7	9	5
Cleveland, Ohio	181	101	53	16	5	5
Columbus, Ohio	134	76	34	11	5	3
Dayton, Ohio	114	65	33	6	5	1
Detroit, Mich.	303	163	92	25	10	9
Evansville, Ind.	39	25	10	2	1	3
Fort Wayne, Ind.	38	28	7	2	-	1
Gary, Ind.	28	6	15	4	-	1
Grand Rapids, Mich.	55	37	14	-	2	4
Indianapolis, Ind.	163	94	41	11	8	-
Madison, Wis.	27	19	2	1	5	2
Milwaukee, Wis.	124	72	39	5	5	-
Peoria, Ill.	39	20	11	3	4	2
Rockford, Ill.	43	28	10	1	2	3
South Bend, Ind.	48	31	9	3	-	4
Toledo, Ohio	98	52	33	3	5	-
Youngstown, Ohio	52	36	13	1	1	1
WEST NORTH CENTRAL	828	494	206	47	48	20
Des Moines, Iowa	61	36	23	-	-	-
Duluth, Minn.	25	17	4	3	1	2
Kansas City, Kans.	25	13	7	2	3	3
Kansas City, Mo.	133	79	34	7	8	3
Lincoln, Nebr.	34	26	5	1	-	-
Minneapolis, Minn.	117	75	23	11	3	3
Omaha, Nebr.	85	51	21	5	4	1
St. Louis, Mo.	180	97	47	12	14	3
St. Paul, Minn.	92	60	17	3	8	1
Wichita, Kans.	76	40	25	3	7	4

REPORTING AREA	ALL CAUSES					Pneumonia and Influenza
	ALL AGES	65 Years and Over	45–64 Years	25–44 Years	Under 1 Year	ALL AGES
SOUTH ATLANTIC	1,290	693	403	98	52	46
Atlanta, Ga.	124	69	32	9	7	3
Baltimore, Md.	282	148	95	18	9	3
Charlotte, N. C.	55	27	16	8	4	6
Jacksonville, Fla.	106	63	31	7	5	3
Miami, Fla.	108	61	34	8	2	1
Norfolk, Va.	68	30	25	4	4	6
Richmond, Va.	95	47	33	7	5	5
Savannah, Ga.	48	20	19	8	-	2
St. Petersburg, Fla.	67	55	12	-	-	5
Tampa, Fla.	69	48	12	5	2	4
Washington, D. C.	227	103	80	21	14	7
Wilmington, Del.	41	22	14	3	-	1
EAST SOUTH CENTRAL	656	382	178	37	22	25
Birmingham, Ala.	101	56	25	5	6	-
Chattanooga, Tenn.	39	24	9	1	3	3
Knoxville, Tenn.	47	32	10	2	1	-
Louisville, Ky.	99	56	29	4	3	8
Memphis, Tenn.	170	102	42	12	4	6
Mobile, Ala.	54	35	9	5	3	-
Montgomery, Ala.	42	25	14	2	-	3
Nashville, Tenn.	104	52	40	6	2	5
WEST SOUTH CENTRAL	1,147	607	344	77	62	41
Austin, Tex.	38	19	7	2	5	3
Baton Rouge, La.	26	19	6	1	-	4
Corpus Christi, Tex.	32	20	5	-	3	2
Dallas, Tex.	173	92	54	13	4	6
El Paso, Tex.	48	20	14	4	6	3
Fort Worth, Tex.	69	37	24	5	2	3
Houston, Tex.	337	162	108	30	23	7
Little Rock, Ark.	52	27	18	4	1	3
New Orleans, La.	125	65	39	5	6	1
San Antonio, Tex.	127	81	32	5	4	2
Shreveport, La.	58	30	17	7	3	3
Tulsa, Okla.	62	35	20	1	5	4
MOUNTAIN	465	284	109	20	34	26
Albuquerque, N. Mex.	51	36	11	1	-	2
Colorado Springs, Colo.	31	17	9	2	2	5
Denver, Colo.	107	63	25	7	11	6
Las Vegas, Nev.	31	16	6	3	1	1
Ogden, Utah	22	16	4	1	-	4
Phoenix, Ariz.	98	53	27	3	11	4
Pueblo, Colo.	24	19	4	-	1	3
Salt Lake City, Utah	53	29	13	1	8	-
Tucson, Ariz.	48	35	10	2	-	1
PACIFIC	1,661	1,064	399	94	50	38
Berkeley, Calif.	14	11	1	1	-	-
Fresno, Calif.	60	39	10	5	2	-
Glendale, Calif.	23	15	7	1	-	-
Honolulu, Hawaii	40	22	11	6	-	2
Long Beach, Calif.	87	58	22	3	3	2
Los Angeles, Calif.	550	365	126	34	12	21
Oakland, Calif.	83	49	16	9	4	-
Pasadena, Calif.	26	17	4	1	3	-
Portland, Oreg.	134	91	34	4	1	2
Sacramento, Calif.	48	28	15	1	1	1
San Diego, Calif.	125	76	31	4	11	2
San Francisco, Calif.	169	100	48	12	3	2
San Jose, Calif.	53	33	13	3	2	1
Seattle, Wash.	174	108	46	9	4	3
Spokane, Wash.	44	32	7	-	3	-
Tacoma, Wash.	31	20	8	1	1	2
TOTAL	11,516	6,813	3,074	721	471	408
Expected Number	11,661	6,980	3,071	764	366	357

†Delayed Report for Week Ending 6/5/76

The Morbidity and Mortality Weekly Report, circulation 52,000, is published by the Center for Disease Control, Atlanta, Georgia. The data in this report are provisional, based on weekly telegraphs to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday.

The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Send reports to: Center for Disease Control, Attn.: Editor, Morbidity and Mortality Weekly Report, Atlanta, Georgia 30333.

Send mailing list additions, deletions, and address changes to: Center for Disease Control, Attn.: Distribution Services, GSO, 1-SB-36, Atlanta, Georgia 30333. When requesting changes be sure to give your former address, including zip code and mailing list code number, or send an old address label.

International Notes

Salmonella Infections — United Kingdom, 1975

Salmonella continues to be one of the most common organisms reported to the Public Health Laboratory Service. During the first 24 weeks of 1975, there were 3,053 reports. Though about 100 different serotypes were reported, 7 serotypes made up 2,141 (70%) of this total. As usual, by far the most common was *Salmonella typhimurium* (951 reports). *S. enteritidis, S. heidelberg, S. indiana,* and *S. newport* were each reported between 200-300 times. *S. agona* and *S. branderup* both featured in more than 100 reports.

Reports of salmonella reach a peak during warm weather in summer and are least common in winter and spring, but individual serotypes often show considerable variation from this general rule. For example, 164 of the 275 infections of *S. indiana* were received in January and 119 of the 225 reports of *S. newport* during February. Only 22 infections of *S. enteritidis* were received in January, whereas 180 of the total of 262—almost 70%—were reported during April and May.

The sources, other than man, from which these serotypes are most often identified are poultry and animal feed. A sudden, large increase in the reports of a single serotype usually indicates the occurrence of a large single outbreak from a common food source. Thus, the sudden increase in the reports of *S. indiana* early in January was due to several large outbreaks whose origin was infected turkeys from a single source of supply (*1*).

More troublesome from an epidemiologic point of view is a consistent increase, for weeks or months, in numbers of a single serotype. *S. heidelberg*, for example, is not usually 1 of the more common serotypes reported. The average number of reports during the first half of the last 5 years was only 35, but in the first 6 months of 1975 there were 243. This excess was already evident in the first few weeks of 1975 and consistently increased each month, with reports coming from many areas. The food usually implicated was chicken. In the first 6 months of 1975, there were 8 outbreaks of *S. heidleberg,* although none was large. Three occurred in February, 2 in April, 2 in May, and 1 in early June. No outbreaks occurred during the corresponding period in 1974.

One outbreak was associated with a special-care nursery. One baby failed to thrive and was found to be infected with *S. heidelberg*. On investigation, 2 more babies, a nurse, and a house physician were found to be excreting the organism. The physician had resuscitated all 3 infected babies; he had just returned from Bangladesh.

Other cases were reported in twin babies in the unit, and in a mother and 2 siblings of infected infants. In another outbreak 3 out of 15 members of a school party had diarrhea on their return from Romania; all 3 were excreting *S. heidelberg*. Five outbreaks concerned individual households; in the remaining 1 the community was not stated. No common source of infection has yet been identified.

From notes based on reports to the Public Health Laboratory Service from public health and hospital laboratories in the United Kingdom and the Republic of Ireland, published in the British Medical Journal, *August 9, 1975.*

Editorial Note: In the United States the 10 most frequently reported serotypes in 1974 were *S. typhimurium* (including var. copenhagen), *S. newport, S. enteritidis, S. infantis, S. heidelberg, S. agona, S. saint-paul, S. typhi, S. derby,* and *S. oranienburg*. They accounted for 16,435 (68.9%) of the 23,838 isolates reported in 1974. *S. agona*, which was widely disseminated in Europe and the United States in the late 60s and early 70s (*2*), has shown the greatest rise, accounting for a 20% increase from 1973.

References

1. *Salmonella indiana* from Christmas turkey. Br Med J 3:107, 1975
2. Clark GM, Kaufmann AF, Gangarosa EJ, Thompson MA: Epidemiology of an international outbreak of *Salmonella agona*. Lancet ii:490-493, 1973

Botulism Associated with Cheese Spread — Buenos Aires, Argentina

Eleven persons in 5 Argentinean families contracted botulism in January 1974. Four of the families resided in the metropolitan area of Buenos Aires, and 1 lived in Chacabuco.

Ten of the patients received botulinum anti-toxin. There were 3 deaths. A commercial cheese spread with dehydrated onions, sold in sealed plastic containers, was the vehicle of transmission. Type A botulinal toxin and Type A *Clostridium botulinum* were isolated from 4 containers of the same factory lot of the suspect spread. The product was withdrawn from the market, and there were no further cases.

Reported by Dra. Ethel Amato de Lagarde, Cándido V. del Prado, National Institute of Microbiology, "Carlos G. Malbran," Buenos Aires; Dr. Raúl Garbugino, Hospital Muñiz, Buenos Aires.

Editorial Note: Outbreaks of botulism are infrequently traced to cheese. Since the first outbreak of botulism in the United States was reported in 1899, 7 out of 736 outbreaks were from cheese, including 1 outbreak from a commercially-processed product. In these 7 outbreaks 21 persons were affected, and 9 died (*1,2*). The commercial outbreak occurred in California in 1951 and was caused by Liederkranz cheese; the 1 person affected died from type B botulism.

Reported by Enteric Diseases Br, Bacterial Diseases Div, Bur of Epidemiology, CDC.

References

1. Meyer KF, Eddie B: Sixty-five Years of Botulism in the United States and Canada. San Francisco, George Williams Hooper Foundation, University of California, 1965, pp 28, 34
2. Center for Disease Control: Botulism in the United States, 1899-1973. Handbook for Epidemiologists, Clinicians, and Laboratory Workers. Issued June 1974

Current Trends

Primary and Secondary Syphilis — United States, April 1976

In April 1976, 1,892 primary and secondary syphilis cases were reported, a decline of 440 cases (18.9%) from the 2,332 cases reported in April 1975. For the first 4 months of 1976, cases numbered 8,290; this was 4.8% fewer than the number of cases reported in the same time period of 1975.

Reported by Venereal Disease Control Div, Bur of State Services, CDC.

Summary of Reported Primary and Secondary Syphilis Cases by Reporting Area
April 1976 and April 1975 – Provisional Data

Reporting Area by HEW Regions	April		Calendar Year Cumulative January–April	
	1976	1975	1976	1975
Connecticut	11	26	51	79
Maine	1	2	9	10
Massachusetts	44	57	170	210
New Hampshire	0	0	3	10
Rhode Island	1	0	10	3
Vermont	0	1	2	4
REGION I TOTAL	57	86	245	316
New Jersey	42	74	185	289
New York (Excl. NYC)	19	31	92	151
New York City	214	282	909	990
REGION II TOTAL	275	387	1,186	1,430
Delaware	5	13	20	34
District of Columbia	57	49	214	203
Maryland (Excl. Baltimore)	16	19	62	76
Baltimore	45	29	152	136
Pennsylvania (Excl. Phila.)	27	59	85	138
Philadelphia	39	39	125	160
Virginia	62	48	218	211
West Virginia	3	2	14	10
REGION III TOTAL	254	258	890	968
Alabama	17	22	64	97
Florida	230	328	881	1,114
Georgia (Excl. Atlanta)	37	64	181	209
Atlanta*	46	27	176	138
Kentucky	4	12	52	60
Mississippi	21	28	87	86
North Carolina	123	74	502	348
South Carolina	29	41	138	200
Tennessee	27	30	127	140
REGION IV TOTAL	534	626	2,208	2,392
Illinois (Excl. Chicago)*	14	31	48	84
Chicago	59	62	291	273
Indiana (Excl. Indianapolis)	9	8	30	41
Indianapolis*	2	6	16	9
Michigan	16	32	93	120
Minnesota	9	13	38	27
Ohio	48	38	184	149
Wisconsin	15	4	44	33
REGION V TOTAL	172	194	744	736
Arkansas	4	5	29	22
Louisiana	23	48	189	181
New Mexico	10	17	63	66
Oklahoma	4	7	39	36
Texas	136	130	637	516
REGION VI TOTAL	177	207	957	821
Iowa	3	1	18	11
Kansas	8	11	31	38
Missouri	9	30	60	109
Nebraska	5	1	13	4
REGION VII TOTAL	25	43	122	163
Colorado	12	11	53	47
Montana	0	0	4	3
North Dakota	0	0	1	2
South Dakota	0	0	2	2
Utah	7	0	8	3
Wyoming	0	1	4	1
REGION VIII TOTAL	19	12	72	58
Arizona	27	22	90	92
California (Excl. LA & SF)	154	151	748	574
Los Angeles*	87	211	587	651
San Francisco*	64	86	275	347
Hawaii	16	6	34	21
Nevada	3	5	16	21
REGION IX TOTAL	351	481	1,750	1,706
Alaska	6	1	8	1
Idaho	5	2	13	6
Oregon	9	9	50	38
Washington	8	26	45	77
REGION X TOTAL	28	38	116	122
UNITED STATES TOTAL	1,892	2,332	8,290	8,712
Puerto Rico	55	66	187	272
Virgin Islands	1	4	13	11
United States, Including Outlying Areas	1,948	2,402	8,490	8,995

*County Data

Note: Cumulative totals include revised and delayed reports through previous months.

Source: CDC 9.98, HEW-CDC-BSS-VD Control Division, Atlanta, Georgia

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE / CENTER FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333

Director, Center for Disease Control, David J. Sencer, M.D.
Director, Bureau of Epidemiology, Philip S. Brachman, M.D.
Editor, Michael B. Gregg, M.D.
Managing Editor, Anne D. Mather, M.A.

OFFICIAL BUSINESS **FIRST CLASS**

U.S.MAIL

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF HEW
HEW 399

HEW Publication No. (CDC) 76-8017