

# Morbidity and Mortality



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

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EPIDEMIOLOGIC NOTES AND REPORTS  
SUSPECTED CARBON MONOXIDE POISONING

Massachusetts

At midday on August 29, 1974, assembly workers at a semiconductor factory in Norfolk County, Massachusetts, began to experience headaches and anorexia. By 3:30 that afternoon many of them were having weakness, dizziness, "misplaced" sensations, and parasthesias of their limbs and faces. Four lost consciousness but recovered promptly after oxygen administration. At 4:00 p.m. the plant was evacuated; 1 employee was taken to the hospital. A blood sample taken while she was fully conscious, after nasal oxygen administration, contained less than 10% carboxyhemoglobin by a spectrophotometric assay. Most of those affected felt entirely normal within 24 hours.

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The assembly employees work 4 10-hour shifts per week, and August 29 was the last day of their work week. A majority of those affected were cigarette smokers who are allowed to smoke while working.

The factory's main building contains 6 annealing furnaces. Propane and air are burned in the furnaces to provide a reducing atmosphere with as high as 8% carbon monoxide (CO) (80,000 ppm). Approximately 125 persons work in an

TABLE I. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES  
(Cumulative totals include revised and delayed reports through previous weeks)

DISEASE	WEEK ENDING		MEDIAN 1969-1973	CUMULATIVE, FIRST 38 WEEKS		
	September 21, 1974	September 22, 1973		1974	1973	MEDIAN 1969-1973
Aseptic meningitis . . . . .	89	165	196	2,165	3,233	3,233
Brucellosis . . . . .	5	5	5	121	139	144
Chickenpox . . . . .	312	294	—	99,939	145,479	—
Diphtheria . . . . .	2	1	3	183	127	117
Encephalitis:						
Primary: Arthropod-borne and unspecified . . . . .	34	48	38	716	1,065	1,032
Post-Infectious . . . . .	1	1	4	199	222	248
Hepatitis, Viral:						
Type B . . . . .	219	143	143	7,037	5,823	5,823
Type A . . . . .	857	—	—	30,661	—	—
Type unspecified . . . . .	153	1,132	1,132	6,059	37,013	39,973
Malaria . . . . .	8	7	47	166	179	2,089
Measles (rubeola) . . . . .	84	89	156	19,989	24,296	27,079
Meningococcal infections, total . . . . .	16	11	20	1,009	1,072	1,787
Civilian . . . . .	16	11	20	983	1,048	1,594
Military . . . . .	—	—	—	26	24	191
Mumps . . . . .	278	403	509	44,820	55,857	68,711
Pertussis . . . . .	40	—	—	1,243	—	—
Rubella (German measles) . . . . .	138	86	236	10,066	26,107	38,819
Tetanus . . . . .	4	4	4	64	65	85
Tuberculosis, new active . . . . .	577	628	—	22,368	22,892	—
Tularemia . . . . .	4	6	4	113	127	110
Typhoid fever . . . . .	9	13	13	291	508	253
Typhus, tick-borne (Rky. Mt. spotted fever) . . . . .	19	16	10	690	562	394
Venereal Diseases:						
Gonorrhoea . . . . .	19,946	18,226	—	658,506	614,952	—
Syphilis, primary and secondary . . . . .	558	469	—	18,140	18,146	—
Rabies in animals . . . . .	50	47	58	2,141	2,648	2,647

TABLE II. NOTIFIABLE DISEASES OF LOW FREQUENCY

	Cum.		Cum.
Anthrax: . . . . .	2	Poliomyelitis, total: . . . . .	5
Botulism: Alaska 2, Iowa 2 . . . . .	13	Paralytic: . . . . .	5
Congenital rubella syndrome: * . . . . .	41	Psittacosis: * Tex. 32 . . . . .	141
Leprosy: * Calif. 2, Hawaii 3 . . . . .	78	Rabies in man: . . . . .	—
Leptospirosis: La. 1 . . . . .	29	Trichinosis: . . . . .	68
Plague: N. Mex. 1 . . . . .	2	Typhus, murine: Tex. 2 . . . . .	20

\*Delayed reports: Cong. Rub. Synd. Ariz. 1 (1973)  
Leptospirosis: Guam 1  
Psittacosis: Mo. delete 1

**CARBON MONOXIDE POISONING – Continued**

open room near these furnaces assembling and inspecting the semiconductors; 3 men load the semiconductors into the ovens. These 3 men all had headaches on August 29, but none lost consciousness. The seriously ill patients were workers located throughout the assembly area. Ventilation is provided by ducts exhausting gases directly from the furnaces and out the roof and by ceiling fans blowing air from the general assembly area and above the furnaces out through the roof. Four large electric air conditioners had been installed 2 weeks before in the roof and generally operated without circulating outside air. With the air conditioners in use, windows and doors around the work place were kept closed, whereas previously they had frequently been opened to permit a flow of air from the outside.

On September 3, following a 4-day weekend, the factory resumed normal operations. On September 4, the average CO level in the assembly area was 141 ppm using a direct-reading CO meter with a catalytically active electrode. Operation of the furnaces, ventilation system, and air conditioners was the same on August 29 and September 4 according to the plant engineers, and windows and doors to the outside were closed on both days.

Alveolar air CO levels of 22 workers in the assembly area were measured on September 4 to provide an indication of blood carboxyhemoglobin (COHb) levels. All had been at work approximately 5 hours at the time of the testing on the second day of the work week. The same direct reading CO meter used for environmental samples was employed for these tests. Office workers in the administrative area of the plant, separated from the assembly room by closed doors, were similarly tested. The air in these offices contained only 18 ppm CO. Table 1 gives the calculated COHb levels for those tested. Nonsmokers in the assembly area averaged 10.5% COHb, whereas nonsmokers in the office averaged 4.9%. Smokers in both groups had higher levels.

The ventilation system from the furnaces was examined, and the flow rate was found to be insufficient to provide complete removal of exhausted CO. Installation of an improved ventilation system for the furnaces was recommended. It was suggested that as an interim measure outside air be allowed to enter the building more freely. After opening windows and doors around the assembly area on the afternoon of September 4, average CO levels in that area fell from 141 to 49 ppm.

*(Reported by Leonard D. Pagnotto, M.S., Chief of Chemical Services, Harold Bavley, Director, and John N. Lewis, M.D., Occupational Health Physician, Division of Occupational Hygiene, Massachusetts Department of Labor and Industries.)*

**Editorial Note**

The internal combustion engine has been the most notorious source of atmospheric CO pollution and accounts for

Table 1  
Average COHb Levels Calculated from Alveolar Air Samples  
for Workers in a Semiconductor Plant  
Norfolk County, Massachusetts – September 4, 1974

Work Area	Smokers		Nonsmokers	
	No.	% (Range)	No.	% (Range)
Assembly area	15	12.5 (9.1-16.2)	7	10.5 (8.7-12.3)
Administrative Offices	3	5.6 (4.4-6.8)	4	4.9 (4.5-5.3)

over half the estimated emissions. Other sources of this toxic gas may be found in industrial work places, particularly foundries, petroleum refineries, pulp mills, and steel mills (1).

Blood levels of CO are measured as percent of bound hemoglobin (carboxyhemoglobin). Mild symptoms such as headache and anorexia usually appear at carboxyhemoglobin levels around 20%. Numbness and dizziness would be expected to occur at levels of 30-40%. Unconsciousness might ensue at 40-50%. A worker's blood level would not be expected to reach 40% carboxyhemoglobin unless he were exposed to at least 300 ppm CO for 10 hours (2).

The air standard for occupational exposure to CO proposed by the National Institute for Occupational Safety and Health is a time-weighted average of 35 ppm for an 8-hour workday. (This assumes levels will return to normal before the next workday.) It is designed to prevent accumulative blood levels of 5% carboxyhemoglobin or above in sedentary workers and recognizes that more active workers and smokers will not be afforded the same protection at that level (3).

In the August 29 episode at this plant the level of CO present during the shift when workers developed symptoms is not known. The predictions above suggest, however, that average levels of approximately 300 ppm should have been present. Yet when furnace operation and ventilation conditions were reproduced on September 4, levels of only 140 ppm were found. Two factors which might have accounted for symptoms appearing at levels below 300 ppm are (1) reduced recovery time of workers on 10-hour shifts for 4 consecutive working days and (2) smoking. Smoking has been shown to elevate carboxyhemoglobin about 5% above normal levels, but it is not clear how much it affects levels already high because of the work environment.

**References**

1. US Dept of Health, Education, and Welfare: Air Quality Criteria for Carbon Monoxide (NAPCA Pub No. AP-62). Washington, 1970
2. Stewart RD, et al: Experimental human exposure to carbon monoxide. Arch Environ Health 21:154-164, 1970
3. National Institute for Occupational Safety and Health: Criteria for a Recommended Standard . . . Occupational Exposure to Carbon Monoxide (Pub No. HSM 73-11000). Washington, 1972

**CURRENT TRENDS**  
**INFLUENZA – United States, 1973-74**

**Summary**

Influenza activity in the United States during the 1973-74 influenza season was characterized by widespread outbreaks of influenza B predominantly in the Midwest during the months of January and February followed by the appearance in late March and April of localized outbreaks of influenza A in various parts of the country.

**Influenza B**

The first reported outbreaks of influenza B in the United States occurred in early January in Georgia, northern Wisconsin, northern Michigan, Illinois, Minnesota, Oklahoma, Iowa, and the Texas Panhandle. Within a 3-week period, the disease spread widely throughout the Midwest and to a somewhat

*(Continued on page 331)*

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES FOR WEEKS ENDING SEPTEMBER 21, 1974 AND SEPTEMBER 22, 1973 (38th WEEK)

AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKENPOX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS, VIRAL			MALARIA	
						Primary: Arthropod-borne and Unspecified		Post Infectious	Type B	Type A	Type Unspecified		
						1974	1973	1974	1974	1974	1974		
UNITED STATES	89	5	312	2	183	34	48	1	219	857	153	8	166
NEW ENGLAND	5	-	32	-	-	1	3	-	2	32	16	-	8
Maine *	-	-	4	-	-	-	-	-	-	3	5	-	-
New Hampshire *	1	-	1	-	-	-	-	-	-	-	1	-	-
Vermont	-	-	-	-	-	-	-	-	-	1	-	-	-
Massachusetts	-	-	21	-	-	1	2	-	-	14	9	-	2
Rhode Island	3	-	2	-	-	-	-	-	-	6	-	-	3
Connecticut *	1	-	4	-	-	-	1	-	2	8	1	-	3
MIDDLE ATLANTIC	11	1	14	-	1	3	11	-	35	79	21	1	29
Upstate New York	2	-	6	-	-	-	2	-	2	18	1	-	10
New York City	-	1	7	-	-	-	-	-	7	17	-	-	11
New Jersey	8	-	NN	-	-	2	3	-	17	21	19	1	4
Pennsylvania *	1	-	1	-	1	1	6	-	9	23	1	-	4
EAST NORTH CENTRAL	15	-	127	-	2	4	12	-	24	162	15	-	13
Ohio *	3	-	5	-	1	2	5	-	2	26	-	-	6
Indiana	1	-	22	-	-	-	-	-	-	5	-	-	-
Illinois	1	-	-	-	1	-	4	-	9	41	6	-	2
Michigan	10	-	55	-	-	2	3	-	10	80	8	-	4
Wisconsin	-	-	45	-	-	-	-	-	3	10	1	-	1
WEST NORTH CENTRAL	4	-	35	-	-	9	-	-	5	52	12	-	4
Minnesota	-	-	-	-	-	-	-	-	1	12	-	-	1
Iowa	2	-	26	-	-	2	-	-	2	9	3	-	1
Missouri *	-	-	2	-	-	7	-	-	2	1	7	-	1
North Dakota	-	-	1	-	-	-	-	-	-	-	-	-	-
South Dakota	-	-	-	-	-	-	-	-	-	1	-	-	1
Nebraska	-	-	-	-	-	-	-	-	-	6	2	-	-
Kansas	2	-	6	-	-	-	-	-	-	23	-	-	-
SOUTH ATLANTIC	5	2	20	-	1	6	5	-	40	168	33	1	25
Delaware	-	-	1	-	-	-	-	-	-	-	-	-	-
Maryland	2	-	-	-	-	1	-	-	12	5	3	-	3
District of Columbia	-	-	-	-	-	-	-	-	5	3	-	-	4
Virginia	-	1	5	-	-	2	1	-	4	8	12	-	6
West Virginia	-	-	9	-	-	-	-	-	-	3	-	-	-
North Carolina	1	-	NN	-	1	1	2	-	4	33	-	-	4
South Carolina	-	-	5	-	-	-	-	-	-	4	1	-	-
Georgia	-	-	-	-	-	-	-	-	-	25	-	-	1
Florida	2	1	-	-	-	2	2	-	15	87	17	1	7
EAST SOUTH CENTRAL	3	-	23	-	-	4	2	-	15	69	-	1	7
Kentucky	1	-	18	-	-	-	-	-	-	17	-	-	4
Tennessee	2	-	NN	-	-	4	-	-	8	35	-	-	1
Alabama	-	-	3	-	-	-	-	-	5	7	-	-	-
Mississippi	-	-	2	-	-	-	2	-	2	10	-	1	2
WEST SOUTH CENTRAL	10	2	15	-	9	1	5	-	13	86	1	-	10
Arkansas	-	-	1	-	-	-	-	-	1	15	-	-	1
Louisiana	2	-	NN	-	-	-	-	-	1	4	-	-	1
Oklahoma *	6	2	2	-	-	1	2	-	3	8	1	-	3
Texas	2	-	12	-	9	-	3	-	8	59	-	-	5
MOUNTAIN	-	-	24	-	30	1	1	-	12	66	32	2	9
Montana	-	-	5	-	-	1	-	-	-	18	-	-	-
Idaho	-	-	-	-	-	-	-	-	1	-	2	-	-
Wyoming	-	-	1	-	-	-	-	-	-	6	-	-	-
Colorado	-	-	10	-	-	-	1	-	4	3	17	-	5
New Mexico	-	-	6	-	-	12	-	-	-	21	3	1	2
Arizona	-	-	-	-	18	-	-	-	6	12	5	-	-
Utah	-	-	2	-	-	-	-	-	1	2	5	1	1
Nevada	-	-	-	-	-	-	-	-	-	4	-	-	1
PACIFIC	36	-	22	2	140	5	9	1	73	143	23	3	61
Washington	-	-	16	2	129	-	2	-	7	16	14	-	-
Oregon	1	-	-	-	-	-	-	-	5	24	3	-	2
California *	34	-	-	-	7	5	7	1	60	103	5	3	57
Alaska	-	-	2	-	4	-	-	-	-	-	-	-	-
Hawaii	1	-	4	-	-	-	-	-	1	-	1	-	2
Guam *	-	-	-	-	-	-	-	-	-	-	-	-	2
Puerto Rico	-	-	18	-	-	-	-	-	2	-	1	-	1
Virgin Islands	-	-	-	-	-	-	-	-	-	-	-	-	-

\*Delayed reports: Aseptic meningitis: N.H. 1, Penn. 1, Guam 1  
 Brucellosis: Okla. 1  
 Chickenpox: Me. 2, N.H. 2, Calif. 1, Guam 3  
 Encephalitis, primary: Conn. delete 1, Penn. 1, Mo. delete 2

Encephalitis, post: Conn. 1  
 Hepatitis B: Ohio 1  
 Hepatitis A: Me. 1, N.H. delete 1, Ohio delete 1, Guam 13  
 Hepatitis unspecified: Me. 1, N.H. 1

## Morbidity and Mortality Weekly Report

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES  
FOR WEEKS ENDING SEPTEMBER 21, 1974 AND SEPTEMBER 22, 1973 (38th WEEK) — Continued

AREA	MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS, TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1974	Cumulative		1974	Cumulative		1974	Cum. 1974	1974	1974	Cum. 1974	Cum. 1974
		1974	1973		1974	1973						
UNITED STATES	84	19,989	24,296	16	1,009	1,072	278	44,820	40	138	10,066	64
NEW ENGLAND	1	921	7,358	3	54	46	26	5,926	—	4	979	1
Maine	—	43	66	—	2	1	1	789	—	1	281	—
New Hampshire	—	198	857	—	12	6	1	280	—	—	16	1
Vermont	—	57	119	—	2	3	—	28	—	1	21	—
Massachusetts	—	387	3,908	2	17	12	10	972	—	1	338	—
Rhode Island	—	59	605	—	7	3	11	2,436	—	—	19	—
Connecticut	1	177	1,803	1	14	21	3	1,421	—	1	304	—
MIDDLE ATLANTIC	18	8,035	2,473	2	150	147	18	3,589	6	9	1,080	6
Upstate New York	4	949	802	1	56	52	6	874	4	1	245	2
New York City	7	597	903	—	33	29	1	635	2	2	148	1
New Jersey	—	5,527	416	1	43	35	2	657	—	3	447	2
Pennsylvania	7	962	352	—	18	31	9	1,423	—	3	240	1
EAST NORTH CENTRAL	40	7,734	8,537	2	130	140	49	12,813	11	66	3,303	9
Ohio	3	3,044	283	—	52	56	8	3,137	—	8	505	2
Indiana	5	237	644	—	13	4	6	989	—	19	568	—
Illinois	5	2,035	2,069	—	10	24	4	1,118	8	12	524	3
Michigan	15	1,932	4,375	2	39	41	13	5,436	2	10	1,200	3
Wisconsin	12	486	1,166	—	16	15	18	2,133	1	17	506	1
WEST NORTH CENTRAL	1	687	441	1	73	80	28	2,725	1	1	218	11
Minnesota	—	83	21	—	24	8	—	41	—	1	13	1
Iowa	—	134	277	—	13	19	21	1,655	1	—	15	1
Missouri	1	262	52	—	17	32	2	386	—	—	36	3
North Dakota	—	28	58	—	3	3	1	35	—	—	15	3
South Dakota	—	27	—	—	3	4	—	2	—	—	26	—
Nebraska	—	2	6	—	3	7	—	81	—	—	6	—
Kansas	—	151	27	1	10	7	4	525	—	—	107	3
SOUTH ATLANTIC	6	548	1,223	4	204	183	27	5,452	2	7	1,190	14
Delaware	—	9	8	—	5	1	—	92	—	—	27	—
Maryland	—	24	12	1	22	24	—	109	—	—	5	—
District of Columbia	—	3	5	—	1	4	—	50	—	—	4	—
Virginia	—	35	418	1	32	35	—	565	—	—	44	3
West Virginia	6	201	213	—	7	4	9	2,939	—	7	277	1
North Carolina	1	5	4	—	43	39	NN	NN	1	—	54	3
South Carolina	—	49	60	—	16	12	1	112	—	—	609	1
Georgia	—	4	152	—	8	21	—	1	—	—	3	1
Florida	—	218	351	2	70	43	17	1,584	1	—	167	5
EAST SOUTH CENTRAL	1	223	605	2	100	97	31	5,579	8	26	582	3
Kentucky	1	157	371	—	38	34	15	2,228	2	9	207	—
Tennessee	—	35	165	1	45	39	10	2,456	5	16	294	1
Alabama	—	18	12	1	10	15	6	523	1	1	62	—
Mississippi	—	13	57	—	7	9	—	372	—	—	19	2
WEST SOUTH CENTRAL	7	204	688	1	162	165	34	3,188	2	11	382	7
Arkansas	5	11	69	1	12	13	1	130	1	—	26	—
Louisiana	—	13	84	—	35	38	4	221	—	3	80	3
Oklahoma	1	27	55	—	17	29	1	368	—	1	47	1
Texas	1	153	480	—	98	85	28	2,469	1	7	229	3
MOUNTAIN	2	738	725	—	31	33	10	1,056	—	1	409	—
Montana	—	373	17	—	1	7	4	176	—	—	66	—
Idaho	—	51	255	—	2	4	—	157	—	—	15	—
Wyoming	—	1	80	—	3	—	1	10	—	—	—	—
Colorado	—	30	105	—	8	11	5	510	—	—	158	—
New Mexico	—	61	120	—	2	3	—	178	—	—	119	—
Arizona	—	16	19	—	6	4	—	—	—	—	—	—
Utah	2	7	128	—	6	2	—	20	—	1	18	—
Nevada	—	199	1	—	3	2	—	5	—	—	33	—
PACIFIC	8	899	2,246	1	105	181	55	4,492	10	13	1,923	13
Washington	—	64	1,014	1	12	20	9	1,542	1	5	352	1
Oregon	—	—	459	—	13	12	10	780	1	2	219	1
California	7	769	689	—	74	143	32	2,001	8	6	1,335	11
Alaska	—	—	65	—	3	6	4	109	—	—	—	—
Hawaii	1	66	19	—	3	—	—	60	—	—	17	—
Guam *	—	15	50	—	1	—	—	358	—	—	6	—
Puerto Rico	—	592	1,830	—	6	8	20	974	—	—	29	4
Virgin Islands	2	28	1	—	—	—	—	32	—	—	—	1

\*Delayed reports: Mass. delete 1, Ark. delete 2

Meningococcal infection: Ohio 1, Mo. delete 2

Mumps: Guam 2

Rubella: Ark. 18, Guam 1

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES  
FOR WEEKS ENDING SEPTEMBER 21, 1974 AND SEPTEMBER 22, 1973 (38th WEEK) - Continued

AREA	TUBERCULOSIS (New Active)		TULA- REMIA	TYPHOID FEVER		TYPHUS-FEVER TICK-BORNE (Rky. Mt. spotted fever)		VENEREAL DISEASES						RABIES IN ANIMALS
	1974	Cum. 1974	Cum. 1974	1974	Cum. 1974	1974	Cum. 1974	GONORRHEA		SYPHILIS (Pri. & Sec.)		Cum. 1974		
								1974	Cumulative		1974		Cumulative	
									1974	1973			1974	1973
UNITED STATES	577	22,368	113	9	291	19	690	19,946	658,506	614,952	558	18,140	18,146	2,141
NEW ENGLAND	11	919	-	-	8	-	8	876	17,240	15,817	3	361	488	18
Maine	-	71	-	-	1	-	-	52	1,433	958	-	26	21	2
New Hampshire	-	21	-	-	1	-	-	26	574	570	-	9	6	3
Vermont	-	17	-	-	-	-	-	20	467	267	-	2	13	1
Massachusetts	7	505	-	-	3	-	6	556	7,843	7,119	2	151	222	4
Rhode Island	-	85	-	-	2	-	2	31	1,536	1,633	1	15	13	4
Connecticut	4	220	-	-	1	-	-	191	5,387	5,270	-	158	213	4
MIDDLE ATLANTIC	106	4,056	2	2	47	-	60	2,906	79,396	84,336	125	3,936	4,055	53
Upstate New York	18	575	2	1	12	-	27	724	14,937	14,674	9	355	269	20
New York City	41	1,566	-	-	25	-	2	1,008	34,337	39,392	78	2,283	2,481	-
New Jersey	19	768	-	1	9	-	4	360	10,950	11,965	24	635	718	20
Pennsylvania	28	1,147	-	-	1	-	27	814	19,172	18,305	14	663	587	13
EAST NORTH CENTRAL	87	3,039	6	3	27	1	23	3,173	102,781	93,008	44	1,563	1,674	166
Ohio *	21	801	-	-	5	1	16	415	26,919	22,585	11	222	202	26
Indiana	6	444	-	2	3	-	1	290	9,952	8,548	3	140	219	12
Illinois	20	881	3	1	11	-	6	1,354	32,744	32,638	27	819	839	35
Michigan	40	835	-	-	6	-	-	724	22,937	21,768	3	304	356	3
Wisconsin	-	78	3	-	2	-	-	390	10,229	7,469	-	78	58	90
WEST NORTH CENTRAL	34	840	19	2	10	-	17	1,115	33,832	31,671	18	451	259	566
Minnesota	5	138	-	-	4	-	-	289	7,919	6,448	1	61	77	201
Iowa	1	86	-	1	2	-	1	103	4,087	3,706	-	24	43	105
Missouri	15	404	14	1	2	-	10	402	10,945	11,058	17	314	108	28
North Dakota	2	23	2	-	-	-	-	15	520	514	-	3	2	89
South Dakota	3	42	3	-	-	-	1	54	1,660	1,601	-	2	5	91
Nebraska	-	35	-	-	-	-	-	90	2,888	3,404	-	9	7	4
Kansas	8	112	-	-	2	-	5	162	5,813	4,940	-	38	17	48
SOUTH ATLANTIC	124	4,723	9	-	44	15	397	4,945	167,328	150,398	171	5,730	5,291	294
Delaware	3	79	-	-	-	-	10	67	2,242	2,251	3	61	72	1
Maryland	13	608	1	-	6	1	45	521	17,330	12,891	16	573	514	23
District of Columbia	4	273	-	-	1	-	-	340	12,202	12,730	11	486	649	-
Virginia	16	596	3	-	1	5	133	380	14,659	15,121	3	594	577	78
West Virginia	8	219	-	-	12	-	4	71	1,953	2,227	-	13	17	26
North Carolina	20	733	3	-	3	8	103	826	22,523	21,869	21	701	449	37
South Carolina	13	454	-	-	4	1	53	399	17,227	15,718	19	614	821	3
Georgia	28	668	2	-	3	-	47	1,185	34,785	29,151	8	640	781	95
Florida	19	1,093	-	-	14	-	2	1,156	44,407	38,440	90	2,048	1,411	31
EAST SOUTH CENTRAL	42	1,985	12	1	44	1	97	1,514	55,129	49,586	20	926	994	194
Kentucky	4	428	2	-	14	-	13	157	6,756	6,063	2	212	263	117
Tennessee	18	629	6	1	22	1	61	562	21,901	19,200	3	357	339	46
Alabama	9	588	2	-	4	-	10	446	15,177	13,862	9	180	135	28
Mississippi	11	340	2	-	4	-	13	349	11,295	10,461	6	177	257	3
WEST SOUTH CENTRAL	55	2,603	48	-	21	2	79	2,174	87,600	79,140	58	1,709	2,018	464
Arkansas	3	302	27	-	1	2	10	116	8,325	9,344	1	77	107	59
Louisiana *	13	373	2	-	8	-	1	354	17,758	16,984	20	456	604	21
Oklahoma	7	224	14	-	2	-	56	271	8,118	7,268	3	100	130	124
Texas *	32	1,704	5	-	10	-	12	1,433	53,399	45,544	34	1,076	1,177	260
MOUNTAIN	15	709	11	-	17	-	6	662	25,050	20,934	13	418	440	119
Montana	5	59	-	-	-	-	1	56	1,381	1,230	-	3	3	5
Idaho	1	24	-	-	-	-	1	34	1,316	1,386	-	9	9	-
Wyoming	-	15	5	-	3	-	1	5	507	372	-	6	24	10
Colorado	-	137	-	-	-	-	1	125	6,941	5,297	3	95	155	27
New Mexico	-	143	2	-	3	-	1	105	3,763	3,739	5	61	62	42
Arizona	7	251	-	-	8	-	-	191	7,303	6,169	2	159	120	34
Utah	-	33	4	-	-	-	1	74	1,411	1,144	1	14	12	1
Nevada	2	47	-	-	3	-	-	72	2,428	1,597	2	71	55	-
PACIFIC	103	3,494	6	1	73	-	3	2,581	90,150	90,062	106	3,046	2,927	267
Washington	16	252	-	1	13	-	1	302	8,362	8,446	-	53	115	-
Oregon	3	150	1	-	-	-	2	200	8,042	8,025	2	67	47	9
California	80	2,748	5	-	56	-	-	1,991	69,845	69,778	104	2,891	2,688	250
Alaska	-	75	-	-	2	-	-	21	1,996	2,157	-	11	16	8
Hawaii	4	269	-	-	2	-	-	67	1,905	1,656	-	24	61	-
Guam *	-	28	-	-	-	-	-	-	233	309	-	3	3	-
Puerto Rico	15	397	-	-	4	-	-	70	2,323	3,125	24	636	532	41
Virgin Islands	-	3	-	-	-	-	-	2	218	184	1	34	18	-

\*Delayed reports: Tuberculosis: Ohio delete 10, Texas 21, Guam 1  
Gonorrhea: La. delete 28, Guam 12  
Rabies: Texas 4

TABLE IV. DEATHS IN 121 UNITED STATES CITIES FOR WEEK ENDING SEPTEMBER 21, 1974

(By place of occurrence and week of filing certificate. Excludes fetal deaths)

Area	All Causes					Pneumonia and Influenza All Ages	Area	All Causes					Pneumonia and Influenza All Ages
	All Ages	65 years and over	45-64 years	25-44 years	Under 1 year			All Ages	65 years and over	45-64 years	25-44 years	Under 1 year	
<b>NEW ENGLAND</b>	626	368	185	37	20	26	<b>SOUTH ATLANTIC</b>	1,107	596	343	75	45	38
Boston, Mass.	209	112	63	17	8	14	Atlanta, Ga.	123	52	42	11	8	7
Bridgeport, Conn.	41	29	10	2	—	1	Baltimore, Md.	202	111	69	9	9	4
Cambridge, Mass.	28	23	4	—	—	2	Charlotte, N. C.	53	32	14	4	1	—
Fall River, Mass.	23	15	7	1	—	—	Jacksonville, Fla.	96	51	25	6	3	—
Hartford, Conn.	50	28	11	6	2	1	Miami, Fla.	118	63	36	13	4	2
Lowell, Mass.	11	8	3	—	—	—	Norfolk, Va.	51	27	16	3	5	—
Lynn, Mass.	22	16	3	2	—	—	Richmond, Va.	81	46	28	3	3	10
New Bedford, Mass.	32	15	14	1	2	1	Savannah, Ga.	46	27	16	1	1	5
New Haven, Conn.	37	19	18	—	—	—	St. Petersburg, Fla.	71	57	11	1	1	2
Providence, R. I.	45	23	16	2	4	2	Tampa, Fla.	78	37	24	9	5	4
Somerville, Mass.	9	7	1	1	—	—	Washington, D. C.	167	80	56	15	3	3
Springfield, Mass.	37	19	14	2	1	4	Wilmington, Del.	21	13	6	—	2	1
Waterbury, Conn.	32	15	13	1	2	—							
Worcester, Mass.	50	39	8	2	1	1	<b>EAST SOUTH CENTRAL</b>	669	373	186	44	29	25
<b>MIDDLE ATLANTIC</b>	2,717	1,630	698	201	97	94	Birmingham, Ala.	109	55	25	6	11	2
Albany, N. Y.	45	26	12	3	2	—	Chattanooga, Tenn.	63	40	9	9	2	4
Allentown, Pa.	20	14	4	2	—	1	Knoxville, Tenn.	30	20	8	1	1	—
Buffalo, N. Y.	129	79	33	14	2	11	Louisville, Ky.	123	67	38	6	5	5
Camden, N. J.	39	28	9	—	2	1	Memphis, Tenn.	140	77	48	8	4	5
Elizabeth, N. J.	28	21	6	—	—	2	Mobile, Ala.	48	29	11	4	—	1
Erie, Pa.	22	16	4	1	1	3	Montgomery, Ala.	37	18	12	4	1	3
Jersey City, N. J.	57	31	23	2	1	—	Nashville, Tenn.	119	67	35	6	5	5
Newark, N. J.	58	18	18	12	9	4	<b>WEST SOUTH CENTRAL</b>	1,227	638	338	109	70	23
New York City, N. Y. †	1,423	861	354	115	40	36	Austin, Tex.	34	18	10	1	5	2
Paterson, N. J.	32	18	8	1	1	1	Baton Rouge, La.	64	32	18	7	2	3
Philadelphia, Pa.	296	159	80	24	25	3	Corpus Christi, Tex.	28	11	9	4	1	—
Pittsburgh, Pa.	183	95	58	12	9	12	Dallas, Tex.	193	105	49	20	8	2
Reading, Pa.	48	38	10	—	—	6	El Paso, Tex.	55	22	16	8	4	3
Rochester, N. Y.	113	71	26	6	4	2	Fort Worth, Tex.	88	50	22	5	8	—
Schenectady, N. Y.	21	15	6	—	—	1	Houston, Tex.	285	132	91	28	15	2
Scranton, Pa.	36	24	10	2	—	—	Little Rock, Ark.	54	31	12	3	2	1
Syracuse, N. Y.	82	53	20	3	1	2	New Orleans, La.	153	77	49	12	9	2
Trenton, N. J.	31	23	7	1	—	1	San Antonio, Tex.	135	75	30	12	10	3
Utica, N. Y.	28	24	3	1	—	4	Shreveport, La.	61	34	18	5	2	3
Yonkers, N. Y.	26	16	7	2	—	4	Tulsa, Okla.	77	51	14	4	4	2
<b>EAST NORTH CENTRAL</b>	2,364	1,303	684	172	94	48	<b>MOUNTAIN</b>	503	264	143	48	22	15
Akron, Ohio	44	25	14	1	1	—	Albuquerque, N. Mex.	51	21	15	7	3	3
Canton, Ohio	39	19	15	1	—	1	Colorado Springs, Colo.	35	18	9	4	2	7
Chicago, Ill.	603	321	179	56	27	15	Denver, Colo.	111	52	43	10	4	3
Cincinnati, Ohio	192	114	51	16	6	2	Las Vegas, Nev.	29	12	9	6	2	—
Cleveland, Ohio	180	87	62	10	10	1	Ogden, Utah	19	16	1	2	—	—
Columbus, Ohio	88	48	21	7	3	—	Phoenix, Ariz.	127	69	33	9	9	—
Dayton, Ohio	112	67	36	4	1	4	Pueblo, Colo.	17	11	5	1	—	1
Detroit, Mich.	303	160	92	20	10	9	Salt Lake City, Utah	50	29	11	4	2	1
Evansville, Ind.	52	35	14	2	1	1	Tucson, Ariz.	64	36	17	5	—	—
Fort Wayne, Ind.	61	33	13	9	3	3	<b>PACIFIC</b>	1,834	1,143	454	118	58	46
Gary, Ind.	31	11	9	5	2	2	Berkeley, Calif.	14	12	1	1	—	—
Grand Rapids, Mich.	61	31	18	4	6	1	Fresno, Calif.	59	32	13	4	6	—
Indianapolis, Ind.	144	66	53	11	8	2	Glendale, Calif.	32	26	5	—	1	—
Madison, Wis.	24	11	9	2	2	1	Honolulu, Hawaii	51	33	10	3	1	2
Milwaukee, Wis.	163	104	34	9	6	2	Long Beach, Calif.	112	70	32	3	4	3
Peoria, Ill.	37	17	13	2	2	—	Los Angeles, Calif.	614	391	150	39	13	10
Rockford, Ill.	37	23	8	3	2	1	Oakland, Calif.	88	52	22	9	2	2
South Bend, Ind.	60	36	13	6	3	2	Pasadena, Calif.	39	29	10	—	—	—
Toledo, Ohio	77	52	18	4	1	—	Portland, Oreg.	117	79	27	6	4	2
Youngstown, Ohio	56	43	12	—	—	1	Sacramento, Calif.	58	39	10	6	2	2
<b>WEST NORTH CENTRAL</b>	696	432	176	32	28	23	San Diego, Calif.	160	93	47	10	3	4
Des Moines, Iowa	29	16	9	1	2	1	San Francisco, Calif.	212	115	59	20	10	9
Duluth, Minn.	15	9	5	1	—	3	San Jose, Calif.	66	44	11	6	1	3
Kansas City, Kans.	53	32	9	6	2	1	Seattle, Wash.	130	75	39	7	7	—
Kansas City, Mo.	110	77	25	2	2	5	Spokane, Wash.	49	34	9	3	2	5
Lincoln, Nebr.	17	13	2	1	—	—	Tacoma, Wash.	33	19	9	1	2	2
Minneapolis, Minn.	105	65	18	4	10	2	<b>Total</b>	11,743	6,747	3,207	836	463	338
Omaha, Nebr.	80	54	20	3	1	2	<b>Expected Number</b>	11,607	6,705	3,173	802	426	332
St. Louis, Mo.	191	107	61	10	7	5							
St. Paul, Minn.	61	38	17	2	2	1							
Wichita, Kans.	35	21	10	2	2	3							

†Delayed report for week ending Sept. 14, 1974

**INFLUENZA – Continued**

lesser degree the Southwest, and into the Middle Atlantic and South Atlantic States, including Mississippi, Tennessee, Kentucky, and the East South Central Region. The Central Regions were the most heavily affected, although there was no increase in pneumonia and influenza mortality. Influenza B activity within communities was most sensitively represented by school absenteeism. Most virus isolates were inhibited to a variable extent by antisera to both B/Victoria/48426/70 and B/Hong Kong/5/72 and were, therefore, termed intermediate in antigenic character.

**Influenza A**

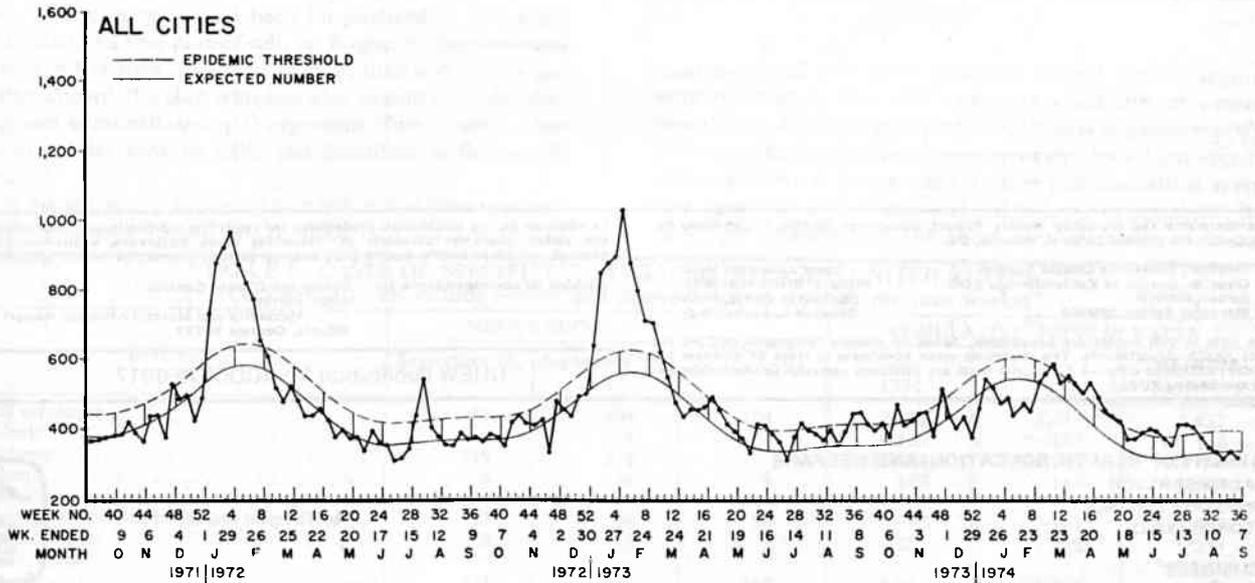
The first reported outbreak of influenza A occurred in the third week of February at the University of Illinois in Urbana. Within 2 weeks, outbreaks of influenza-like disease associated with influenza A isolates occurred in Cleveland, Ohio; Nassau County, New York; Albany, New York; Richmond, Virginia; and Puerto Rico.

State Health Department Laboratories reported an increase in frequency of influenza A virus isolation and of serologic conversions compatible with influenza A infection between March 2 and April 27, 1974. Hemagglutination inhibition reactions indicated antigenic drift away from A/England/42/72 and A/Hong Kong/68 toward A/Port Chalmers/1/73.

Pneumonia and influenza mortality for all 121 reporting cities did not rise significantly above the epidemic level during the 1973-74 influenza season (Figure 1). Between March 1 and April 30, the Middle Atlantic States demonstrated an increase above the epidemic threshold of mortality due to pneumonia and influenza. This was associated with a regional outbreak of influenza A and an increase in the number of isolations of influenza A virus by laboratories in the region.

*(Reported by the Viral Diseases Division, Bureau of Epidemiology, and the Bureau of Laboratories, CDC.)*

**Figure 1**  
**PNEUMONIA-INFLUENZA DEATHS IN 121 UNITED STATES CITIES**



**CURRENT TRENDS**  
**SMALLPOX SURVEILLANCE – Worldwide**

Through September 2, 1974, 195,399 cases of smallpox had been reported to the World Health Organization. The peak in smallpox incidence this year was reached during the week ending May 11 when 15,921 cases were recorded. Since then, the number of cases recorded each week has steadily, if irregularly, declined. The normal seasonal decrease in incidence plus the increased tempo of activities in the endemic areas was expected to bring the total well below 2,000 cases per week by mid-September. The principal problem areas continue to be those in India, as reflected by the fact that more than 90% of the world's cases in July were reported from India alone.

A steady decrease is also being observed in the number of villages and municipal wards in Asia considered "active"

foci subject to continuing surveillance (i.e., wards that have experienced 1 or more cases of smallpox in the preceding 4 weeks). The total as of July 31 was 7,169 but by September 2 the number had decreased by 45% to 3,948 foci and is now decreasing at the rate of 75 to 100 foci per day. Only 28 districts in the subcontinent now report 50 or more known active foci. Of this total, 22 districts were in the Indian State of Bihar, 3 in Bangladesh, and 3 in the State of Uttar Pradesh, India.

By far the most dramatic achievements in recent weeks have been in Pakistan. As of September 1, only 16 active foci were known, and few of these had reported cases in the preceding 2 weeks. As recently as May 31, there were more than 230 known foci in the country. In week 34, a total of only 7

## SMALLPOX -- Continued

cases were detected in Pakistan, the smallest number of cases ever to have been recorded in 1 week in that country. However, with extensive and continuing search operations now in progress, some previously undetected foci are being found. In Baluchistan (Kalat District) a focus of 100 cases was discovered during week 33 which subsided without specific containment measures. The last cases had onset of illness during week 26 and therefore by week 33 Baluchistan was no longer considered an "active" focus. Intensive efforts are continuing to discover and contain all outbreaks in Baluchistan and elsewhere in the country, with the hope of reaching a nil incidence within the next few weeks.

In Bangladesh, monsoon floods have partially curtailed the smallpox eradication program activities, and some cases have occurred among persons displaced by the floods. An intensive campaign, assisted in part by disaster relief groups,

is in progress with the objective of interrupting transmission during early autumn.

In India, only limited foci now remain outside the heavily infected areas of Bihar, Uttar Pradesh, and Assam States and the bordering areas of Orissa, West Bengal, and Madhya Pradesh. After many months of work, the last known foci in Jammu and Kashmir and Meghalaya are believed to have been eliminated; Andhra Pradesh and Maharashtra are expected soon to record a similar achievement. In Uttar Pradesh, 15 of the 55 districts are believed to be smallpox-free, while only 3 record more than 50 active foci. Bihar, while making excellent progress, continues to be the world's principal trouble spot for smallpox. Purnea and Katihar Districts in northeastern Bihar record 358 and 240 active foci, respectively. Of the 8 districts in Asia recording more than 100 active foci, 7 are in Bihar.

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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.

In addition to the established procedures for reporting morbidity and mortality, the editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials.

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