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MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

Sewer Collapse and Toxic Illness in Sewer Repairmen — Ohio

On February 19, 1981, a 30-foot-deep sewer in an industrial section of Cincinnati, Ohio, collapsed, bringing with it 20 tons of earth and leaving a hole 24 feet in diameter in the street. Three days later, several sewer workers were overcome by nausea, vomiting, dizziness, and eye and nose irritation while repairing the collapsed drain, and had to climb out of the sewer. Four other workers also experienced eye and nose irritation and headache. The supervisor of maintenance for the Metropolitan Sewer District notified the city health department and the National Institute for Occupational Safety and Health (NIOSH). Subsequent epidemiologic investigation and environmental mapping of underground sewer systems have implicated highly acidic effluent (wastewater) and volatile organic solvents discharged from a large pigment manufacturing plant as the cause of the sewer collapse and subsequent illness in the sewer workers. City health officials immediately closed the repair site, pending further investigation.

On February 23, NIOSH medical and industrial hygiene investigators visited the site of the collapse, interviewed the affected workers, and conducted environmental sampling. Exposed workers reported symptoms of eye and nose irritation, headache, and a metallic taste in the mouth; they also noted a solvent-like odor at the work site and that work equipment such as shovels and safety lines had turned a bluish-green color.

NIOSH industrial hygienists measured concentrations of explosive gases and of chlorine in the sewer work area, and with appropriate protective equipment, descended 18 feet into the first level of the vertical sewer shaft to conduct organic vapor testing and to collect bulk samples of industrial effluent. This same procedure was repeated at 3 other sites along a sewer conduit upstream from the work site, except that the investigators did not physically enter the conduits.

The pH was measured for all effluent samples. The pH of those samples taken from the sewer repair site ranged from 1.0 to 7.0. The pH varied as the effluent color changed. The bluish effluent had an acidic pH (range 1.0 to 3.0). Effluents of other colors generally had higher pHs. Samples were also taken from the main sewer line near the 2 wastewater discharge pipes of a nearby organic pigment manufacturing plant located along the main sewer line approximately 500 yards upstream from the sewer repair site. The samples taken near the discharge pipe for the blue pigment (phthalocyanine) wastewater had a pH ranging from 1.0 to 7.0. Samples taken near the discharge pipe for the red/orange pigment ranged from 8.0 to 9.4. The pH of all samples taken upstream above the plant ranged from 6.5 to 7.0. Chloride ion concentrations were also higher in the effluent at the repair site (8,000 to 24,000 parts per million [ppm]) than at the sampling site above the pigment plant (150 to 1,500 ppm).

Direct-reading instruments indicated the presence of significant amounts of volatile

Toxic Illness – Continued

organic substances (200 to 600 ppm) at the sewer repair site. Qualitative analyses of sewer air samples taken at the same time indicated the presence of several solvent compounds, including Stoddard solvent, 1,1,1-trichloroethane, trichloroethylene, toluene, perchloroethylene, xylene, and chlorobenzene. Initial quantitative analyses showed concentrations of Stoddard solvent of 780 ppm below the pigment manufacturing plant, and of 20 ppm above the plant. Further analytical work is under way to quantitate other compounds.

The pigment manufacturing plant was visited by the NIOSH investigators. The plant uses large amounts of Stoddard solvent and hydrochloric acid in its manufacturing processes. Although the company has a procedure to neutralize hydrochloric acid by adding caustic soda to a holding tank before effluent is discharged, pH and chloride measurements taken by NIOSH and by the city sewer department indicated that large amounts of unneutralized effluent were frequently discharged by the plant into the sewer line. No other source of acid could be identified in the area. Further investigation at the plant revealed that the firm's pH-monitoring equipment was inoperative.

On the basis of these findings, NIOSH determined that the sewer repair site was hazardous to workers' health and recommended that workers not re-enter the area until discharges of solvent and acid had ceased and residual levels dissipated (*1*). On March 3, company officials agreed to cease all discharges until repairs had been safely completed and to redesign their entire wastewater-discharge system.

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Editorial Note: Sewer workers may be exposed to myriad chemical contaminants while working in industrial areas. Wastewater effluents from many different industries commonly channel into sewer conduits and, if not properly treated, can react to form hazardous contaminants and unhealthy conditions not only for sewer workers, but also for the general public (*2,3*).

In this incident, the sewer collapse was caused by erosion of concrete sewer pipe by acid discharged from the pigment plant. The sudden onset of symptoms in the sewer workers appears to have resulted from their exposure to the vapors of acidic and organic effluent which were discharged into the sewer lines.

References

1. National Institute for Occupational Safety and Health. Criteria for a recommended standard—working in confined spaces. Cincinnati, Ohio: National Institute for Occupational Safety and Health, 1980. (HEW publication no. (NIOSH) 80-106).
2. Kominsky JR, Wisseman CL, Morse D, et al. Hexachlorocyclopentadiene contamination of a municipal wastewater treatment plant. Am Ind Hyg Assoc J 1980;41:552-6.
3. Cannon SB, Veazey JM, Jackson RS, et al. Epidemic kepone poisoning in chemical workers. Am J Epidemiol 1978;107:529-37.

Raw-Milk-Associated Illness – Oregon, California

Raw milk has recently been associated with cases of campylobacteriosis in Oregon and salmonellosis in California.

Oregon: In the period December 22, 1980-February 20, 1981, 5 counties in Oregon

Raw Milk — Continued

reported a total of 91 stool isolates of *Campylobacter fetus* subsp. *jejuni* from persons with diarrhea. Of these 91 persons, 52 (57%) gave a history of having consumed raw milk before onset of illness. In the households of these 52 index patients, 76 other household members also drank raw milk; 25 (33%) of these persons developed diarrhea. Of 19 members of these households who did not drink raw milk, none had diarrhea ($p=.005$).

To test the hypothesis that raw milk was the vehicle of transmission, 2 case-control studies were performed. In the first study, 70 control households in 1 county were selected randomly from a local telephone book. Fifty-seven (81%) of these households were contacted and interviewed. One of these households gave a history of consuming a specific brand of raw milk in the previous 2 months compared to 11 of 15 case households ($p<.0001$). In the control household in which this same brand of raw milk was consumed, the 3 members who drank it became ill but the 3 who did not remained well. No significant association was found between developing *Campylobacter* diarrhea and exposure to sick pets, live poultry, livestock, raw eggs, raw meat, untreated surface water, other individuals with diarrheal illness outside the household, or history of foreign travel in the previous 2 months. In the second case-control study, age-matched controls were selected for 28 cases. In 15 matched pairs, the patient drank the same brand of raw milk as was implicated in the other study, and the control drank no raw milk. In no instance did a patient not drink the implicated brand of raw milk and a control drink it ($p<.001$).

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California: On January 23, 1981, the California State Department of Food and Agriculture (DFA) requested that the State Department of Health Services (DHS) order the removal from sale of some certified, raw, whole milk from a single California dairy after the DFA Laboratory recovered *Salmonella saint-paul* from bottled milk coded Jan 25C. Independently, the San Diego County Health Department Laboratory recovered the same serotype from an opened milk container of the same code brought in by an ill consumer. That laboratory had also recovered *S. saint-paul* from a 4½-month-old infant who became ill within 2 weeks of starting on this dairy's certified raw milk; the infant had been breast-fed for the previous 4 months. On February 13, the DFA requested that the DHS order the removal from the market of milk coded Feb 17A, 18A, and 19A after both the DFA Laboratory and the Los Angeles County Milk Commission Laboratory—which regulates the dairy—recovered *Salmonella* organisms from milk coded 17A.

The Food and Drug Administration (FDA) cultured the implicated dairy's raw milk, obtained from retail shelves in Nevada, and found *Salmonella* Group B organisms in milk coded Feb 18A.

This dairy's raw milk, which is certified by the American Association of Medical Milk Commissions, has been implicated in outbreaks of *S. dublin* in 1958, 1964, and 1971-1975 (*3,4*). It has also been implicated in sporadic cases of campylobacteriosis (*4*). Of the 12 different serotypes of *Salmonella* that have been isolated from the dairy's milk (*S. agona, S. cerro, S. dublin, S. infantis, S. kentucky, S. lille, S. meleagridis, S. montevideo, S. newington, S. saint-paul, S. typhimurium, S. worthington*) only *S. dublin* has been epidemiologically linked to human disease (*3*).

Raw Milk – Continued

Reported by the California Dept of Health Services in the California Morbidity Weekly Report, 27 Feb 1981; and the Epidemiology Br, FDA.

Editorial Note: An analysis of *S. dublin* cases in the United States in 1979 and 1980 from 17 states (excluding California and Oregon) showed that 11 of 32 patients gave a history of raw milk ingestion. Milk from many different dairies was involved. Unlike tuberculosis and brucellosis, which can be eliminated from dairy herds by adequate precautions, *Salmonella* infections of milking herds continue to occur. Since up to 10% of healthy cattle may carry *S. dublin* (*3*), *Salmonella* contamination of unpasteurized milk can be a persistant problem, even in dairies that follow the procedures recommended by the American Association of Medical Milk Commissions, a private organization.

The association of *Campylobacter* infections with the use of unpasteurized milk has been documented in the United States and England (*4-7*). In each outbreak that was investigated, milk was either improperly pasteurized or used in an unpasteurized form. Although up to 60% of healthy cattle excrete *Campylobacter* in their feces, these organisms are eliminated from milk by pasteurization.

(Continued on page 97)

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

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

DISEASE	8th WEEK ENDING		MEDIAN 1976-1980	CUMULATIVE, FIRST 8 WEEKS		
	February 28 1981	February 23 1980		February 28 1981	February 23 1980	MEDIAN 1976-1980
Aseptic meningitis	66	61	42	486	518	312
Brucellosis	2	2	4	12	29	29
Chickenpox	5,579	4,934	6,084	39,589	36,553	40,925
Diphtheria	–	–	1	3	–	12
Encephalitis: Primary (arthropod-borne & unspec.)	17	12	13	105	97	94
Post-infectious	–	3	4	10	20	20
Hepatitis, Viral: Type B	385	271	269	2,600	2,317	2,217
Type A	512	479	563	3,571	4,140	4,417
Type unspecified	288	194	177	1,661	1,569	1,375
Malaria	21	23	10	180	203	66
Measles (rubeola)	84	173	622	335	1,137	2,532
Meningococcal infections: Total	128	55	55	781	445	405
Civilian	128	55	55	780	441	403
Military	–	–	–	1	4	3
Mumps	100	230	534	801	1,972	3,133
Pertussis	38	37	21	153	171	198
Rubella (German measles)	49	93	305	361	515	1,343
Tetanus	–	–	1	8	5	5
Tuberculosis	500	481	494	3,498	3,385	3,844
Tularemia	1	1	1	14	13	13
Typhoid fever	8	8	6	65	34	51
Typhus fever, tick-borne (Rky. Mt. spotted)	1	–	–	10	7	7
Venereal diseases:						
Gonorrhea: Civilian	16,603	15,000	16,901	147,073	145,887	145,887
Military	488	460	480	4,233	4,279	4,279
Syphilis, primary & secondary: Civilian	649	473	459	4,607	4,012	3,674
Military	12	8	8	60	64	51
Rabies in animals	96	95	48	750	713	352

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1981		CUM. 1981
Anthrax	–	Poliomyelitis: Total	–
Botulism	9	Paralytic	–
Cholera	–	Psittacosis Va. 2, Calif. 1	10
Congenital rubella syndrome Calif. 1	1	Rabies in man	–
Leprosy Tex. 3, Hawaii 1	34	Trichinosis Mass. 2, R.I. 3, Conn. 11	40
Leptospirosis Calif. 1, Hawaii 1	7	Typhus fever, flea-borne (endemic, murine)	–
Plague	–		

All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending February 28, 1981 and February 23, 1980 (8th week)

REPORTING AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKEN-POX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS (VIRAL), BY TYPE			MALARIA	
						Primary		Post-infectious	B	A	Unspecified		
	1981	1981	1981	1981	CUM. 1981	1981	1980	1981	1981	1981	1981	1981	CUM. 1981
UNITED STATES	66	2	5,579	–	3	17	12	–	385	512	288	21	180
NEW ENGLAND	3	–	441	–	–	1	–	–	18	10	6	–	10
Maine	2	–	159	–	–	–	–	–	3	–	–	–	1
N.H.	–	–	–	–	–	–	–	–	–	–	–	–	1
Vt.	–	–	31	–	–	–	–	–	1	–	–	–	–
Mass.	–	–	93	–	–	–	–	–	1	4	6	–	6
R.I.	–	–	44	–	–	–	–	–	5	3	–	–	1
Conn.	1	–	114	–	–	1	–	–	8	3	–	–	1
MID. ATLANTIC	8	–	348	–	–	2	2	–	74	36	39	1	16
Upstate N.Y.	3	–	133	–	–	1	1	–	20	22	9	–	5
N.Y. City	2	–	105	–	–	1	1	–	36	3	11	–	8
N.J.	1	–	NN	–	–	–	–	–	18	11	19	1	2
Pa.	2	–	110	–	–	–	–	–	NA	NA	NA	–	1
E.N. CENTRAL	2	–	2,038	–	–	3	4	–	34	38	13	–	5
Ohio	1	–	195	–	–	3	1	–	7	8	3	–	–
Ind.	–	–	364	–	–	–	1	–	4	7	5	–	1
Ill.	–	–	396	–	–	–	–	–	7	13	–	–	1
Mich.	–	–	664	–	–	–	2	–	15	9	4	–	3
Wis.	1	–	419	–	–	–	–	–	1	1	1	–	–
W.N. CENTRAL	9	1	894	–	–	–	–	–	4	15	8	1	7
Minn.	–	–	1	–	–	–	–	–	2	2	1	1	2
Iowa	5	–	276	–	–	–	–	–	2	2	–	–	2
Mo.	4	1	1	–	–	–	–	–	–	8	7	–	1
N. Dak.	–	–	35	–	–	–	–	–	–	–	–	–	–
S. Dak.	–	–	82	–	–	–	–	–	–	–	–	–	–
Nebr.	–	–	39	–	–	–	–	–	–	1	–	–	–
Kans.	–	–	460	–	–	–	–	–	–	2	–	–	2
S. ATLANTIC	17	–	803	–	1	4	1	–	84	63	33	3	17
Del.	1	–	7	–	–	–	–	–	–	–	1	–	–
Md.	–	–	98	–	–	3	–	–	9	2	11	–	2
D.C.	–	–	1	–	–	–	–	–	13	2	–	1	1
Va.	3	–	52	–	–	1	–	–	8	5	3	–	6
W. Va.	–	–	202	–	–	–	–	–	3	3	–	–	–
N.C.	2	–	NN	–	–	–	1	–	6	4	3	1	1
S.C.	2	–	50	–	–	–	–	–	8	–	2	–	–
Ga.	–	–	10	–	–	–	–	–	15	13	–	–	3
Fla.	9	–	383	–	1	–	–	–	22	34	13	1	4
E.S. CENTRAL	5	–	81	–	–	2	2	–	16	22	1	–	–
Ky.	–	–	63	–	–	–	1	–	4	7	1	–	–
Tenn.	2	–	NN	–	–	2	1	–	7	6	–	–	–
Ala.	1	–	13	–	–	–	–	–	1	1	–	–	–
Miss.	2	–	5	–	–	–	–	–	4	8	–	–	–
W.S. CENTRAL	7	–	495	–	–	3	–	–	21	95	85	2	7
Ark.	–	–	9	–	–	–	–	–	2	7	2	–	1
La.	–	–	NN	–	–	–	–	–	5	12	7	–	1
Okla.	–	–	–	–	–	2	–	–	4	7	1	–	1
Tex.	7	–	486	–	–	1	–	–	10	69	75	2	4
MOUNTAIN	1	–	126	–	1	–	–	–	21	50	36	1	5
Mont.	–	–	–	–	1	–	–	–	2	4	–	–	–
Idaho	–	–	1	–	–	–	–	–	1	–	–	–	–
Wyo.	–	–	–	–	–	–	–	–	–	–	–	–	–
Colo.	1	–	118	–	–	–	–	–	7	17	5	1	2
N. Mex.	–	–	2	–	–	–	–	–	5	6	–	–	–
Ariz.	–	–	NN	–	–	–	–	–	3	14	20	–	2
Utah	–	–	2	–	–	–	–	–	3	2	2	–	–
Nev.	–	–	3	–	–	–	–	–	–	7	9	–	1
PACIFIC	14	1	353	–	1	2	3	–	113	183	67	13	113
Wash.	5	–	324	–	–	1	–	–	6	30	3	3	9
Oreg.	1	–	3	–	–	–	2	–	8	7	–	–	3
Calif.	7	1	–	–	–	–	1	–	96	142	64	10	101
Alaska	–	–	16	–	1	–	–	–	2	–	–	–	–
Hawaii	1	–	10	–	–	1	–	–	1	4	–	–	–
Guam	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–
P.R.	–	–	15	–	–	–	–	–	4	15	3	–	3
V.I.	–	–	9	–	–	–	–	–	–	–	–	–	–
Pac. Trust Terr.	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–

NN: Not notifiable. NA: Not available.
All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending February 28, 1981 and February 23, 1980 (8th week)

REPORTING AREA	MEASLES (RUBEOLA)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	1981	1981	CUM. 1981	CUM. 1981
UNITED STATES	84	335	1,137	128	781	445	100	801	38	49	361	8
NEW ENGLAND	–	8	83	5	54	20	4	33	–	3	48	–
Maine	–	–	–	–	8	1	2	6	–	3	30	–
N.H.	–	2	51	–	5	3	–	4	–	–	12	–
Vt.	–	1	30	–	–	1	–	1	–	–	–	–
Mass.	–	1	–	–	12	8	2	14	–	–	6	–
R.I.	–	–	1	2	5	1	–	3	–	–	–	–
Conn.	–	4	1	3	24	6	–	5	–	–	–	–
MID. ATLANTIC	51	117	203	12	79	68	6	73	5	8	48	1
Upstate N.Y.	50	89	65	3	23	32	5	22	4	7	22	–
N.Y. City	1	11	51	1	4	15	–	8	–	1	9	1
N.J.	–	7	14	3	31	15	1	15	–	–	15	–
Pa.	–	10	73	5	21	6	–	28	1	–	2	–
E.N. CENTRAL	4	24	141	8	74	56	41	250	14	11	77	1
Ohio	–	7	18	2	26	27	4	43	1	–	–	–
Ind.	1	1	10	–	9	10	2	32	4	4	28	–
Ill.	2	5	36	4	20	3	12	38	7	7	18	–
Mich.	1	11	46	1	15	12	16	95	–	–	9	1
Wis.	–	–	31	1	4	4	7	42	2	–	22	–
W.N. CENTRAL	–	2	120	2	25	15	9	63	3	3	18	2
Minn.	–	1	84	–	12	6	1	1	–	3	5	1
Iowa	–	–	–	1	7	1	2	20	1	–	–	–
Mo.	–	–	22	1	3	6	–	2	2	–	1	1
N. Dak.	–	–	–	–	–	1	–	–	–	–	–	–
S. Dak.	–	–	–	–	1	1	–	1	–	–	–	–
Nebr.	–	1	3	–	–	–	–	–	–	–	–	–
Kans.	–	–	11	–	2	–	6	39	–	–	12	–
S. ATLANTIC	22	82	311	41	213	100	16	118	2	6	42	1
Del.	–	–	1	–	4	–	–	2	–	–	–	–
Md.	–	–	1	2	8	10	5	21	–	–	–	–
D.C.	–	–	–	–	1	–	–	–	–	–	–	–
Va.	–	–	65	5	21	11	3	33	2	–	6	–
W. Va.	–	6	1	2	10	3	4	22	–	–	11	–
N.C.	–	–	1	9	29	19	–	3	–	–	2	–
S.C.	–	–	–	5	27	10	1	4	–	1	4	1
Ga.	10	40	174	7	36	23	–	11	–	4	9	–
Fla.	12	36	68	11	77	24	3	22	–	1	10	–
E.S. CENTRAL	–	1	87	7	63	44	2	28	3	1	7	–
Ky.	–	–	27	3	17	12	2	14	3	1	5	–
Tenn.	–	1	4	3	20	13	–	8	–	–	2	–
Ala.	–	–	12	1	17	13	–	5	–	–	–	–
Miss.	–	–	44	–	9	6	–	1	–	–	–	–
W.S. CENTRAL	4	23	60	30	159	48	6	38	2	5	26	1
Ark.	–	–	1	–	14	3	–	–	–	–	–	–
La.	–	–	3	8	36	14	–	3	–	–	2	–
Okla.	2	3	11	3	6	4	–	–	1	–	–	–
Tex.	2	20	45	19	103	27	6	35	1	5	24	1
MOUNTAIN	–	7	32	2	33	26	4	25	3	6	14	1
Mont.	–	–	–	–	1	1	–	–	–	–	1	–
Idaho	–	–	–	–	2	3	–	2	–	–	–	–
Wyo.	–	–	–	–	–	1	–	–	–	1	1	–
Colo.	–	–	2	1	14	8	1	10	2	5	9	–
N. Mex.	–	–	1	–	4	3	–	–	1	–	–	–
Ariz.	–	–	9	–	7	5	–	6	–	–	1	1
Utah	–	–	18	–	3	1	2	4	–	–	2	–
Nev.	–	7	2	1	2	4	1	3	–	–	–	–
PACIFIC	3	71	100	21	81	68	12	173	6	6	81	1
Wash.	–	–	18	2	11	10	2	55	3	1	16	–
Oreg.	–	–	–	3	6	6	2	27	–	–	3	–
Calif.	3	70	80	16	58	52	8	83	3	5	62	1
Alaska	–	–	–	–	2	–	–	1	–	–	–	–
Hawaii	–	1	2	–	4	–	–	7	–	–	–	–
Guam	NA	–	1	–	–	–	NA	–	NA	NA	–	–
P.R.	–	36	9	1	2	3	–	10	–	–	–	–
V.I.	–	–	–	–	–	–	–	–	–	–	–	–
Pac. Trust Terr.	NA	–	3	–	–	–	NA	–	NA	NA	1	–

NA: Not available.

All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending February 28, 1981 and February 23, 1980 (8th week)

REPORTING AREA	TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		VENEREAL DISEASES (Civilian)						RABIES (in Animals)
								GONORRHEA			SYPHILIS (Pri. & Sec.)			
	1981	CUM. 1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1980	CUM. 1981
UNITED STATES	500	3,498	14	8	65	1	10	16,603	147,073	145,887	649	4,607	4,012	750
NEW ENGLAND	16	96	–	–	1	–	–	561	3,858	4,001	11	109	91	3
Maine	–	9	–	–	–	–	–	31	181	269	–	1	–	3
N.H.	–	1	–	–	–	–	–	13	142	135	6	9	–	–
Vt.	–	2	–	–	–	–	–	3	55	125	1	2	1	–
Mass.	9	57	–	–	1	–	–	280	1,561	1,509	4	60	50	–
R.I.	–	5	–	–	–	–	–	19	168	220	–	10	3	–
Conn.	7	22	–	–	–	–	–	215	1,751	1,743	–	27	37	–
MID. ATLANTIC	77	590	–	1	6	–	2	2,062	16,449	15,743	75	710	571	1
Upstate N.Y.	12	100	–	–	1	–	–	332	2,415	2,341	12	60	43	1
N.Y. City	42	239	–	1	5	–	2	750	6,375	6,487	50	448	389	–
N.J.	12	150	–	–	–	–	–	532	3,690	2,853	7	86	71	–
Pa.	11	101	–	–	–	–	–	448	3,969	4,062	6	116	68	–
E.N. CENTRAL	65	444	–	1	6	–	1	2,052	22,674	24,685	27	221	373	81
Ohio	13	78	–	–	1	–	1	404	9,355	6,507	1	50	63	7
Ind.	NA	23	–	–	–	–	–	178	1,870	2,291	2	19	38	4
Ill.	27	200	–	–	4	–	–	455	4,150	8,099	18	97	211	45
Mich.	17	126	–	–	–	–	–	615	5,198	5,232	4	37	48	–
Wis.	8	17	–	1	1	–	–	400	2,101	2,556	2	18	13	25
W.N. CENTRAL	26	121	1	–	2	–	1	790	7,309	6,316	16	80	41	321
Minn.	4	17	–	–	1	–	–	153	1,171	1,138	3	20	14	63
Iowa	5	26	–	–	–	–	–	117	703	750	1	4	4	120
Mo.	10	39	1	–	–	–	1	314	3,293	2,511	12	48	22	24
N. Dak.	1	6	–	–	–	–	–	13	75	85	–	–	–	54
S. Dak.	1	9	–	–	1	–	–	18	199	219	–	–	–	24
Nebr.	1	7	–	–	–	–	–	76	552	549	–	3	1	16
Kans.	4	17	–	–	–	–	–	99	1,316	1,064	–	5	–	20
S. ATLANTIC	113	781	3	–	7	1	4	4,669	37,789	35,988	165	1,206	963	52
Del.	–	6	1	–	–	–	–	76	579	559	–	1	3	–
Md.	8	65	–	–	1	–	–	659	3,973	3,405	10	93	75	1
D.C.	7	57	–	–	1	–	–	343	2,563	2,659	14	102	67	–
Va.	NA	65	–	–	–	–	–	427	3,527	3,060	25	122	89	9
W. Va.	1	33	–	–	3	–	–	72	498	478	1	2	3	2
N.C.	30	160	1	–	1	1	4	821	6,304	5,646	9	80	75	–
S.C.	20	72	1	–	–	–	–	358	3,279	3,639	10	86	38	1
Ga.	26	114	–	–	–	–	–	695	7,604	6,412	53	310	272	27
Fla.	21	209	–	–	1	–	–	1,218	9,462	10,130	43	410	341	12
E.S. CENTRAL	39	296	2	1	2	–	2	1,175	11,941	11,107	24	344	325	43
Ky.	3	72	2	–	–	–	–	153	1,500	1,717	1	16	15	14
Tenn.	14	102	–	–	–	–	1	629	4,522	4,037	8	132	136	23
Ala.	14	101	–	1	1	–	–	130	3,787	2,888	4	100	59	6
Miss.	8	21	–	–	1	–	1	263	2,132	2,465	11	96	115	–
W.S. CENTRAL	37	290	3	–	4	–	–	2,408	21,473	18,441	143	1,138	745	152
Ark.	5	22	–	–	–	–	–	68	1,180	1,408	8	20	29	32
La.	6	81	2	–	–	–	–	384	3,273	2,830	35	241	161	8
Okla.	NA	42	–	–	1	–	–	263	2,082	1,936	3	24	9	23
Tex.	26	145	1	–	3	–	–	1,693	14,938	12,267	97	853	546	89
MOUNTAIN	22	106	5	1	5	–	–	721	5,834	5,531	42	146	82	23
Mont.	–	6	1	1	4	–	–	11	218	199	–	3	–	23
Idaho	1	5	1	–	–	–	–	29	239	273	2	7	3	–
Wyo.	–	1	–	–	–	–	–	9	127	164	–	1	3	–
Colo.	–	8	2	–	1	–	–	152	1,550	1,396	7	37	29	–
N. Mex.	6	21	–	–	–	–	–	74	710	829	14	29	13	–
Ariz.	11	47	–	–	–	–	–	314	1,870	1,373	15	32	20	–
Utah	4	6	1	–	–	–	–	29	277	292	1	1	4	–
Nev.	–	12	–	–	–	–	–	103	843	1,005	3	36	10	–
PACIFIC	105	774	–	4	32	–	–	2,165	19,746	24,075	146	653	821	74
Wash.	13	52	–	–	–	–	–	266	1,755	2,053	–	8	48	–
Oreg.	10	31	–	1	2	–	–	250	1,694	1,559	1	11	17	–
Calif.	79	679	–	3	28	–	–	1,533	15,313	19,405	143	617	744	64
Alaska	–	1	–	–	–	–	–	56	510	562	–	1	1	10
Hawaii	3	11	–	–	2	–	–	60	474	496	2	16	11	–
Guam	NA	–	–	NA	–	NA	–	NA	–	25	NA	–	–	–
P.R.	–	1	–	–	–	–	–	94	490	286	33	112	71	10
V.I.	–	–	–	–	–	–	–	7	7	25	–	–	5	–
Pac. Trust Terr.	NA	8	–	NA	–	NA	–	NA	46	94	NA	–	–	–

NA: Not available.
All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE IV. Deaths in 121 U.S. cities,* week ending February 28, 1981 (8th week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	<1	
NEW ENGLAND	648	456	125	27	18	53
Boston, Mass.	185	122	38	6	8	22
Bridgeport, Conn.	29	23	5	–	–	2
Cambridge, Mass.	17	16	1	–	–	3
Fall River, Mass.	27	22	4	1	–	3
Hartford, Conn.	61	38	13	6	2	3
Lowell, Mass.	18	13	4	1	–	–
Lynn, Mass.	23	12	9	1	–	1
New Bedford, Mass.	17	12	4	–	1	–
New Haven, Conn.	43	31	10	1	–	3
Providence, R.I.	73	58	6	4	4	6
Somerville, Mass.	7	6	1	–	–	–
Springfield, Mass.	51	34	13	1	1	5
Waterbury, Conn.	39	26	8	3	–	2
Worcester, Mass.	58	43	9	3	2	3
MID. ATLANTIC	2,650	1,735	636	150	62	134
Albany, N.Y.	47	30	14	2	–	–
Allentown, Pa.	20	14	6	–	–	–
Buffalo, N.Y.	150	101	37	5	2	23
Camden, N.J.	49	30	11	3	4	2
Elizabeth, N.J.	30	19	8	3	–	2
Erie, Pa.†	40	27	7	1	1	–
Jersey City, N.J.	55	31	15	5	1	1
Newark, N.J. ††	58	28	18	6	3	3
N.Y. City, N.Y.	1,410	932	318	94	33	61
Paterson, N.J.	23	16	5	2	–	1
Philadelphia, Pa.†	327	202	92	17	10	22
Pittsburgh, Pa.†	64	47	14	1	1	2
Reading, Pa.	41	26	12	–	–	2
Rochester, N.Y.	115	80	22	7	3	7
Schenectady, N.Y.	27	19	6	–	1	1
Scranton, Pa.†	31	23	8	–	–	–
Syracuse, N.Y.	87	52	28	4	3	1
Trenton, N.J.	31	20	9	–	–	1
Utica, N.Y.	17	14	3	–	–	1
Yonkers, N.Y.	28	24	3	–	–	4
E.N. CENTRAL	2,375	1,479	578	144	81	78
Akron, Ohio	40	20	11	2	5	2
Canton, Ohio	41	25	10	2	2	2
Chicago, Ill.	526	322	116	45	22	17
Cincinnati, Ohio	181	107	53	8	6	19
Cleveland, Ohio	159	92	49	6	4	1
Columbus, Ohio	126	79	30	5	3	4
Dayton, Ohio	111	74	25	10	1	–
Detroit, Mich.	250	142	65	20	12	9
Evansville, Ind.	49	35	9	4	1	1
Fort Wayne, Ind.	65	39	18	5	2	3
Gary, Ind.	25	8	7	1	4	1
Grand Rapids, Mich.	79	49	17	7	5	3
Indianapolis, Ind.	192	135	37	8	3	1
Madison, Wis.	37	25	7	1	1	2
Milwaukee, Wis.	152	93	46	4	5	–
Peoria, Ill.	48	36	7	2	2	–
Rockford, Ill.	45	31	12	1	1	4
South Bend, Ind.	49	35	12	1	–	–
Toledo, Ohio	115	73	29	7	1	5
Youngstown, Ohio	85	59	18	5	1	4
W.N. CENTRAL	852	564	158	59	42	53
Des Moines, Iowa	101	70	23	3	3	4
Duluth, Minn.	17	14	1	1	–	5
Kansas City, Kans.	49	30	15	2	1	2
Kansas City, Mo.	83	59	14	2	4	7
Lincoln, Nebr.	28	20	7	–	–	3
Minneapolis, Minn.	113	77	20	4	10	2
Omaha, Nebr.	99	68	18	8	1	12
St. Louis, Mo.	206	123	24	33	18	14
St. Paul, Minn.	85	63	15	2	2	–
Wichita, Kans.	71	40	21	4	3	4

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	<1	
S. ATLANTIC	1,411	890	361	95	28	84
Atlanta, Ga.	162	99	36	20	1	8
Baltimore, Md.	277	162	75	25	5	11
Charlotte, N.C.	71	46	19	4	2	3
Jacksonville, Fla.	123	78	37	4	2	6
Miami, Fla.	93	56	27	4	–	5
Norfolk, Va.	83	49	22	5	5	9
Richmond, Va.	80	62	8	8	1	7
Savannah, Ga.	62	35	21	4	1	9
St. Petersburg, Fla.	107	93	10	1	3	11
Tampa, Fla.	75	51	19	3	–	5
Washington, D.C.	219	124	72	14	3	8
Wilmington, Del.	59	35	15	3	5	2
E.S. CENTRAL	775	471	185	37	62	55
Birmingham, Ala.	101	58	31	6	5	2
Chattanooga, Tenn.	52	28	17	2	4	9
Knoxville, Tenn.	46	35	10	–	–	4
Louisville, Ky.	144	80	37	7	12	15
Memphis, Tenn.	178	111	35	3	26	11
Mobile, Ala. ††	70	41	16	4	5	4
Montgomery, Ala.	68	48	13	2	5	2
Nashville, Tenn.	116	70	26	13	5	8
W.S. CENTRAL	1,666	924	462	118	81	81
Austin, Tex.	53	35	5	8	3	8
Baton Rouge, La.	27	17	5	–	–	3
Corpus Christi, Tex.	28	17	8	1	–	–
Dallas, Tex.	209	120	50	17	12	8
El Paso, Tex.	61	38	15	2	3	6
Fort Worth, Tex.	124	70	35	13	1	11
Houston, Tex.	474	234	150	41	21	5
Little Rock, Ark.	88	49	30	3	5	8
New Orleans, La.	207	112	61	8	22	2
San Antonio, Tex.	218	128	56	13	8	14
Shreveport, La.	82	42	29	5	1	5
Tulsa, Okla.	95	62	14	7	5	11
MOUNTAIN	701	423	170	47	27	35
Albuquerque, N. Mex.	69	34	23	9	1	3
Colo. Springs, Colo.	44	21	17	3	1	2
Denver, Colo.	167	98	40	12	8	8
Las Vegas, Nev.	66	36	23	2	2	4
Ogden, Utah	18	16	1	1	–	–
Phoenix, Ariz.	165	111	25	12	9	4
Pueblo, Colo.	20	15	1	3	–	3
Salt Lake City, Utah	53	27	17	2	2	1
Tucson, Ariz.	99	65	23	3	4	10
PACIFIC	2,369	1,549	509	164	77	103
Berkeley, Calif.	18	13	–	–	4	1
Fresno, Calif.	78	45	18	6	5	5
Glendale, Calif.	56	46	4	2	2	1
Honolulu, Hawaii	70	45	15	4	1	6
Long Beach, Calif.	104	70	29	4	1	2
Los Angeles, Calif.	920	583	216	68	21	37
Oakland, Calif.	85	58	12	7	3	2
Pasadena, Calif.	36	20	10	3	3	5
Portland, Oreg.	138	92	25	9	9	2
Sacramento, Calif.	69	42	18	5	3	7
San Diego, Calif.	143	95	28	15	2	3
San Francisco, Calif.	176	112	40	13	8	4
San Jose, Calif.	163	104	36	8	10	13
Seattle, Wash.	201	144	35	17	2	6
Spokane, Wash.	53	36	13	1	2	5
Tacoma, Wash.	59	44	10	2	1	4
TOTAL	13,447	8,491	3,184	841	478	676

*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.

††Data not available this week. Figures are estimates based on average percent of regional totals.

Raw Milk – Continued

Present technology cannot produce raw milk (including that listed as certified) that can be assured to be free of pathogens; only with pasteurization is there this assurance. The U.S. Animal Health Assocation, the National Association of State Public Health Veterinarians, the Conference of State and Territorial Epidemiologists, the American Academy of Pediatrics, and the House of Delegates of the American Veterinary Medical Association have adopted policy statements that milk for human consumption should be pasteurized.

References

1. CDC. Human *Salmonella dublin* infection associated with consumption of certified raw milk—California. MMWR 1974;23:175.
2. Werner SB, Humphrey GL, Kamer I. Assocation between raw milk and human *Salmonella dublin* infection. Br Med J 1979;2:238-41.
3. Hinton M, Williams BM. *Salmonella dublin* infection in adult cattle: a slaughterhouse and knackery survey in South West Wales. J Hyg 1977;78:121-7.
4. Taylor PR, Weinstein WM, Bryner JH. *Campylobacter fetus* infection in human subjects: association with raw milk. Am J Med 1979;66:779-83.
5. Blaser MJ, Cravens J, Powers BW, LaForce FM, Wang W-LL. *Campylobacter* enteritis associated with unpasteurized milk. Am J Med 1979;67:715-8.
6. Robinson DA, Edgar WJ, Gibson GL, Matcheff AA, Robertson L. *Campylobacter* enteritis associated with consumption of unpasteurized milk. Br Med J 1979;1:1171-3.
7. Porter IA, Reid TMS. A milk-borne outbreak of *Campylobacter* infection. J Hyg 1980;84:415-9.

Human Rabies – United States, 1980

There were no cases of rabies in humans reported in the United States during 1980. Since 1938, the first year for which CDC has records on rabies, 1974 and 1980 are the only years in which no cases of human rabies were reported. The last known human case occurred in a 45-year-old man from Kentucky who died on November 30, 1979.

Reported by Respiratory and Special Pathogens Br, Viral Diseases Div, Center for Infectious Diseases, CDC.

Editorial Note: The reported number of human rabies cases in the last 2 years does not parallel the reports of animal cases, which have risen dramatically (an average of 5,722 cases annually for 1979 and 1980, compared with an average of 3,091 a year for the previous 5 years). Since human diploid cell rabies vaccine (HDCV) was licensed on June 9, 1980, the majority of postexposure treatments for rabies have used this highly effective—and safer—product. The contribution of this vaccine to the lack of human cases in 1980 is unknown.

In 1978 and 1979, 4 of the 9 patients who died of rabies had no history of a known bite exposure. Since clinical rabies often mimics encephalitis caused by other viruses, it is possible that patients—particularly those from rural or semi-rural environments—have died of undiagnosed rabies. In cases of encephalitis of unknown etiology, postmortem fluorescent-antibody staining of unfixed brain tissue from the hippocampus (Ammon's horn) or brain stem, may reveal previously undiagnosed rabies.

Reference

1. CDC. Human rabies – Kentucky. MMWR 1979;28:590-1.

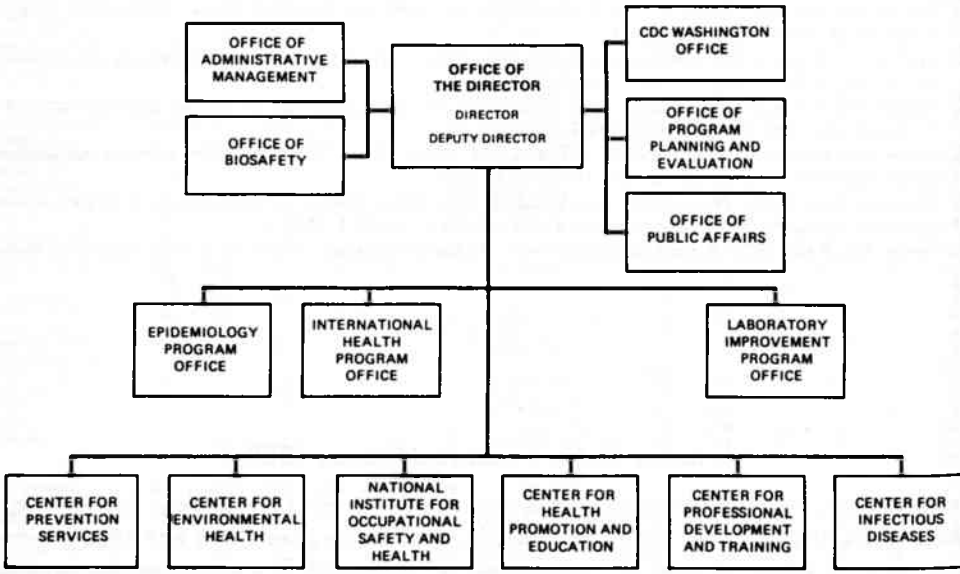
Notice to Readers

CDC Reorganized

As announced in the Federal Register on October 14, 1980, the Center for Disease Control was recently reorganized and renamed the Centers for Disease Control. To facilitate correspondence with CDC, please refer to the figure below.

Reported by the Office of the Director, CDC.

FIGURE 1. Newly-reorganized Centers for Disease Control, as of October 14, 1980



Current Trends

Influenza — United States

For the week ending February 21, 1981, Florida and Nebraska reported widespread outbreaks of influenza. Nine states throughout the country reported regional outbreaks, while 10 reported no known activity. Deaths due to pneumonia and influenza reported in 121 cities were elevated for the 12th consecutive week since December 13, 1980 (Figure 2).

Influenza A(H1N1) virus has been isolated from sporadic cases in Arizona, Arkansas, Indiana, Minnesota, Mississippi, Nevada, and Virginia. This raises the total number of states with influenza A(H1N1) isolates to 26, plus the District of Columbia (*1*). There were no reported outbreaks due to this subtype during February.

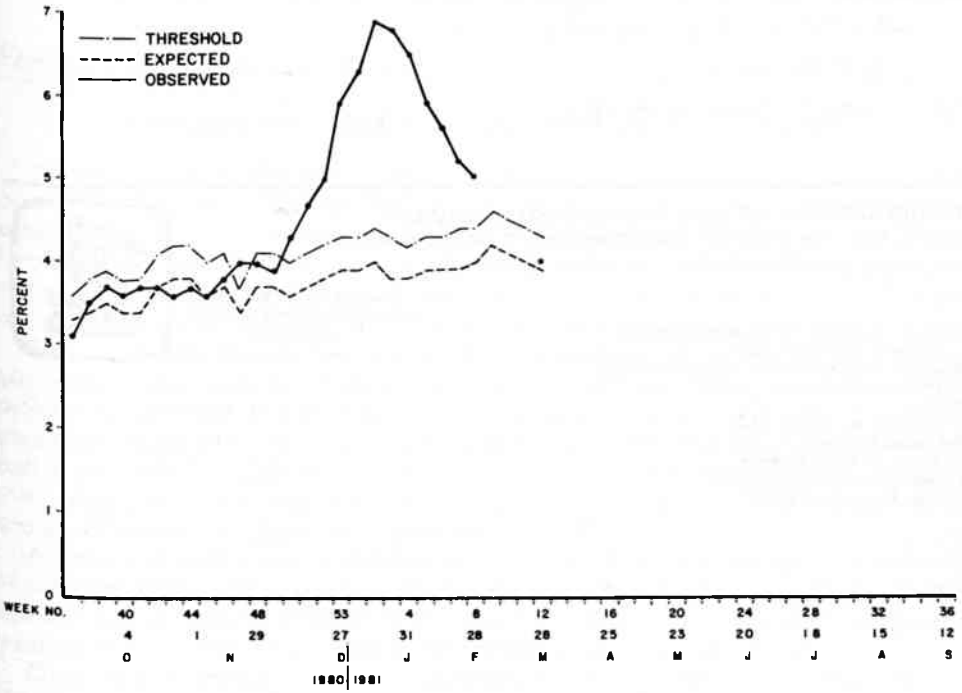
Influenza — Continued

Reported by participating State Epidemiologists and Laboratory Directors; Immunization Div, Center for Prevention Services, Virology Div, Center for Infectious Diseases, Consolidated Surveillance and Communications Activity, Epidemiology Program Office, CDC.

Reference

1. CDC. Influenza—United States. MMWR 1981;30:74-5.

FIGURE 2. Observed and expected ratio of deaths attributed to pneumonia and influenza in 121 U.S. cities, 1980-1981



*Forecasts are made at 4-week intervals except during epidemic periods.

The Morbidity and Mortality Weekly Report, circulation 106,874, 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.

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

Send mailing list additions, deletions and address changes to: Attn: Distribution Services, Management Analysis and Services Office, 1-SB-419, Centers for Disease Control, Atlanta, Georgia 30333. Or call 404-329-3219. When requesting changes be sure to give your former address, including zip code and mailing list code number, or send an old address label.

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