CENTERS FOR DISEASE CONTROL

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Epidemiologic Notes and Reports

Common-Source Outbreaks of Trichinosis — New York City, Rhode Island

Forty-six cases of trichinosis including 1 death were diagnosed in the period November-December 1981 in 3 common-source outbreaks reported from New York City and Rhode Island. All 3 outbreaks were associated with eating pork from hogs purchased directly from farms and prepared in ethnic dishes calling for raw or partially cooked pork.

New York City: Eight cases of trichinosis were reported to the New York City Department of Health from 2 Brooklyn hospitals on November 16, 1981. The patients were members of 3 related families of Italian heritage. A ninth case was subsequently diagnosed in the course of the investigation. One patient died. The outbreak appeared to be associated with eating dried, homemade pork sausage.

The index patient was a 55-year-old woman who had onset of symptoms on November 4, 1981, 10 days after eating some of the pork sausage. Her initial symptoms included nausea, vomiting, diarrhea, myalgia, and abdominal pain. When she became febrile, she was hospitalized. By the nineteenth day of hospitalization, the patient had developed bronchopneumonia, pulmonary edema, paralytic ileus, and motor paralysis; she died the same day. Autopsy findings revealed bronchopneumonia, pulmonary artery thrombosis, pulmonary edema, mild cardiomegaly and chronic myocarditis, hepatomegaly, and renal vein thrombosis. No *Trichinella* larvae were identified in the brain, although fresh thromboses were noted in blood vessels. Multiple muscle samples were positive for *Trichinella*.

The other 8 patients had eaten dried, uncooked, or lightly fried sausage on 2 occasions, November 4 and 11. Onset of symptoms ranged from 2 to 13 days after eating the initial serving of sausage. Of the symptoms commonly associated with clinical trichinosis, all patients had fever (temperatures ranging from 37.9 C to 39.1 C [100.2 F to 102.4 F]), periorbital edema and muscle pain. Six of 8 patients had abdominal pain; 5 of 8 had diarrhea. Two patients reported headache, and 2 had subconjunctival hemorrhages. Most patients received oral or intravenous steroid therapy; at least 2 also received thiabendazole. Laboratory studies revealed that all of the 8 patients whose blood was examined had eosinophilia (range) 4%-57%). Six of 7 patients whose specimens were tested for antibody to *Trichinella* with the bentonite flocculation (BF) test had titers compatible with recent infection ($\geq$10), and 3 patients from whom additional specimens were tested approximately 7 weeks after onset of symptoms had a $\geq$4-fold rise in titer to *Trichinella*.

Interviews with family members revealed that the sausage had been prepared from a pig purchased and slaughtered at a farm in Green County, New York. Two other pigs kept at the farm over the past year had been slaughtered for consumption by the farm owner. The car-

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cass of the pig that had been purchased was brought to New York City, where it was hung and dried indoors for 2 days; the carcass was then butchered, and sausages were prepared and hung to dry for another 10 days. The sausages were then eaten raw by 8 patients. The ninth patient fried the sausage lightly before eating it. Samples of sausage were examined by the hospital pathologist, who identified multiple encysted larvae of *T. spiralis*.

Sausage prepared by the farmer with meat from the other 2 pigs was examined at the Animal Parasitology Institute, United States Department of Agriculture (USDA), and found to contain *Trichinella*. The farmer insisted that the pigs had been fed only grains. However, the farmer went hunting frequently and fed portions of killed game to pet dogs. It was not known whether the pigs had also eaten portions of such meat.

Rhode Island: On November 23, 1981, the Rhode Island Department of Health was notified by the Indochinese Unit of the State Department of Social and Rehabilitative Services of an outbreak in that state. A group of Kampuchean refugees were experiencing swollen eyes, myalgia, and fever; several had been hospitalized. The symptoms plus eosinophilia and elevated creatinine phosphokinase (CPK) levels suggested trichinosis; this diagnosis was confirmed on the basis of findings from a muscle biopsy performed on 1 hospitalized patient. An investigation begun November 24 showed that on October 15, 11 Kampuchean families had shared a meal in the home of 1 family. The main dish was spiced, boiled meat and viscera of a pig that had been purchased the same day from a local farm. Forty-nine family members reported eating the pork either at that meal or subsequently at their homes. Between November 11 and 28, 26 persons became ill with signs and symptoms that included fever and either myalgia or periorbital edema.Trichinosis was confirmed for 24 of the 26 ill persons on the basis of positive BF titers (ranging from 5 to 640) measured in serum specimens obtained between 48 and 75 days after the shared meal. The other 23 asymptomatic family members were negative for trichinal antibodies. Five of the most severely ill persons were hospitalized; serum CPK values for these patients ranged from 544 to 7,360 International Units (IU). Of the 24 trichinosis patients, who ranged in age from 2 to 66 years, 15 were male. All symptomatic individuals recovered without specific therapy. Staff of the Animal Parasitology Institute, USDA, investigated the farm from which the implicated pig had been obtained. The farmer stated that he only kept a few pigs at a time and that they were not fed garbage. A land-fill dump was located approximately 2 miles from the farm. Four hogs purchased from the farmer were killed, and the tissues were examined by direct microscopy and digestion of tissues. Blood samples were taken from 5 other pigs for serologic tests. All tissues and serum specimens were negative for *Trichinella* in these tests. Thirty-two rats trapped and killed on the farm were negative for *Trichinella* larva.

A second outbreak occurred in Rhode Island in early December 1981. The Rhode Island Department of Health was notified by staff at a hospital emergency room of a group of Laotian refugees with trichinosis-like illness. Investigation revealed that on November 24, 30 members of 4 extended families had shared a meal that included raw pork from a pig purchased at the same farm involved in the first Rhode Island outbreak discussed above. Between December 10 and 29, 13 of these 31 persons became ill with signs and symptoms including fever, periorbital edema, myalgia, eosinophilia ($\geq$10%), and elevated serum CPK levels (>250 IU). Four patients were hospitalized, and *T. spiralis* larvae were identified in material from muscle biopsies performed on 2 women ages 22 and 33 years. The patients ranged in age from 7 to 66 years, and 8 of the 13 were male. All recovered. Single or paired serum specimens obtained from 4 patients and from 4 exposed but asymptomatic persons were sent to CDC for BF testing. All 4 patients and 3 of the 4 asymptomatic persons had single

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titers of ≥40 and/or a 4-fold rise in titer between acute- and convalescent-phase specimens. A sample of pork from the implicated meal was examined at CDC in an artificial digestion procedure that revealed a low concentration of *T. spiralis* larvae.

Intensive efforts were made to educate Indochinese families in Rhode Island about the need to cook pork adequately. All state health-care providers and social service agencies were requested to emphasize this recommendation to their refugee populations.

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Editorial Note: Trichinosis remains a public health problem in the United States primarily because the infection is enzootic among domestic swine. Surveillance indicates that in 75% of cases for which a probable source is identified, a pork product is incriminated as the source of infection and that ground beef—probably adulterated with pork—accounts for some of the other 25% (*1-3*). Since 1947, when the Public Health Service began collecting data on cases reported from all the states, the annual incidence of reported human cases has declined from 300-400 cases/year to <150. Since 1966, the annual number of reported cases appears to have stabilized at 100-150, with an average of 1 death/year (*1*). Factors that accounted for the decline in the number of humans infected include: 1) state laws that (although directed at preventing other diseases by prohibiting the feeding of raw garbage to swine) have reduced trichinosis in swine; 2) widespread commercial and home freezing of pork, which kills trichinae; 3) consumer awareness of the need to cook pork products adequately; and 4) a national trend to consume more beef than pork.

Trichinosis has occurred most frequently among members of ethnic groups who enjoy eating raw pork (*3-4*). It has been observed that some outbreaks have occurred among new immigrants who apparently did not understand the need to cook, freeze, or otherwise treat American pork thoroughly in order to kill *Trichinella* larvae. As evidenced by the 2 outbreaks in Rhode Island discussed above, certain groups among the culturally diverse refugees from Southeast Asia must be included in the group at high risk of acquiring trichinosis. Identifying citizens of European ancestry and recent immigrants who belong to ethnic groups that traditionally eat raw pork as "high-risk groups" suggests these groups as targets for special health education as an effort to reduce the potential for further outbreaks.

For approximately two-thirds of the reported cases of pork-associated trichinosis, the incriminated item is a USDA-inspected pork product purchased at a local supermarket or butcher shop (*3*). The outbreaks reported here are unusual in that the pork was acquired directly from a farm. The most recent data on the prevalence of trichinosis among commercially slaughtered swine indicate that approximately 1/1,000 carcasses is infected (*5*). However, feeding raw garbage to swine, a practice prohibited by law in most states but difficult to enforce, and certain other swine-management practices may result in higher infection rates. Therefore, the rate of infection among hogs purchased directly from farms may be considerably higher than among the 70-80 million hogs that pass through commercial channels each year.

Currently, the Animal Parasitology Institute, USDA, in collaboration with investigators from the Pathobiology Department, University of Pennsylvania, are conducting prevalence studies on hogs in garbage-fed and grain-fed operations in the eastern United States; this study is de-

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signed to obtain a better understanding of the roles that wildlife and the feeding of garbage play in swine trichinosis.

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TABLE I. Summary — cases of specified notifiable diseases, United States

DISEASE	13th WEEK ENDING			CUMULATIVE, FIRST 13 WEEKS		
	April 3 1982	April 4 1981	MEDIAN 1977-1981	April 3 1982	April 4 1981	MEDIAN 1977-1981
Aseptic meningitis	75	55	55	958	846	640
Brucellosis	5	3	3	25	19	41
Encephalitis: Primary (arthropod-borne & unspec.)	13	8	10	175	183	151
Post-infectious	2	4	4	11	21	39
Gonorrhea: Civilian	16,009	19,850	17,825	227,570	241,305	236,316
Military	489	391	469	6,606	7,137	6,812
Hepatitis: Type A	454	455	537	5,607	6,235	6,790
Type B	473	361	300	4,800	4,621	3,933
Non A, Non B	56	N	N	448	N	N
Unspecified	176	203	190	2,294	2,648	2,557
Legionellosis	6	N	N	64	N	N
Leprosy	7	1	3	38	49	37
Malaria	17	18	11	174	295	122
Measles (rubeola)	44	77	517	231	690	4,002
Meningococcal infections: Total	101	83	66	865	1,290	874
Civilian	101	82	65	861	1,287	865
Military	–	1	–	4	3	9
Mumps	236	103	341	1,683	1,398	4,987
Pertussis	40	23	23	261	257	263
Rubella(German measles)	98	77	360	805	668	3,377
Syphilis (Primary & Secondary): Civilian	530	474	474	8,296	7,533	6,097
Military	10	6	6	96	102	81
Tuberculosis	550	463	582	6,007	6,016	6,546
Tularemia	4	–	1	21	24	23
Typhoid fever	13	15	11	98	115	103
Typhus fever, tick-borne (RMSF)	1	2	1	19	14	14
Rabies, animal	137	184	123	1,237	1,610	850

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1982		CUM. 1982
Anthrax	–	Poliomyelitis: Total	1
Botulism (Calif. 1)	18	Paralytic	1
Cholera	1	Psittacosis (Mass. 1, Wash. 1, Calif. 1)	20
Congenital rubella syndrome (Ariz. 1)	2	Rabies, human	–
Diphtheria	–	Tetanus (Va. 1, Ark. 1)	11
Leptospirosis (Tex. 1, Hawaii 2)	15	Trichinosis (Mass. 1)	28
Plague	2	Typhus fever, flea-borne (endemic, murine)	3

N: Not notifiable

TABLE III. Cases of specified notifiable diseases, United States, weeks ending April 3, 1982 and April 4, 1981 (13th week)

REPORTING AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	ENCEPHALITIS		GONORRHEA (Civilian)		HEPATITIS (Viral), by type				LEGIONELLOSIS	LEPROSY
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	1982	CUM. 1982	CUM. 1982	CUM. 1982	CUM. 1982	CUM. 1981	1982	1982	1982	1982	1982	CUM. 1982
UNITED STATES	75	25	175	11	227,570	241,305	454	473	56	176	6	38
NEW ENGLAND	–	–	10	3	5,509	5,994	11	16	–	5	1	1
Maine	–	–	–	–	254	291	1	–	–	–	–	–
N.H.	U	–	–	–	152	220	U	U	U	U	U	–
Vt.	–	–	–	–	113	100	2	–	–	–	–	–
Mass.	–	–	3	–	2,508	2,439	3	3	–	5	–	–
R.I.	–	–	–	–	400	284	3	3	–	–	–	–
Conn.	–	–	7	3	2,082	2,660	2	10	–	–	1	1
MID. ATLANTIC	12	–	24	2	27,954	27,839	69	79	12	14	1	3
Upstate N.Y.	–	–	11	–	4,504	4,353	16	13	2	3	–	–
N.Y. City	2	–	5	–	12,073	11,025	26	24	–	6	1	1
N.J.	6	–	4	–	4,751	5,726	27	42	10	5	–	1
Pa.	4	–	4	2	6,626	6,735	U	U	U	U	–	1
E.N. CENTRAL	8	–	39	3	28,754	38,135	59	54	3	27	1	–
Ohio	1	–	13	1	8,943	13,202	14	4	2	4	–	–
Ind.	2	–	11	2	3,909	3,091	14	14	–	12	–	–
Ill.	–	–	–	–	4,896	10,377	4	2	1	2	–	–
Mich.	3	–	13	–	7,969	8,169	23	31	–	9	1	–
Wis.	2	–	2	–	3,037	3,296	4	3	–	–	–	–
W.N. CENTRAL	4	2	11	–	10,766	11,417	19	27	–	5	1	–
Minn.	–	–	–	–	1,586	1,881	5	5	–	1	–	–
Iowa	1	1	6	–	1,181	1,135	3	–	–	–	–	–
Mo.	1	1	3	–	4,851	5,140	9	16	–	4	1	–
N. Dak.	–	–	–	–	138	150	–	–	–	–	–	–
S. Dak.	–	–	–	–	309	305	–	–	–	–	–	–
Nebr.	2	–	1	–	683	834	1	6	–	–	–	–
Kans.	–	–	1	–	2,018	1,972	1	–	–	–	–	–
S. ATLANTIC	18	10	21	1	58,737	60,219	39	91	10	30	2	2
Del.	–	–	–	–	939	922	1	2	–	1	–	–
Md.	3	–	9	–	7,854	6,414	3	15	3	4	1	–
D.C.	–	–	–	–	3,021	3,994	–	3	–	–	–	–
Va.	–	4	6	–	5,106	5,640	1	7	1	1	–	–
W. Va.	1	–	–	–	694	866	1	–	–	1	–	–
N.C.	–	–	1	–	9,708	9,743	2	5	–	3	–	–
S.C.	1	1	–	–	5,646	5,396	3	10	1	3	–	–
Ga.	1	1	–	–	9,483	12,063	9	17	–	6	–	–
Fla.	12	4	5	1	16,286	15,181	19	32	5	11	1	2
E.S. CENTRAL	3	3	10	1	19,293	20,058	18	18	3	2	–	–
Ky.	2	–	–	–	2,584	2,557	2	4	–	–	–	–
Tenn.	–	1	7	–	7,320	7,256	12	7	2	–	–	–
Ala.	1	1	2	1	5,881	6,659	2	7	1	2	–	–
Miss.	–	1	1	–	3,508	3,586	2	–	–	–	–	–
W.S. CENTRAL	13	4	15	–	32,772	33,539	96	44	2	51	–	3
Ark.	–	2	–	–	2,728	2,206	1	1	1	3	–	–
La.	4	–	2	–	5,953	5,258	9	8	1	8	–	–
Okla.	4	2	6	–	3,404	3,318	18	14	–	5	–	–
Tex.	5	–	7	–	20,687	22,757	68	21	–	35	–	3
MOUNTAIN	1	–	7	1	8,497	9,797	30	10	3	11	–	1
Mont.	–	–	–	–	359	351	2	–	–	–	–	–
Idaho	–	–	–	–	346	391	1	–	–	–	–	1
Wyo.	–	–	–	–	233	209	1	1	–	–	–	–
Colo.	1	–	1	1	2,283	2,537	10	1	–	–	–	–
N. Mex.	–	–	–	–	1,030	1,155	–	–	–	–	–	–
Ariz.	–	–	2	–	2,343	3,201	10	6	3	3	–	–
Utah	–	–	–	–	375	450	2	–	–	6	–	–
Nev.	–	–	4	–	1,528	1,503	4	2	–	2	–	–
PACIFIC	16	6	38	–	35,288	34,307	113	134	23	31	–	28
Wash.	–	–	3	–	3,035	3,221	4	–	–	–	–	2
Oreg.	–	–	–	–	2,025	2,613	4	6	2	–	–	–
Calif.	13	5	33	–	28,689	26,767	101	125	20	30	–	19
Alaska	–	1	2	–	916	947	1	1	1	–	–	–
Hawaii	3	–	–	–	623	759	3	2	–	1	–	7
Guam	U	–	–	–	5	37	U	U	U	U	U	–
P.R.	–	–	1	–	689	851	6	4	–	4	–	–
V.I.	U	–	–	–	51	24	U	U	U	U	U	–
Pac. Trust Terr.	U	–	–	–	36	118	U	U	U	U	U	1

N: Not notifiable U: Unavailable

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending April 3, 1982 and April 4, 1981 (13th week)

REPORTING AREA	MALARIA		MEASLES (RUBEOLA)			MENINGOCOCCAL INFECTIONS (Total)		MUMPS		PERTUSSIS	RUBELLA		
	1982	CUM. 1982	1982	CUM. 1982	CUM. 1981	1982	CUM. 1982	1982	CUM. 1982	1982	1982	CUM. 1982	CUM. 1981
UNITED STATES	17	174	44	231	690	101	865	236	1,683	40	98	805	668
NEW ENGLAND	2	14	1	5	26	9	48	5	84	–	–	9	61
Maine	–	–	–	–	2	–	2	1	21	–	–	–	31
N.H.	U	1	U	–	4	U	8	U	8	U	U	9	21
Vt.	–	–	–	2	1	–	3	–	4	–	–	–	–
Mass.	2	9	1	1	15	5	13	4	35	–	–	–	5
R.I.	–	1	–	–	–	3	8	–	7	–	–	–	–
Conn.	–	3	–	2	4	1	14	–	9	–	–	–	4
MID. ATLANTIC	3	16	3	31	238	16	130	13	98	10	10	41	81
Upstate N.Y.	–	2	2	17	148	2	32	1	22	6	4	22	32
N.Y. City	3	7	1	12	23	6	26	2	18	2	–	10	17
N.J.	–	4	–	–	17	3	34	2	20	1	6	9	30
Pa.	–	3	–	2	50	5	38	8	38	1	–	–	2
E.N. CENTRAL	–	12	–	15	44	23	101	171	1,002	24	1	58	148
Ohio	–	2	–	–	13	11	42	149	718	3	–	–	–
Ind.	–	1	–	1	3	1	7	2	19	1	–	8	50
Ill.	–	–	–	6	6	7	21	9	47	19	1	17	42
Mich.	–	8	–	8	22	2	23	11	147	–	–	18	18
Wis.	–	1	–	–	–	2	8	–	71	1	–	15	38
W.N. CENTRAL	1	5	1	1	4	4	37	8	65	2	3	19	34
Minn.	–	–	–	–	1	–	9	–	3	–	–	1	6
Iowa	1	2	–	–	1	–	4	3	18	–	–	–	–
Mo.	–	1	1	1	–	3	14	1	11	1	3	12	1
N. Dak.	–	–	–	–	–	–	4	–	–	–	–	–	–
S. Dak.	–	–	–	–	–	–	1	–	–	1	–	1	–
Nebr.	–	1	–	–	1	1	2	–	–	–	–	–	1
Kans.	–	1	–	–	1	–	3	4	33	–	–	5	26
S. ATLANTIC	3	32	2	18	197	16	181	8	128	3	1	19	62
Del.	–	–	–	–	–	–	–	–	3	–	–	–	–
Md.	1	6	–	1	1	–	6	–	10	–	–	4	–
D.C.	–	3	–	1	1	–	1	–	–	–	–	–	–
Va.	1	13	–	9	3	1	16	1	17	1	1	9	1
W. Va.	–	–	–	1	7	2	7	3	61	–	–	1	15
N.C.	–	–	–	–	–	1	28	–	4	–	–	–	3
S.C.	–	2	–	–	–	3	24	2	7	1	–	1	4
Ga.	–	2	–	–	74	3	51	–	2	1	–	1	17
Fla.	1	6	2	6	111	6	48	2	24	–	–	3	22
E.S. CENTRAL	1	1	1	5	–	1	54	3	20	–	2	13	15
Ky.	1	1	–	1	–	–	3	–	7	–	2	13	10
Tenn.	–	–	1	4	–	1	24	2	8	–	–	–	5
Ala.	–	–	–	–	–	–	25	1	3	–	–	–	–
Miss.	–	–	–	–	–	–	2	–	2	–	–	–	–
W.S. CENTRAL	1	6	2	26	47	13	122	7	60	1	4	44	43
Ark.	–	–	–	–	–	–	8	–	3	–	–	–	–
La.	–	1	–	–	–	–	17	1	1	–	–	–	6
Okla.	–	–	–	–	3	–	9	–	–	–	–	1	–
Tex.	1	5	2	26	44	13	88	6	56	1	4	43	37
MOUNTAIN	–	3	–	–	11	7	55	2	30	–	3	18	29
Mont.	–	–	–	–	–	–	4	–	3	–	–	1	1
Idaho	–	–	–	–	–	–	4	–	2	–	–	–	2
Wyo.	–	–	–	–	–	–	4	–	2	–	–	4	1
Colo.	–	2	–	–	3	2	20	–	5	–	–	1	16
N. Mex.	–	–	–	–	–	–	7	–	–	–	–	1	1
Ariz.	–	1	–	–	1	5	10	2	10	–	3	4	1
Utah	–	–	–	–	–	–	3	–	6	–	–	5	3
Nev.	–	–	–	–	7	–	3	–	2	–	–	2	4
PACIFIC	6	85	34	130	123	12	137	19	196	–	74	584	195
Wash.	–	7	–	14	1	1	14	1	34	–	1	15	37
Oreg.	–	2	–	–	–	2	26	–	–	–	–	2	20
Calif.	5	74	33	114	122	9	90	18	157	–	71	562	138
Alaska	–	–	–	–	–	–	5	–	4	–	–	1	–
Hawaii	1	2	1	2	–	–	2	–	1	–	2	4	–
Guam	U	–	U	–	4	U	–	U	1	U	U	1	–
P.R.	–	2	4	43	88	–	3	2	14	1	–	3	1
V.I.	U	–	U	–	3	U	–	U	–	U	U	–	–
Pac. Trust Terr.	U	–	U	–	–	U	–	U	–	U	U	–	1

U: Unavailable

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending April 3, 1982 and April 4, 1981 (13th week)

REPORTING AREA	SYPHILIS (Civilian) (Primary & Secondary)		TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		RABIES, Animal
	CUM. 1982	CUM. 1981	1982	CUM. 1982	CUM. 1982	1982	CUM. 1982	1982	CUM. 1982	CUM. 1982
UNITED STATES	8,296	7,533	550	6,007	21	13	98	1	19	1,237
NEW ENGLAND	169	174	28	172	-	-	10	-	-	5
Maine	-	1	-	11	-	-	-	-	-	5
N.H.	-	8	U	6	-	U	-	U	-	-
Vt.	-	6	1	6	-	-	2	-	-	-
Mass.	117	102	23	113	-	-	7	-	-	-
R.I.	11	13	-	16	-	-	-	-	-	-
Conn.	41	44	4	20	-	-	1	-	-	-
MID. ATLANTIC	1,119	1,140	95	1,020	1	5	11	-	-	14
Upstate N.Y.	114	99	18	178	1	1	2	-	-	9
N.Y. City	696	719	45	402	-	2	7	-	-	-
N.J.	131	129	16	186	-	2	2	-	-	1
Pa.	178	193	16	254	-	-	-	-	-	4
E.N. CENTRAL	396	537	115	937	-	1	8	-	-	137
Ohio	84	72	23	176	-	-	4	-	-	22
Ind.	62	32	2	121	-	-	-	-	-	21
Ill.	132	302	23	350	-	-	1	-	-	52
Mich.	88	103	60	234	-	1	3	-	-	-
Wis.	30	28	7	56	-	-	-	-	-	42
W.N. CENTRAL	162	134	17	176	6	-	3	-	1	324
Minn.	25	47	1	31	-	-	-	-	-	64
Iowa	7	8	4	29	-	-	1	-	-	106
Mo.	98	68	12	76	5	-	1	-	1	41
N. Dak.	4	1	-	3	-	-	-	-	-	37
S. Dak.	-	-	-	3	-	-	-	-	-	12
Nebr.	5	3	-	6	-	-	-	-	-	31
Kans.	23	7	-	28	1	-	1	-	-	33
S. ATLANTIC	2,324	1,958	61	1,184	5	1	12	-	12	198
Del.	6	3	-	11	-	-	-	-	-	-
Md.	139	156	U	144	1	-	3	-	7	13
D.C.	147	173	2	45	-	-	-	-	-	-
Va.	170	186	12	113	1	-	2	-	-	100
W. Va.	6	4	3	32	-	-	2	-	-	9
N.C.	182	153	10	191	-	-	-	-	4	1
S.C.	113	134	7	114	3	-	2	-	1	14
Ga.	497	508	-	190	-	-	-	-	-	51
Fla.	1,064	641	27	344	-	1	3	-	-	10
E.S. CENTRAL	636	514	31	513	3	1	9	1	4	155
Ky.	30	21	10	128	-	-	-	-	-	26
Tenn.	169	200	5	180	3	-	2	-	-	107
Ala.	220	143	9	158	-	-	6	-	3	22
Miss.	217	150	7	47	-	1	1	1	1	-
W.S. CENTRAL	2,099	1,770	91	644	3	1	4	-	1	210
Ark.	53	34	10	62	2	-	-	-	-	28
La.	426	378	20	123	-	-	-	-	-	5
Okla.	41	44	10	101	1	-	2	-	-	52
Tex.	1,579	1,314	51	358	-	1	2	-	1	125
MOUNTAIN	231	197	16	165	2	-	5	-	-	20
Mont.	1	8	3	14	-	-	-	-	-	9
Idaho	16	2	-	7	1	-	-	-	-	-
Wyo.	9	2	-	3	-	-	-	-	-	2
Colo.	75	65	-	17	-	-	1	-	-	-
N. Mex.	43	39	2	33	-	-	-	-	-	3
Ariz.	46	44	9	68	-	-	3	-	-	6
Utah	6	3	-	6	1	-	1	-	-	-
Nev.	35	34	2	17	-	-	-	-	-	-
PACIFIC	1,160	1,109	96	1,196	1	4	36	-	1	174
Wash.	24	39	7	72	1	-	-	-	-	-
Oreg.	36	25	2	43	-	-	1	-	-	-
Calif.	1,069	1,017	76	995	-	4	34	-	1	125
Alaska	6	4	-	13	-	-	-	-	-	49
Hawaii	25	24	11	73	-	-	1	-	-	-
Guam	-	-	U	2	-	U	-	U	-	-
P.R.	149	183	-	57	-	-	-	-	-	11
V.I.	-	-	U	1	-	U	-	U	-	-
Pac. Trust Terr.	-	-	U	19	-	U	-	U	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending April 3, 1982 (13th week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)						P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	704	474	159	34	18	19	67
Boston, Mass.	217	138	51	13	6	9	26
Bridgeport, Conn.	56	31	19	4	1	1	4
Cambridge, Mass.	27	18	7	1	1	–	5
Fall River, Mass.	24	16	4	1	2	1	1
Hartford, Conn.	74	51	17	1	3	2	2
Lowell, Mass.	26	15	10	–	1	–	2
Lynn, Mass.	22	15	6	1	–	–	1
New Bedford, Mass.	23	17	3	3	–	–	3
New Haven, Conn.	49	34	9	4	2	–	6
Providence, R.I.	41	30	6	3	–	2	7
Somerville, Mass.	9	8	1	–	–	–	1
Springfield, Mass.	44	31	8	2	1	2	4
Waterbury, Conn.	25	21	4	–	–	–	5
Worcester, Mass.	67	49	14	1	1	2	–
MID. ATLANTIC	2,570	1,698	591	161	46	74	100
Albany, N.Y.	57	38	8	4	3	4	2
Allentown, Pa.	20	16	3	1	–	–	–
Buffalo, N.Y.	152	100	37	8	4	3	7
Camden, N.J.	52	33	13	2	–	4	2
Elizabeth, N.J.	19	13	4	2	–	–	1
Erie, Pa.†	40	25	14	–	–	1	1
Jersey City, N.J.	59	40	10	3	2	4	4
N.Y. City, N.Y.	1,377	900	315	97	29	36	52
Newark, N.J.	54	33	12	6	2	1	4
Paterson, N.J.	39	22	10	1	–	6	–
Philadelphia, Pa.†	262	166	72	19	–	5	9
Pittsburgh, Pa.†	82	53	24	3	–	2	5
Reading, Pa.	32	22	8	2	–	–	–
Rochester, N.Y.	111	74	24	6	1	6	5
Schenectady, N.Y.	25	19	2	3	1	–	–
Scranton, Pa.†	31	25	5	–	1	–	2
Syracuse, N.Y.	87	65	16	4	2	–	1
Trenton, N.J.	24	17	6	–	–	1	–
Utica, N.Y.	25	19	6	–	–	–	3
Yonkers, N.Y.	22	18	2	–	1	1	2
E.N. CENTRAL	2,174	1,356	533	152	64	69	75
Akron, Ohio	39	27	10	1	1	–	–
Canton, Ohio	33	24	8	1	–	–	–
Chicago, Ill.	523	324	127	42	20	10	21
Cincinnati, Ohio	101	72	19	2	1	7	13
Cleveland, Ohio	194	121	47	16	3	7	4
Columbus, Ohio	139	77	37	12	7	6	3
Dayton, Ohio	111	63	35	11	2	–	–
Detroit, Mich.	268	144	76	26	11	11	6
Evansville, Ind.	48	33	10	4	–	1	2
Fort Wayne, Ind.	49	35	10	1	2	1	5
Gary, Ind.	25	11	10	3	1	–	1
Grand Rapids, Mich.	46	28	11	4	1	2	2
Indianapolis, Ind.	160	105	40	7	3	5	5
Madison, Wis.	14	9	2	1	–	2	2
Milwaukee, Wis.	130	83	28	8	5	6	–
Peoria, Ill.	51	30	11	2	2	6	4
Rockford, Ill.	43	31	8	2	2	–	2
South Bend, Ind.	58	43	11	3	1	–	3
Toledo, Ohio	98	67	20	5	2	4	2
Youngstown, Ohio	44	29	13	1	–	1	–
W.N. CENTRAL	711	465	153	28	19	46	31
Des Moines, Iowa	71	48	21	2	–	–	4
Duluth, Minn.	19	17	1	–	1	–	3
Kansas City, Kans.	51	29	12	2	2	6	2
Kansas City, Mo.	105	68	25	5	4	3	6
Lincoln, Nebr.	22	19	1	–	1	1	1
Minneapolis, Minn.	67	44	13	3	1	6	–
Omaha, Nebr.	77	49	18	2	2	6	2
St. Louis, Mo.	154	96	33	9	2	14	9
St. Paul, Minn.	63	51	7	2	2	1	4
Wichita, Kans.	82	44	22	3	4	9	–

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)						P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	1-24	<1	
S. ATLANTIC	1,152	713	249	84	35	68	45
Atlanta, Ga.	139	94	29	7	2	7	6
Baltimore, Md.	153	99	32	9	4	9	2
Charlotte, N.C.	96	60	22	7	–	7	9
Jacksonville, Fla.	106	66	26	8	2	4	2
Miami, Fla.	86	51	21	10	1	3	4
Norfolk, Va.	64	37	16	1	3	7	3
Richmond, Va.	60	42	11	4	1	2	4
Savannah, Ga.	20	13	4	2	1	–	–
St. Petersburg, Fla.	112	91	12	3	1	5	3
Tampa, Fla.	75	36	20	10	6	3	6
Washington, D.C.	187	91	46	19	9	19	3
Wilmington, Del.	54	33	10	4	5	2	3
E.S. CENTRAL	719	458	182	38	20	20	32
Birmingham, Ala.	104	67	26	7	3	1	1
Chattanooga, Tenn.	55	30	17	6	2	–	1
Knoxville, Tenn.	55	41	8	–	4	2	3
Louisville, Ky.	108	76	26	2	1	3	6
Memphis, Tenn.	165	106	46	7	5	–	11
Mobile, Ala.	67	44	13	5	3	2	3
Montgomery, Ala.	55	26	13	4	–	12	1
Nashville, Tenn.	110	68	33	7	2	–	6
W.S. CENTRAL	1,512	876	374	136	81	45	49
Austin, Tex.	45	30	2	6	6	1	3
Baton Rouge, La.	45	35	5	2	2	1	1
Corpus Christi, Tex.	34	17	11	3	1	2	3
Dallas, Tex.	212	126	57	19	8	2	5
El Paso, Tex.	75	49	9	9	4	4	4
Fort Worth, Tex.	77	41	27	3	3	3	3
Houston, Tex.	458	230	122	57	30	19	10
Little Rock, Ark.	72	45	21	4	2	–	4
New Orleans, La.	182	101	54	15	9	3	3
San Antonio, Tex.	138	93	30	5	5	5	4
Shreveport, La.	70	39	14	7	6	4	2
Tulsa, Okla.	104	70	22	6	5	1	7
MOUNTAIN	667	424	133	53	39	17	38
Albuquerque, N. Mex.	93	42	27	6	16	1	3
Colo. Springs, Colo.	34	23	5	6	–	–	4
Denver, Colo.	119	80	19	11	5	4	8
Las Vegas, Nev.	82	44	22	8	7	1	5
Ogden, Utah	23	13	4	3	–	3	3
Phoenix, Ariz.	151	104	30	10	3	4	3
Pueblo, Colo.	15	12	1	2	–	–	3
Salt Lake City, Utah	51	33	7	5	4	2	4
Tucson, Ariz.	99	73	18	2	4	2	5
PACIFIC	2,008	1,322	407	149	67	62	109
Berkeley, Calif.	23	16	4	2	–	1	–
Fresno, Calif.	75	50	18	4	2	1	5
Glendale, Calif.	24	23	1	–	–	–	1
Honolulu, Hawaii	77	42	23	8	2	2	2
Long Beach, Calif.	98	68	21	6	2	1	5
Los Angeles, Calif.	707	451	141	70	26	19	29
Oakland, Calif.	88	63	16	6	1	2	3
Pasadena, Calif.	28	21	2	1	1	3	2
Portland, Oreg.	122	90	13	4	6	8	4
Sacramento, Calif.	82	58	13	6	3	2	6
San Diego, Calif.	165	101	40	10	7	7	25
San Francisco, Calif.	152	102	30	10	5	5	3
San Jose, Calif.	157	96	38	11	6	6	18
Seattle, Wash.	120	76	33	6	4	1	–
Spokane, Wash.	54	39	8	2	1	4	3
Tacoma, Wash.	36	26	6	3	1	–	3
TOTAL	12,217††	7,786	2,781	835	389	420	546

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza

†Because of changes in reporting methods in these 4 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

Rash Illness Associated with Gypsy Moth Caterpillars — Pennsylvania

Between the end of April and the third week of May 1981, an increase in rash illness was reported by 2 schools in Luzerne County, in northeast Pennsylvania. School A had an enrollment of 320 students, with 135 affected by rashes (an attack rate of 42.2%). School B had 76 out of 300 students affected (an attack rate of 25.3%). The symptoms included pruritic rash and occasional urticaria. Fever, nausea, vomiting, diarrhea, and chills were seldom reported. The rash was generally located on exposed areas of the body—75.4% on arms, 22.8% on the neck, and 21.1% on legs. Rash was less often observed on the back, stomach, face, chest, or hands. The median duration of the rash for school A was 7 days, and for school B, 4 days. All skin scrapings of the rash for bacteria were negative; throat and stool cultures, and tests of acute- and convalescent-phase serum specimens to detect viruses were also negative.

A group of well students from the same schools were selected as controls. All students were interviewed for history of outdoor exposure. Touching caterpillars ($p < 0.01$), working in a garden ($p < 0.05$), and going fishing ($p < 0.01$) were statistically associated with rash illness, whereas a history of allergies was not.

Of the cases with known dates of onset, 27.5% occurred during the first week of May. This period coincides with the first larval instar of gypsy moth caterpillars, which occurs between the first and fourth weeks of May in this area. No new cases were reported after the third week of May. School A is located in a heavily wooded rural area, and school B in a small town with many trees. A distribution map of gypsy moth location indicates highest concentration in the areas in which these schools are located.

The temporal and geographic association between the outbreak of rash illness and the prevalence of gypsy moth larvae suggest a causal relationship may exist.

Reported by R Aber, MD, Hershey Medical Center, T DeMelfi, T Gill, B Healey, MPA, MA McCarthy, RN, N Oswell, W Ruhig, H Speziale, RN, EJ Witte, VMD, State Epidemiologist, Pennsylvania Dept of Health.

Editorial Note: Skin diseases resulting from contact with members of the Order Lepidoptera were described in ancient Greek medical writings. In 1901, several U.S. patients were reported to have experienced dermatitis following contact with *Euproctis chrysorrha* (brown-tailed moth) larvae (*1*). Several outbreaks of dermatitis caused by Lepidoptera have been reported; the largest outbreak involved 600 cases among 6,000 soldiers in Israel (*2,5*). Clinical symptoms and signs are quite variable depending on the type of insect and its stage of development when encountered, the intensity and duration of exposure, the pathogenetic mechanism involved, and the susceptibility of the host. Disease is usually caused by direct contact with the insect or its parts, but indirect contact and airborne transmission have been documented. At least 3 pathogenetic mechanisms have been described: I) intracutaneous injection of toxic substance(s) through hollow appendages (setae) of the insect, 2) direct irritant effects of insect hairs or appendages, and 3) hypersensitivity reaction to insect antigen. A biphasic reaction to skin testing with insect antigens has been described among some patients, which may represent sequential occurrence of 2 or more of these mechanisms (*6*).

The gypsy moth (*Lymantria dispar*) is a serious threat to hardwood trees in the northeastern United States (*7*). It was introduced into the Boston area in 1869 and has been spreading concentrically. Despite heavy infestation in the Northeast, skin diseases have seldom been attributed to the insect except in special laboratories where staff work with the moth and its larvae. No community outbreaks had been reported before 1981, when outbreaks of skin disease attributed to the gypsy moth were reported from Connecticut, Massachusetts (*8*),

Rash Illness — Continued

Rhode Island (*9*), and Pennsylvania. These outbreaks are believed to have been caused by contact with early larval stages of the moth, which are highly mobile and airborne. It is also possible that the disease is caused by a chemical substance that the larvae acquire during pest control programs. Primary-care physicians and dermatologists should be aware of skin disease resulting from contact with gypsy moth larvae.

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Current Trends

Follow-Up on Pentachlorophenol in Log Homes

The U.S. Environmental Protection Agency (EPA) recently issued a position document proposing regulations to reduce the human-health risks resulting from use of creosote, inorganic arsenic compounds, and pentachlorophenol (PCP or penta) for wood preservation (*1,2*). Evidence cited in support of the proposed regulations included that from studies that showed elevated serum and urine PCP levels among residents of log homes that were treated with 5% PCP in organic solvents (*3*).

For home and farm use of PCP (and creosote), EPA proposes prohibiting indoor application and application to wood that is intended for interior use or for uses that might result in contamination of animals, food, feed, or water. For log houses and buildings, this can be interpreted as a proposed ban on treating logs with PCP before construction (*1*).*

Not all log-home manufacturers pretreat logs with wood preservatives at the factory. Also, many manufacturers have changed from PCP to other wood preservatives (such as copper-8 -quinolinolate). To reduce PCP exposure among residents of PCP-treated log homes, CDC has suggested that interior log walls be treated with a sealer such as polyurethane (*3*). Such organic-base sealers have an efficacy of 90%-95% in reducing PCP vaporization under labora-

*Further information on these wood preservatives and copies of the Position Document can be obtained from the Office of Pesticide Programs, EPA. Address inquiries to Ms. Joan Warshawsky, Section Head, Special Pesticide Review Division, Office of Pesticide Programs, EPA (TS-791), Room 711 B, Crystal Mall II, 1921 Jefferson Davis Highway, Arlington, Virginia 22209 (203-557-7460).

Pentachlorophenol — Continued

tory conditions (*4*). A water-base solution (Permatox Pentite)† intended to reduce PCP vaporization from logs has been developed recently and is being marketed at this time. CDC is currently compiling information on the efficacy of this type of product to reduce PCP exposure among log-home residents.

Reported by P Cammer, Special Pesticide Review Division, Office of Pesticide Programs, Environmental Protection Agency; Chronic Diseases Div, Clinical Laboratory Div, Center for Environmental Health, CDC.

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†Use of trade names is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

Erratum, Vol. 31, No. 5

p53. In the article "National Surveillance for Reye Syndrome, 1981: Update, Reye Syndrome and Salicylate Usage" reference 1 should read: CDC. Follow-up on Reye syndrome—United States. MMWR 1980;29:321-2.

Erratum, Vol. 31. No. 10

p135. In the article "Human Rabies—Rwanda, reference 1 should read: Baltazard M, Bahmanyar M, Ghodssi M, Sabeti A, Gajdusek C, Rouzbehi E. A practical trial of antirabies serum in persons bitten by rabid wolves. Bull WHO 1955;13: 747-72.

The Morbidity and Mortality Weekly Report, circulation 106,000, is published by the Centers 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.

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