CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

June 11, 1999 / Vol. 48 / No. 22

MMWR™
MORBIDITY AND MORTALITY
WEEKLY REPORT

Achievements in Public Health, 1900–1999

Improvements in Workplace Safety — United States, 1900–1999

At the beginning of this century, workers in the United States faced remarkably high health and safety risks on the job. Through efforts by individual workers, unions, employers, government agencies, scientists such as Dr. Alice Hamilton (see box, page 462), and others, considerable progress has been made in improving these conditions. Despite these successes, much work remains, with the goal for all workers being a productive and safe working life and a retirement free from long-term consequences of occupational disease and injury. Using the limited data available, this report documents large declines in fatal occupational injuries during the 1900s, highlights the mining industry as an example of improvements in worker safety, and discusses new challenges in occupational safety and health.

Decreases in Fatal Occupational Injuries

Data from multiple sources reflect the large decreases in work-related deaths from the high rates and numbers of deaths among workers during the early 20th century. The earliest systematic survey of workplace fatalities in the United States in this century covered Allegheny County, Pennsylvania, from July 1906 through June 1907 (Figure 1) (*1*); that year in the one county, 526 workers died in "work accidents"*; 195 of these were steelworkers. In contrast, in 1997, 17 steelworker fatalities occurred nationwide (*2*). The National Safety Council estimated that in 1912, 18,000–21,000 workers died from work-related injuries (*3*). In 1913, the Bureau of Labor Statistics documented approximately 23,000 industrial deaths among a workforce of 38 million, equivalent to a rate of 61 deaths per 100,000 workers (*4*). Under a different reporting system, data from the National Safety Council from 1933 through 1997 indicate that deaths from unintentional work-related injuries declined 90%, from 37 per 100,000 workers to 4 per 100,000 (*3*). The corresponding annual number of deaths decreased from 14,500 to 5100; during this same period, the workforce more than tripled, from 39 million to approximately 130 million (*3*).

More recent and probably more complete data from death certificates were compiled from CDC's National Institute for Occupational Safety and Health (NIOSH)

*When a death occurs under "accidental" circumstances, the preferred term within the public health community is "unintentional injury."

Workplace Safety — Continued

Alice Hamilton, M.D.

Alice Hamilton (February 27, 1869–September 22, 1970) was the first U.S. physician to devote herself to research in industrial medicine. Born into a prominent family in Indiana (her sister was the well-known classicist Edith Hamilton), Alice graduated from medical school at the University of Michigan in 1893. After accepting a teaching position at the Women's Medical School of Northwestern University in 1897, she moved into Jane Addams' Hull House in Chicago. There she opened a well-baby clinic for poor families in the local settlement house neighborhood. As she acquainted herself with the families in the neighborhood, she learned of their pains, strange deaths, lead palsy, and "wrist drop," and of the high numbers of widows. Encouraged by the reformers of Hull House, she began to apply her medical knowledge to these problems.

Dr. Hamilton realized that little was written or understood about occupational illnesses in the United States. In 1908, she published her first article about occupational diseases in this country and was soon a recognized expert on the topic. Starting in 1910, initially under the aegis of a commission of the State of Illinois, and later the Federal Bureau of Labor Statistics, she explored occupational disorders and their social consequences. Relying primarily on "shoe leather epidemiology" and the emerging laboratory science of toxicology, she pioneered occupational epidemiology and industrial hygiene in the United States. Her findings were so scientifically persuasive that they caused sweeping reforms, both voluntary and regulatory, to improve the health of workers.

Investigations for which she is best known include carbon monoxide poisoning in steelworkers, mercury poisoning in hatters, and "dead fingers" syndrome among laborers using jackhammers. In her field investigations, she applied precepts of scientific integrity and prudent public health practice that continue to influence the discipline of occupational health. These include the necessity for a strict definition of the disease problem, a thorough understanding of the industrial processes involved, and on-the-spot reporting of findings and recommendations.

In 1919, Dr. Hamilton was appointed Assistant Professor of Industrial Medicine at Harvard Medical School, the first woman to be on the faculty of Harvard University. While there, she served two terms on the Health Committee of the League of Nations. When she retired from Harvard at age 66 years, she became a consultant to the U.S. Division of Labor Standards and served as the president of the National Consumers League.

Today, at the laboratory that bears her name in Cincinnati, Ohio, and at other facilities, researchers of CDC's National Institute for Occupational Safety and Health still explore the "dangerous trades." Alice Hamilton was a physician, scientist, humanitarian, and undisputed leader in the social reform movement of the 20th century.

Bibliography

Gottlieb R. Forcing the spring: the transformation of the American environmental movement. Washington, DC: Island Press, 1993.

Hamilton A. Exploring the dangerous trades: the autobiography of Alice Hamilton, MD. Boston: Little, Brown, 1943.

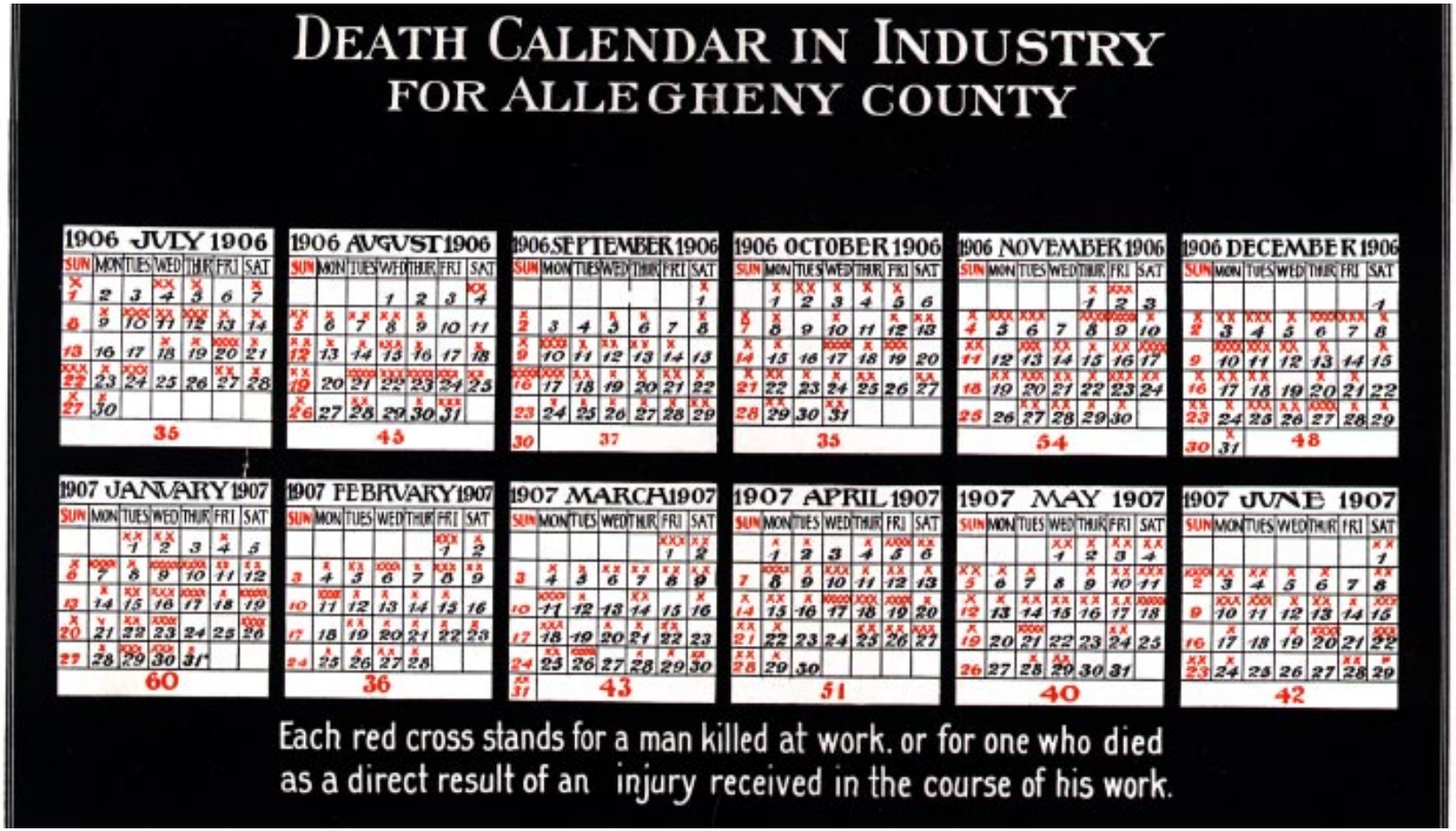
Hamilton A. Industrial diseases: with special reference to the trades in which women are employed. Charities and the Commons 1908;20:655–8.

Rom WN. The discipline of environmental and occupational medicine. In: Rom WN, ed. Environmental and occupational medicine. Boston: Little, Brown, 1983:4.

Sellers CC. Hazards of the job: from industrial disease to environmental health science. Chapel Hill, North Carolina: University of North Carolina Press, 1997.

Sicherman B. Alice Hamilton, a life in letters. Cambridge, Massachusetts: Harvard University Press, 1984:4.

FIGURE 1. Number of work-related deaths, by day — Allegheny County, Pennsylvania, July 1906–June 1907*



*In the original figure, each X is in red.
Reprinted by permission of the Russell Sage Foundation (*1*).

Workplace Safety — Continued

National Traumatic Occupational Fatalities (NTOF) surveillance system (*5*; CDC, unpublished data, 1999). These data indicate that the annual number of deaths declined 28%, from 7405 in 1980 to 5314 in 1995 (the most recent year for which complete NTOF data are available). The average rate of deaths from occupational injuries decreased 43% during the same time, from 7.5 to 4.3 per 100,000 workers. Industries with the highest average rates for fatal occupational injury during 1980–1995 included mining (30.3 deaths per 100,000 workers), agriculture/forestry/fishing (20.1), construction (15.2), and transportation/communications/public utilities (13.4) (Figure 2).[†] Leading causes of fatal occupational injury during the period include motor vehicle-related injuries, workplace homicides, and machine-related injuries (Figure 3).

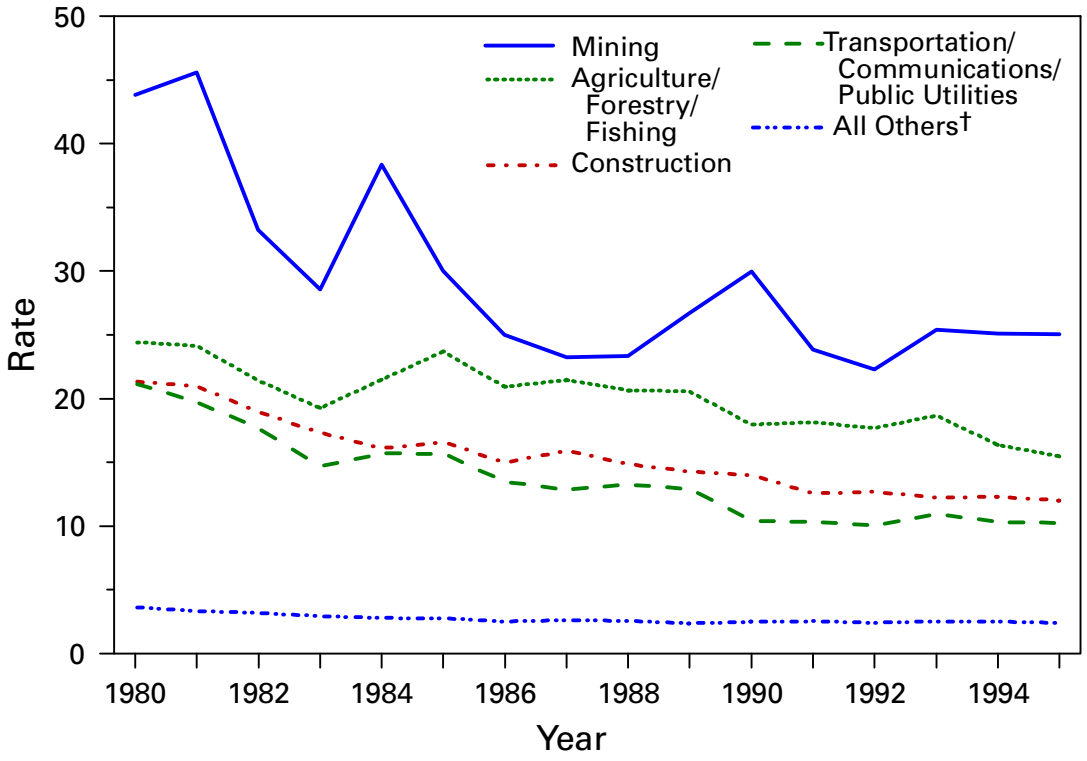
Improvements in Mining[§] Safety

On December 6, 1907, a coal mine explosion in Monongah, West Virginia, killed a reported 362 men and boys (unofficial estimates exceeded 500 deaths), marking the

[†]The NTOF surveillance system classifies industries according to the Standard Industry Classification Manual, 1987, which, unlike the definition used by the Mine Safety and Health Administration (MSHA), includes the oil and gas sectors of mineral extraction in the mining industry.

[§]MSHA data are used in this section of the report; these data exclude oil and gas extraction, and data collection for mining according to MSHA includes only deaths that occur on mine property. Deaths likely to occur off mine property, such as during operation of a motor vehicle (the overall leading cause of death during 1980–1994 [Figure 3]), are excluded.

FIGURE 2. Occupational injury death rates*, by industry division and year — United States, 1980–1995

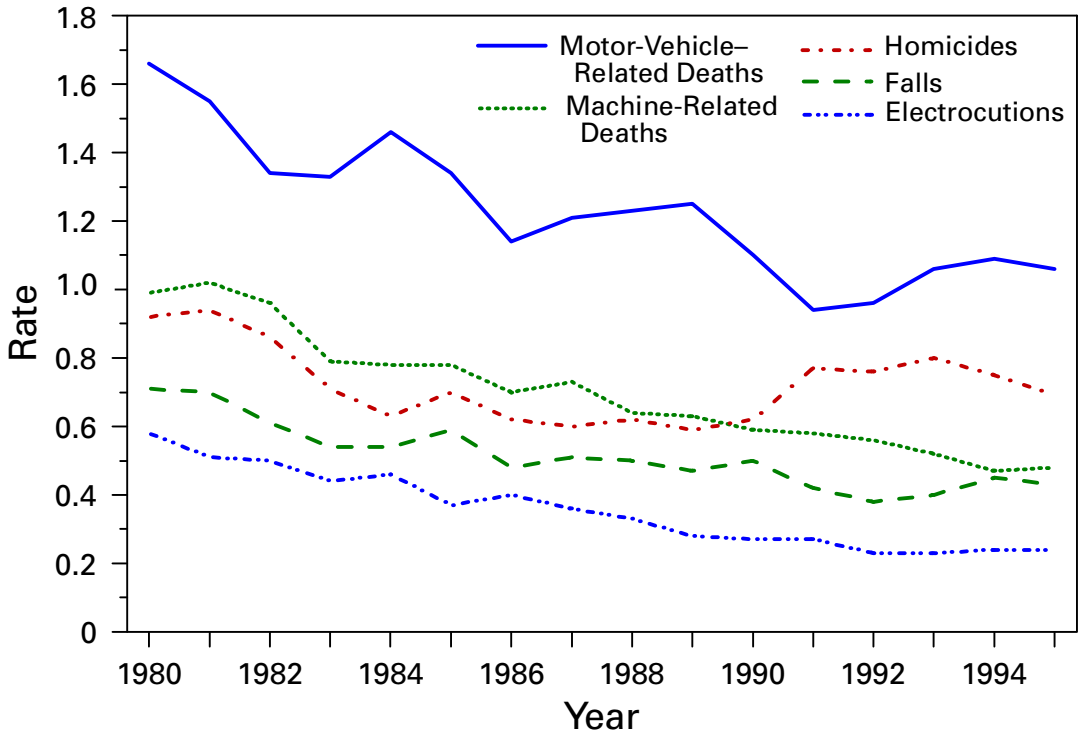


*Per 100,000 workers.

[†]Includes public administration, manufacturing, wholesale trade, retail trade, services, and finance/insurance/real estate.

Workplace Safety — Continued

FIGURE 3. Rates* for leading causes of occupational injury deaths, by cause and year — United States, 1980–1995



*Per 100,000 workers.

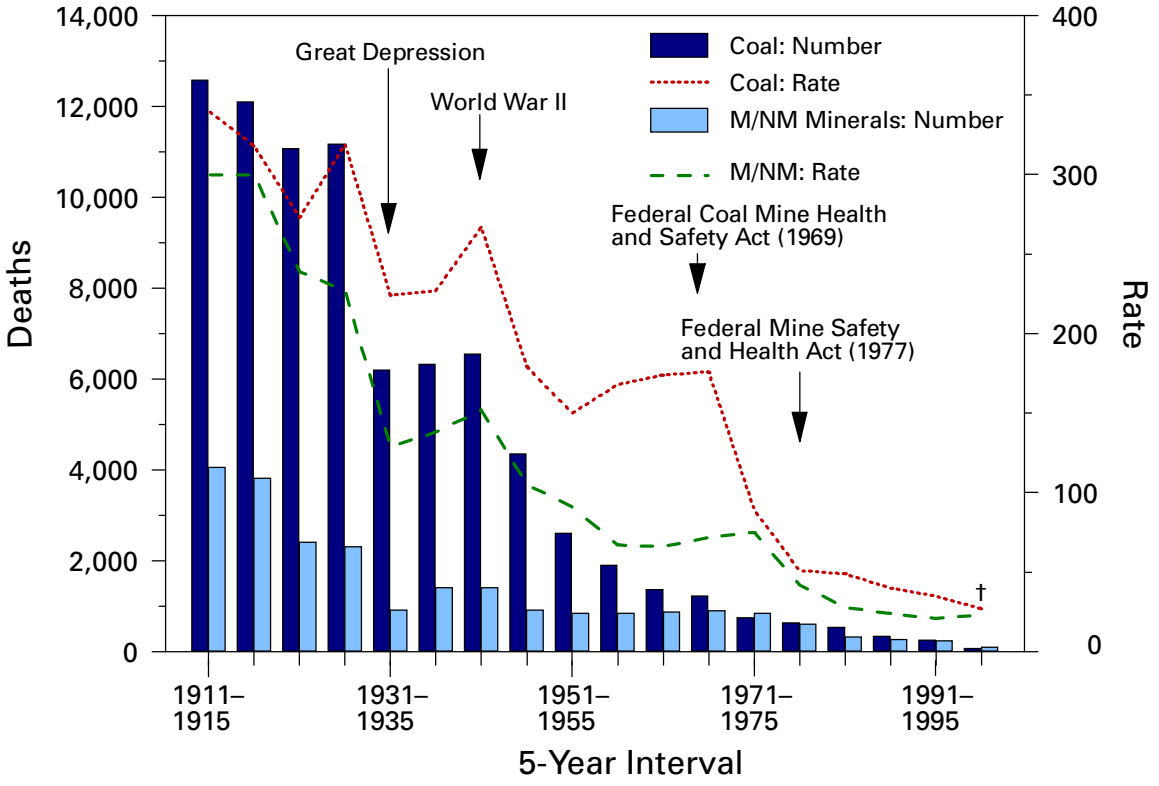
largest coal mining disaster in U.S. history. Of the 2534 mining-related fatalities that occurred in bituminous coal mines that year, 911 (36%) resulted from explosions of gas, coal dust, or a combination; 869 deaths occurred in only 11 incidents. The Monongah catastrophe catalyzed public awareness and led to passage of the Organic Act of 1910, which established the U.S. Bureau of Mines (USBM).

From 1911 through 1997, approximately 103,000 miners died at work (Figure 4). During 1911–1915, an average of 3329 mining-related deaths occurred per year among approximately 1 million miners employed annually, with an average annual fatality rate of 329 per 100,000 miners. During the century, the average annual number of workers (operators and contractors combined) in the mining industry has declined to approximately 356,000, and deaths have dropped approximately 37-fold, from 3329 to 89; injury fatality rates have decreased approximately 13-fold, to 25 per 100,000 during 1996–1997.

Historically, the largest number of miners have been killed by collapsing mine roofs and vertical walls, followed by haulage-related incidents. However, methane gas and coal dust explosions have caused the largest number of deaths from "disasters" (i.e., incidents in which five or more deaths occurred); airborne suspension of dry coal dust and natural liberation of methane (present in all coal beds) create an environment susceptible to explosions. From 1911 through 1920, explosions accounted for approximately 84% of all disaster-related deaths. Workplace interventions (e.g., safer equipment and improved ventilation) during the first half of the century led to a dramatic

Workplace Safety — Continued

FIGURE 4. Number of deaths and fatality rates* in mining coal and metal/nonmetallic (M/NM) minerals, by 5-year interval — United States, 1911–1997



*Per 100,000 workers.
†Data are for 1996 and 1997.

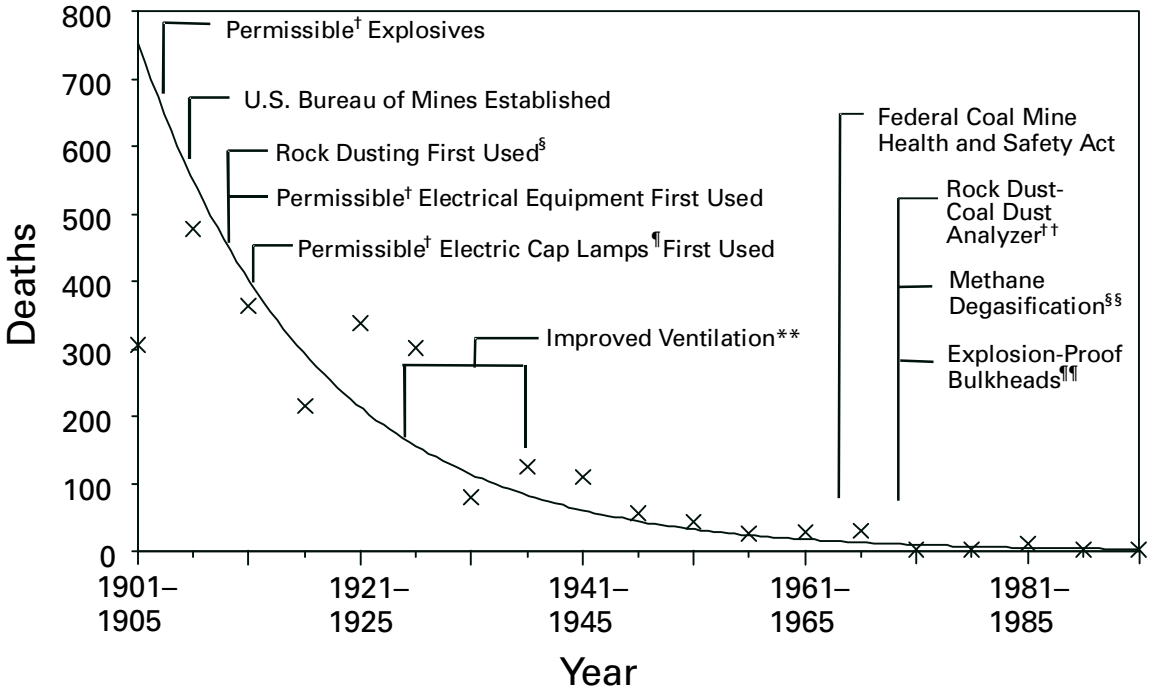
decline in explosion-related fatalities, from an average of 477 per year in 1906–1910 to <3 per year in 1991–1995 (Figure 5). All other causes of death associated with underground coal mines (except machinery) declined similarly from the first to the last 20-year interval of this period.

Factors Contributing to Worker Safety

The decline in occupational fatalities in mining and other industries reflects the progress made in all workplaces since the beginning of the century in identifying and correcting the etiologic factors that contribute to occupational health risks. If today's workforce of approximately 130 million had the same risk as workers in 1933 for dying from injuries, then an additional 40,000 workers would have died in 1997 from preventable events (CDC, unpublished data, 1999). The declines can be attributed to multiple, interrelated factors, including efforts by labor and management to improve worker safety and by academic researchers such as Dr. Alice Hamilton. Other efforts to improve safety were developed by state labor and health authorities and through the research, education, and regulatory activities undertaken by government agencies (e.g., USBM, the Mine Safety and Health Administration [established as the Mining Enforcement and Safety Administration in 1973], the Occupational Safety and Health Administration [OSHA] [established in 1970], and NIOSH). Efforts by these groups led to physical changes in the workplace, such as improved ventilation and dust

Workplace Safety — Continued

FIGURE 5. Five-year averages of annual number of deaths related to coal mine explosions — United States, 1901–1995*



*Each X represents the 5-year average of the number of deaths resulting from explosions; the line is a smoothed regression line through the 5-year averages.
†Explosives and equipment that can be used in an explosive methane-rich environment without causing a methane explosion.
§The process of applying a layer of rock dust over the coal dust, which creates an inert mixture and inhibits a coal dust explosion.
¶Lamps worn on minors' caps.
**Ventilation improvements, including the use of reversible fans, reduce the concentration of methane and remove the explosive gas from the mine.
††A hand-held monitor that provides instantaneous readings of the rock-to-coal dust mixture to ensure that it is inert.
§§Techniques to remove methane from the coal bed before mining the coal.
¶¶Explosion-proof walls used to seal abandoned (mined-out) areas to protect workers in active parts of the mine.

suppression in mines; safer equipment; development and introduction of safer work practices; and improved training of health and safety professionals and of workers. The reduction in workplace deaths has occurred in the context of extensive changes in U.S. economic activity, the U.S. industrial mix, and workforce demographics (*6*). Societywide progress in injury control also contributes to safer workplaces—for example, use of safety belts and other safety features in motor vehicles (*6*) and improvements in medical care for trauma victims.

Only in some instances do data permit association of declines in fatalities with specific interventions. Before 1920, using permissible explosives and electrical equipment (which can be operated in an explosive methane-rich environment without igniting the methane), applying a layer of rock dust over the coal dust (which creates an inert mixture and prevents ignition of coal dust), and improved ventilation, such as

Workplace Safety — Continued

reversible fans, led to dramatic reductions in fatalities from explosions (Figure 5) (*7*). New technologies in roof support and improved mine design reduced the number of deaths from roof falls. However, technology also introduced new hazards, such as fatalities associated with machinery. An approximately 50% decrease in coal mining fatality rates occurred from 1966–1970 to 1971–1975 (Figure 4); 1971–1975 is the period immediately following passage of the 1969 Federal Coal Mine Health and Safety Act, which greatly expanded enforcement powers of federal inspectors and established mandatory health and safety standards for all mines. The act also served as the model for the 1970 Occupational Safety and Health Act. Following the 1977 Federal Mine Safety and Health Act, a 33% decrease in fatalities occurred in metal and nonmetallic minerals mining (1976–1980 compared with 1981–1985) (Figure 4).

Similarly, the impact of more recent targeted efforts to reduce workplace fatalities can be illustrated by data on work-related electrocutions. During the 1980s, there were concerted research and dissemination efforts by NIOSH, changes to the National Electrical Code and occupational safety and health regulations, and public awareness campaigns by power companies and others. During this decade, work-related electrocution rates declined 54%, from 0.7 per 100,000 workers per year in 1980 to 0.3 in 1989; the number of electrocutions decreased from 577 to 329 (*6*).

Although the decline in injuries in general industry since 1970 seems to have resulted from a variety of factors, some sources point to the Occupational Safety and Health Act of 1970¶, which created NIOSH and OSHA (*6,8*). Since 1971, NIOSH has investigated hazardous work conditions, conducted research to prevent injury, trained health professionals, and developed educational materials and recommendations for worker protection. OSHA's regulatory authority for worksite inspection and development of safety standards has brought about safety regulations, mandatory workplace safety controls, and worker training. During 1980–1996, research findings indicated that training creates safer workplaces through increased worker knowledge of job hazards and safe work practices in a wide array of worksites (*9*).

Future Directions

Despite the accomplishments described in this report, workers continue to die from preventable injuries sustained on the job. Ongoing efforts to address important workplace hazards include conducting field investigations of fatalities in high-risk occupations and industries, such as the Fire Fighter Fatality Investigation and Prevention Program, establishing a research center to facilitate childhood agricultural injury prevention (National Children's Center for Rural and Agricultural Health and Safety), and developing educational materials for worker protection, such as Preventing Homicide in the Workplace (*10*). Despite major gains in workplace safety, mining remains the most dangerous industry, and mining safety research remains a national priority.

The National Occupational Research Agenda (NORA), developed by NIOSH and approximately 500 organizations and persons nationwide, identified traumatic injuries as one of its public health priorities. NORA was developed in recognition of the rapidly changing nature of the workplace and workforce and provides the framework for research to improve worker safety in the 21st century. The NORA Traumatic Injuries Team sponsored the first National Occupational Injury Symposium in 1997 and outlined priority needs (*11*). These include the need to identify new sources of surveillance data, to improve identification of work-related injuries and illnesses in existing

¶Public Law 91-596.

Safer Workplace — Continued

databases, to link data from existing sources for improved information about injuries, and to better assess injury exposures and intervention outcomes. Increased attention to other NORA priority areas, such as intervention effectiveness research, surveillance research methods, and organization of work, should guide continued national efforts to reduce both occupational illnesses and injuries in the next century.

References

1. Eastman C. Work-accidents and the law. New York, New York: Russell Sage Foundation, Charities Publications Committee, 1910.
2. Bureau of Labor Statistics, US Department of Labor. Table A-1. Fatal occupational injuries by industry and event or exposure, 1997. Available at http://www.bls.gov/cfoi/cfb0103.pdf. Accessed June 9, 1999.
3. National Safety Council. Accident facts, 1998 edition. Itasca, Illinois: National Safety Council, 1998.
4. Corn JK. Response to occupational health hazards: a historical perspective. New York, New York: Nostrand Reinhold, 1992.
5. CDC. Fatal occupational injuries—United States, 1980–1994. MMWR 1998;47:297–302.
6. Stout NA, Jenkins EL, Pizatella TJ. Occupational injury mortality rates in the United States: changes from 1980 to 1989. Am J Public Health 1996;86:73–7.
7. Skow ML, Kim AG, Duel M. Creating a safer environment in U.S. coal mines: the Bureau of Mines methane control program, 1964–79. Washington, DC: US Department of the Interior, Bureau of Mines, May 1981 (report no. 5-81).
8. Bonnie RJ, Fulco CE, Liverman CT, eds. Reducing the burden of injury: advancing prevention and treatment. Washington, DC: Institute of Medicine, National Academy Press, 1999.
9. National Institute for Occupational Safety and Health. Assessing occupational safety and health training: a literature review. Cincinnati, Ohio: US Department of Health and Human Services, CDC, 1998; DHHS publication no. (NIOSH)98-145.
10. National Institute for Occupational Safety and Health. Preventing homicide in the workplace. Cincinnati, Ohio: US Department of Health and Human Services, CDC, 1993; DHHS publication no. (NIOSH)93-109.
11. National Institute for Occupational Safety and Health. Traumatic occupational injury research needs and priorities. Cincinnati, Ohio: US Department of Health and Human Services, CDC, 1998; DHHS publication no. (NIOSH)98-134.

Heat-Related Illnesses and Deaths — Missouri, 1998, and United States, 1979–1996

Although heat-related illness and death* are readily preventable (*5*), exposure to extremely high temperatures caused an annual average of 381 deaths in the United States during 1979–1996 (*6*). Basic behavioral and environmental precautions are essential to preventing adverse health outcomes associated with sustained periods of hot weather (daytime heat index† of ≥105 F [≥40.6 C] and a nighttime minimum temperature of 80 F [26.7 C] persisting for at least 48 hours). This report describes four heat-related deaths that occurred in Missouri during 1998, summarizes heat-related

*The National Association of Medical Examiners' (NAME) definition of heat-related death includes exposure to high ambient temperature either causing the death or substantially contributing to it, cases where the body temperature at the time of collapse was ≥105 F (≥40.6 C), and a history of exposure to high ambient temperature and the reasonable exclusion of other causes of hyperthermia (*1*). Because death rates from other causes (e.g., cardiovascular and respiratory disease) increase during heat waves (*2–4*) (defined by the National Weather Service as ≥3 consecutive days of temperatures ≥90 F [≥32.2 C]), deaths classified as caused by hyperthermia represent only a portion of heat-related mortality.

†Heat index is a measure of the effect of combined elements (e.g., heat and humidity) on the body.

Heat-Related Illness — Continued

deaths in the United States during 1979–1996, describes risk factors associated with heat-related illness and death, especially in susceptible populations (young and elderly, chronically ill, and disabled persons), and recommends preventive measures.

Case Reports

Case 1. In June 1998, a 92-year-old man was admitted to a city hospital emergency department. He was unresponsive to stimuli, had a heart rate of 170 beats per minute, a rectal temperature of 105.6 F (40.9 C), and a history of heart disease. The medical examiner's report listed the cause of death as hyperthermia as a result of exposure to high environmental temperature. To conserve electricity, his family had not been running the air conditioner in their residence. The daytime heat index recorded at the local airport during the 5 days preceding his death ranged from 102 F to 109 F (38.9 C to 42.8 C).

Case 2. In July 1998 at 4:47 p.m., a 4-year-old girl was found in a locked car in front of a child care center. She had disappeared from the center at approximately 10 a.m. Cardiopulmonary resuscitation was administered on the scene, but rigor mortis already had occurred. Death was attributed to hyperthermia. The temperature inside the car at the time of her death was unknown; however, the estimated heat index in the area that day was 93 F (33.9 C).

Case 3. In July 1998, a 70-year-old woman was found dead in a mobile home. When she was discovered, the air conditioner was blowing hot air, and the temperature inside the mobile home was approximately 115 F (46 C). The autopsy report indicated that she suffered from congestive heart failure, arthritis, and chronic obstructive pulmonary disease, and that death was caused by pulmonary insufficiency brought about by exposure to excessive heat.

Case 4. In July 1998, a 42-year-old man was found dead in his apartment. His partially decomposed body was discovered by police officers investigating reports of a foul odor. The air conditioner was not on. The heat index at the city airport when the man was last seen alive was 93 F (33.9 C). The man had schizophrenia and was under psychiatric care. He also was a heavy smoker and had emphysema. The medical examiner's report indicated that the cause of death was hyperthermia.

Missouri

During 1979–1996, the years for which data are available, Missouri had the second highest age-adjusted rate for heat-related deaths "due to weather conditions"[§] (3 per 1 million population) in the United States. During 1998, after reviewing death certificates, the Missouri Department of Health attributed 12 deaths to high temperatures, and the state's heat surveillance system recorded 470 heat-related illnesses: the average age among decedents was 65.6 years (range: 4–92 years; median 73.5 years); seven (58%) decedents were female.

[§] Underlying cause of death attributed to "excessive heat exposure," classified according to the *International Classification of Diseases, Ninth Revision* (ICD-9), as code E900.0, "due to weather conditions" (deaths); code E900.1, "of man-made origin" (deaths); or code E900.9, "of unspecified origin" (deaths). These data were obtained from the Compressed Mortality File (CMF) of CDC's National Center for Health Statistics, which contains information from death certificates filed in 50 states and the District of Columbia. All rates were age-standardized to the 1990 U.S. population.

Heat-Related Illness — Continued

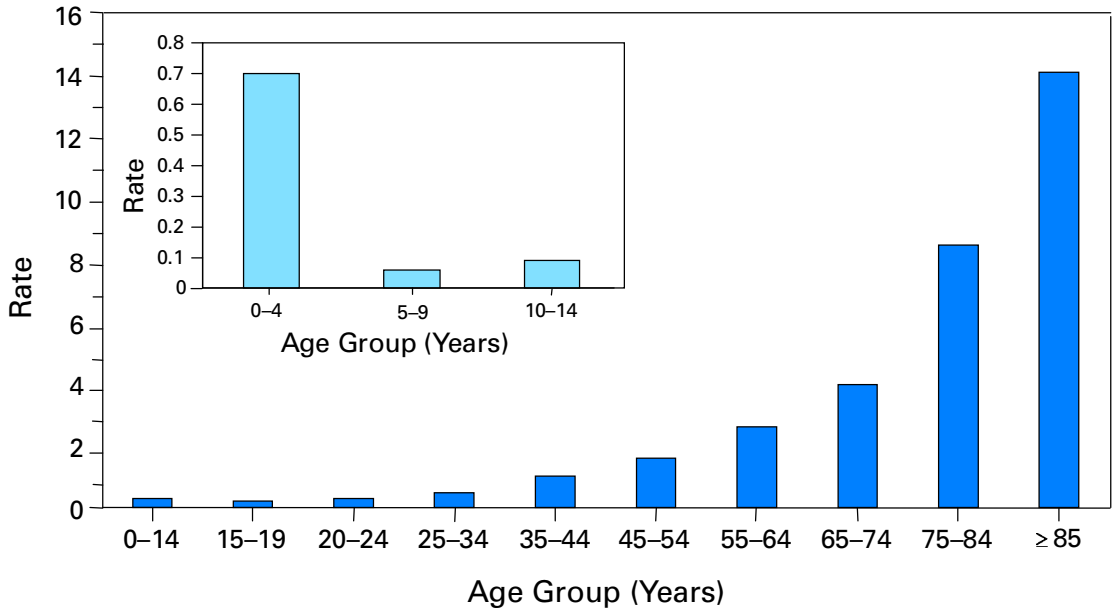
United States

During 1979–1996, an annual average of 381 deaths in the United States (*6*) were attributable to "excessive heat exposure" (range: 148 in 1979 to 1700 in 1980), for an average age-adjusted rate of 2 deaths per 1 million population. During this 18-year period, 6864 deaths were attributable to excessive heat exposure: 2914 (42%) "due to weather conditions," 343 (5%) "of man-made origin," and 3607 (53%) "of unspecified origin." Of the 2862 persons whose death was caused by weather conditions and for whom age data were available, 1745 (61%) were aged ≥55 years, and 19 (4%) were aged ≤14 years. Approximately half of all heat-related deaths occurred among persons aged ≥65 years (Figure 1). During 1979–1996, the annual age-adjusted death rate for hyperthermia in this age group was 6 per 1 million. Among persons aged ≥35 years, the annual death rate "due to weather conditions" was 1.7 times higher for men (1.5 per 1 million) than for women (0.9 per 1 million), and four times higher for blacks (four per 1 million) than for whites (0.9 per 1 million).

Reported by: DC Rackers, Office of Epidemiology, H Donnell, MD, State Epidemiologist, Missouri Dept of Health. Health Studies Br, Div of Environmental Hazards and Health Effects, National Center for Environmental Health; and an EIS Officer, CDC.

Editorial Note: All persons are at risk for hyperthermia when exposed to a sustained period of excessive heat (*2*). The cases described in this report illustrate risk factors associated with heat-related mortality, including age (the young and the elderly), medical history (e.g., cardiovascular disease), social circumstances (e.g., living alone), chronic health conditions (e.g., respiratory diseases), and other conditions that might interfere with the ability to care for oneself (*2,3*).

FIGURE 1. Average annual rate* of heat-related deaths†, by age group — United States, 1979–1996



*Per 1 million population.

†Underlying cause of death attributed to excess heat exposure classified according to the *International Classification of Diseases, Ninth Revision*, as code E900.0, "due to weather conditions."

Heat-Related Illness — Continued

Also contributing to heat-related illness are alcohol consumption (which may cause dehydration), previous heatstroke, physical activity (e.g., exertion in exceptionally hot environments during work or recreation), and the use of medications that interfere with the body's heat regulatory system, such as neuroleptics (antipsychotics or major tranquilizers) and medications with anticholinergic effects (e.g., tricyclic antidepressants, antihistamines, some antiparkinsonian agents, and some over-the-counter sleeping pills [*2–4*]). Although the annual death rate from hyperthermia is higher for men aged ≥35 years and for black persons than for women aged ≥35 years and white persons, the reasons for these differences have not been identified (*5*).

Illnesses associated with high environmental temperatures include heatstroke (hyperthermia), heat exhaustion, heat syncope, and heat cramps (*2*). Heatstroke is a medical emergency characterized by the rapid onset and increase (within minutes) of the core body temperature to ≥105 F (≥40.6 C) and lethargy, disorientation, delirium, and coma (*2*). Heatstroke is often fatal despite medical care directed at rapidly lowering the body temperature (e.g., ice baths) because in many cases irreparable neurologic damage has occurred (*2*). Heat exhaustion is characterized by dizziness, weakness, or fatigue often following several days of sustained exposure to hot temperatures and results from dehydration or electrolyte imbalance (*2*); treatment includes replacing fluids and electrolytes and may require hospitalization (*2*). Physical exertion during hot weather increases the likelihood of heat syncope and heat cramps caused by peripheral vasodilation (*2*). Persons who lose consciousness because of heat syncope should be placed in a recumbent position with feet elevated and given fluid and electrolyte replacement (*2*). For heat cramps, physical exertion should be discontinued and fluids and electrolytes replaced (*2,7*).

Persons working either indoors or outdoors in high temperatures should take special precautions, including allowing 10–14 days to acclimate to high temperatures. Although adequate salt intake is important, salt tablets are not recommended and may be hazardous to many people (*2*). Although the use of fans may increase comfort at temperatures <90 F (<32.2 C), they are not protective against heatstroke when temperatures reach ≥90 F (≥32.2 C) and humidity is >35% (*2,4*).

Measures for preventing heat-related illness and death include spending time in air-conditioned environments, increasing nonalcoholic fluid intake, exercising only during cooler parts of the day, and taking cool-water baths (*2*). Elderly persons should be encouraged to take advantage of air-conditioned environments (e.g., shopping malls and public libraries), even if only for part of the day (*2–4*).

Public health information about exceptionally high temperatures should be directed toward susceptible populations. For example, parents should be educated about the heat sensitivity of children aged <5 years (*2*). When a heat wave is predicted, friends, relatives, and neighbors should make an effort to check on elderly, disabled, and homebound persons, and during periods of high temperatures, prevention messages about avoiding heat-related illness should be disseminated as early as possible to prevent heat-related illness, injury, and death.

References

1. Donoghue ER, Graham MA, Jentzen JM, Lifschultz BD, Luke JL, Mirchandani HG. National Association of Medical Examiners ad hoc committee on the definition of heat-related fatalities. Criteria for the diagnosis of heat-related deaths. National Association of Medical Examiners. Am J Forensic Med Pathol 1997;18:11–4.

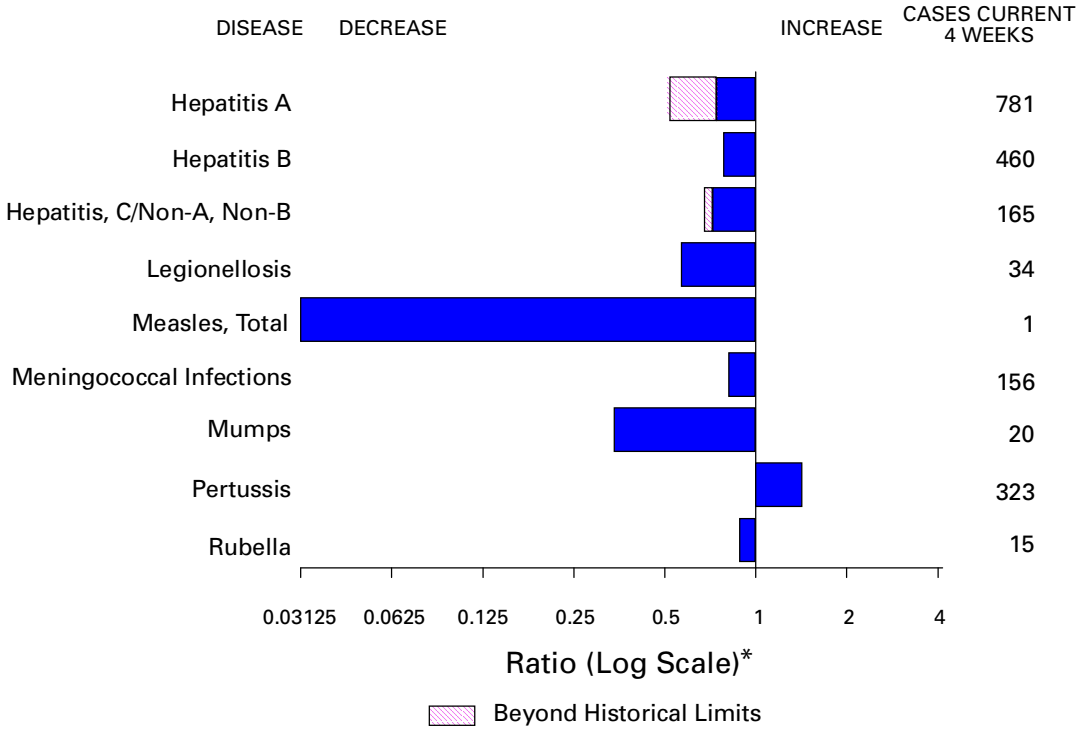
Heat-Related Illness — Continued

2. Kilbourne EM. Heat waves and hot environments. In: Noji EK, ed. The public health consequences of disasters. New York: Oxford University Press, 1997:245–69.
3. Kilbourne EM, Choi K, Jones TS, Thacker SB, Field Investigation Team. Risk factors for heatstroke: a case-control study. JAMA 1982;247:3332–6.
4. Lee DH. Seventy-five years of searching for a heat index. Environ Res 1980;22:331–56.
5. Semenza JC, Rubin CH, Falter KH, et al. Risk factors for heat-related mortality during the July 1995 heat wave in Chicago. N Engl J Med 1996;35:84–90.
6. National Center for Health Statistics. Compressed Mortality File. Atlanta, Georgia: US Department of Health and Human Services, Public Health Service, CDC, 1999.
7. Huston CS. Heat cramps. In: Berkow R, ed. The Merck manual. 7th ed. Rahaway, New Jersey: Merck & Co., Inc., 1992:2511.

Erratum — Vol. 48, No. 18

In the article "Motor-Vehicle Safety: A 20th Century Public Health Achievement," on page 369 the denominator for the rate was incorrect in Figure 1. The figure title and the label for the Y axis on the left side should be "per *100* million vehicle miles traveled."

FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending June 5, 1999, with historical data — United States



*Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — provisional cases of selected notifiable diseases, United States, cumulative, week ending June 5, 1999 (22nd Week)

	Cum. 1999		Cum. 1999
Anthrax	-	HIV-Infection, pediatric*§	73
Brucellosis	14	Plague	1
Cholera	-	Poliomyelitis, paralytic	-
Congenital rubella syndrome	2	Psittacosis	14
Cyclosporiasis	7	Rabies, human	-
Diphtheria	-	Rocky Mountain spotted fever (RMSF)	75
Encephalitis: California*	2	Streptococcal disease, invasive Group A	1,018
eastern equine*	2	Streptococcal toxic-shock syndrome*	20
St. Louis*	-	Syphilis, congenital¶	60
western equine*	1	Tetanus	9
Ehrilichiosis human granulocyctic (HGE)*	27	Toxic-shock syndrome	51
human monocyctic (HME)*	5	Trichinosis	5
Hansen disease	35	Typhoid fever	116
Hantavirus pulmonary syndrome*†	7	Yellow fever	-
Hemolytic uremic syndrome, post-diarrheal*	12		

-:no reported cases
*Not notifiable in all states.
† Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases (NCID).
§ Updated monthly from reports to the Division of HIV/AIDS Prevention–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention (NCHSTP), last update May 23, 1999.
¶ Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending June 5, 1999, and June 6, 1998 (22nd Week)

Reporting Area	AIDS		Chlamydia		Cryptosporidiosis		*Escherichia coli* O157:H7*			
							NETSS		PHLIS	
	Cum. 1999†	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998
UNITED STATES	18,649	19,858	236,249	241,165	513	831	543	510	275	386
NEW ENGLAND	953	620	8,181	8,629	27	64	84	71	65	64
Maine	22	13	193	388	8	14	5	2	-	-
N.H.	24	13	400	409	5	3	11	10	7	15
Vt.	6	10	213	163	6	7	8	-	1	-
Mass.	627	264	3,679	3,541	8	36	35	40	31	36
R.I.	60	60	997	1,058	-	4	4	3	6	1
Conn.	214	260	2,699	3,070	-	-	21	16	20	12
MID. ATLANTIC	4,463	5,687	30,402	25,388	87	282	34	46	7	17
Upstate N.Y.	531	714	N	N	46	163	28	33	-	-
N.Y. City	2,110	3,149	15,862	11,369	22	88	-	6	2	5
N.J.	967	986	4,263	4,837	9	9	6	7	5	11
Pa.	855	838	10,277	9,182	10	22	N	N	-	1
E.N. CENTRAL	1,289	1,510	34,849	41,631	47	93	89	104	42	70
Ohio	209	287	9,140	11,357	16	35	33	21	8	14
Ind.	169	292	4,444	4,460	8	20	15	26	10	20
Ill.	594	598	11,813	10,819	6	26	21	38	7	7
Mich.	252	251	9,452	9,364	17	12	20	19	11	13
Wis.	65	82	U	5,631	-	-	N	N	6	16
W.N. CENTRAL	389	345	13,328	14,581	38	68	98	50	38	46
Minn.	69	55	2,755	2,968	14	19	30	18	21	21
Iowa	44	20	1,213	1,818	8	14	11	7	4	6
Mo.	154	175	5,099	5,027	5	7	12	9	9	16
N. Dak.	4	4	325	429	4	7	3	1	-	1
S. Dak.	11	9	674	702	2	9	3	1	4	1
Nebr.	34	34	1,217	1,255	4	11	32	6	-	-
Kans.	73	48	2,045	2,382	1	1	7	8	-	1
S. ATLANTIC	5,239	4,979	52,557	45,654	132	71	70	29	34	35
Del.	72	57	1,201	1,074	-	-	2	-	-	1
Md.	560	572	4,374	3,512	6	6	4	10	-	6
D.C.	208	412	N	N	4	3	-	-	-	-
Va.	266	368	5,860	4,061	6	1	20	-	11	17
W. Va.	26	44	888	1,023	-	1	3	1	1	-
N.C.	356	333	9,664	9,518	3	N	15	9	10	5
S.C.	485	313	7,932	7,817	-	-	7	1	3	-
Ga.	826	610	12,211	10,252	74	19	6	2	-	-
Fla.	2,440	2,270	10,427	8,397	39	41	13	6	9	6
E.S. CENTRAL	844	784	16,597	16,460	8	15	39	37	14	22
Ky.	128	101	2,800	2,595	2	5	13	10	-	-
Tenn.	339	268	6,078	5,344	4	6	14	19	7	14
Ala.	214	232	3,811	4,063	1	N	9	5	6	7
Miss.	163	183	3,908	4,458	1	4	3	3	1	1
W.S. CENTRAL	2,091	2,463	31,893	35,913	30	13	19	23	11	6
Ark.	70	81	2,440	1,447	-	3	5	1	3	1
La.	410	412	7,084	5,239	20	5	3	-	3	1
Okla.	54	134	3,265	4,355	1	3	6	3	5	4
Tex.	1,557	1,836	19,104	24,872	9	2	5	19	-	-
MOUNTAIN	723	706	13,510	13,241	30	57	44	50	22	39
Mont.	4	13	559	515	4	1	3	2	-	-
Idaho	11	14	501	800	2	14	1	3	2	1
Wyo.	3	1	333	287	-	-	3	-	3	-
Colo.	144	126	3,233	3,439	4	2	16	11	8	9
N. Mex.	37	111	1,633	1,614	11	25	2	9	1	6
Ariz.	355	283	5,409	4,549	7	9	9	8	4	9
Utah	70	57	769	923	-	-	8	11	2	8
Nev.	99	101	1,073	1,114	2	6	2	6	2	6
PACIFIC	2,658	2,764	34,932	39,668	114	168	66	100	42	87
Wash.	153	196	5,131	4,663	-	-	20	20	16	30
Oreg.	63	87	2,445	2,127	12	16	17	24	12	22
Calif.	2,394	2,428	25,584	31,086	102	151	29	55	13	32
Alaska	6	12	804	821	-	-	-	1	-	-
Hawaii	42	41	968	971	-	1	-	-	1	3
Guam	1	-	-	156	-	-	N	N	-	-
P.R.	625	830	U	U	-	-	6	4	U	U
V.I.	13	17	N	N	-	-	N	N	U	U
Amer. Samoa	-	-	U	U	-	-	N	N	U	U
C.N.M.I.	-	-	N	N	-	-	N	N	U	U

N: Not notifiable U: Unavailable -: no reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands

*Individual cases may be reported through both the National Electronic Telecommunications System for Surveillance (NETSS) and the Public Health Laboratory Information System (PHLIS).

†Updated monthly from reports to the Division of HIV/AIDS Prevention–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention, last update May 23, 1999.

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending June 5, 1999, and June 6, 1998 (22nd Week)

Reporting Area	Gonorrhea		Hepatitis C/NA,NB		Legionellosis		Lyme Disease	
	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998
UNITED STATES	126,432	138,698	1,102	1,890	394	469	1,919	2,109
NEW ENGLAND	2,468	2,385	69	35	24	23	307	546
Maine	15	16	1	-	3	1	-	11
N.H.	32	39	-	-	3	2	-	11
Vt.	24	13	2	2	3	1	-	3
Mass.	1,036	846	63	32	7	9	153	141
R.I.	244	156	3	1	2	4	16	30
Conn.	1,117	1,315	-	-	6	6	138	350
MID. ATLANTIC	16,361	14,969	73	168	86	102	1,205	1,212
Upstate N.Y.	2,508	2,818	46	130	25	26	527	557
N.Y. City	6,561	5,041	-	-	7	23	6	51
N.J.	2,315	2,962	-	-	5	4	118	170
Pa.	4,977	4,148	27	38	49	49	554	434
E.N. CENTRAL	22,796	27,616	322	228	105	170	42	97
Ohio	5,449	6,905	-	6	29	60	25	18
Ind.	2,606	2,640	-	4	35	31	14	4
Ill.	8,289	8,797	8	24	10	22	2	4
Mich.	6,452	6,989	314	194	28	26	1	5
Wis.	U	2,285	-	-	3	31	U	66
W.N. CENTRAL	5,426	6,881	56	11	21	25	23	19
Minn.	1,045	1,020	2	-	1	3	13	4
Iowa	280	560	-	5	12	4	2	10
Mo.	2,625	3,692	50	4	7	8	-	3
N. Dak.	31	37	-	-	-	-	1	-
S. Dak.	67	116	-	-	1	-	-	-
Nebr.	549	469	-	2	-	8	-	-
Kans.	829	987	4	-	-	2	7	2
S. ATLANTIC	37,918	36,979	108	49	43	50	223	167
Del.	709	576	-	-	3	7	7	8
Md.	3,990	3,881	24	5	4	10	151	128
D.C.	1,042	1,507	-	-	-	3	1	4
Va.	3,914	2,579	9	3	11	4	17	11
W. Va.	230	350	12	3	N	N	4	4
N.C.	8,315	7,981	21	11	7	6	28	5
S.C.	4,325	5,085	12	1	6	5	3	1
Ga.	7,967	8,379	1	9	-	-	-	2
Fla.	7,426	6,641	29	17	12	14	12	4
E.S. CENTRAL	13,196	15,520	115	62	54	22	41	23
Ky.	1,276	1,419	5	11	44	12	17	8
Tenn.	4,629	4,466	42	48	8	4	12	7
Ala.	3,648	5,342	1	3	2	2	6	8
Miss.	3,643	4,293	67	-	-	4	6	-
W.S. CENTRAL	17,928	21,424	119	369	1	13	2	8
Ark.	1,150	1,668	2	9	-	1	-	4
La.	5,660	4,459	96	6	1	-	-	-
Okla.	1,649	2,358	2	2	-	6	2	-
Tex.	9,469	12,939	19	352	-	6	-	4
MOUNTAIN	3,711	3,495	69	218	23	29	5	1
Mont.	17	22	4	4	-	1	-	-
Idaho	26	72	4	77	-	-	1	-
Wyo.	11	15	24	53	-	1	1	-
Colo.	893	951	12	12	4	5	-	-
N. Mex.	280	311	4	40	1	2	1	-
Ariz.	2,031	1,640	16	2	3	5	-	-
Utah	75	89	2	14	9	13	1	-
Nev.	378	395	3	16	6	2	1	1
PACIFIC	6,628	9,429	171	750	37	35	71	36
Wash.	902	790	7	10	7	4	1	1
Oreg.	338	297	7	10	1	-	1	6
Calif.	5,126	7,999	157	675	28	31	69	29
Alaska	139	143	-	1	1	-	-	-
Hawaii	123	200	-	54	-	-	-	-
Guam	-	19	-	-	-	1	-	-
P.R.	130	170	-	-	-	-	-	-
V.I.	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U
C.N.M.I.	-	15	-	-	-	-	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending June 5, 1999, and June 6, 1998 (22nd Week)

Reporting Area	Malaria		Rabies, Animal		Salmonellosis*			
					NETSS		PHLIS	
	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998
UNITED STATES	446	484	2,225	3,082	10,325	11,749	4,735	6,955
NEW ENGLAND	16	18	364	573	636	791	124	186
Maine	1	-	67	97	46	60	2	4
N.H.	-	3	26	33	35	50	7	6
Vt.	1	-	56	30	23	29	4	3
Mass.	6	13	74	183	357	417	73	117
R.I.	-	2	45	33	32	48	12	15
Conn.	8	-	96	197	143	187	26	41
MID. ATLANTIC	111	146	430	646	1,397	2,015	349	1,101
Upstate N.Y.	32	30	286	449	356	443	89	198
N.Y. City	36	82	U	U	324	651	93	364
N.J.	27	19	85	83	307	437	103	366
Pa.	16	15	59	114	410	484	64	173
E.N. CENTRAL	44	47	27	43	1,343	2,111	726	1,104
Ohio	8	2	8	31	309	486	234	265
Ind.	8	2	-	-	153	206	35	73
Ill.	17	22	-	4	473	642	275	583
Mich.	9	18	17	6	370	426	134	105
Wis.	2	3	2	2	38	351	48	78
W.N. CENTRAL	20	23	258	317	633	673	303	346
Minn.	5	8	39	55	185	187	43	70
Iowa	5	3	51	64	84	117	6	22
Mo.	9	9	8	18	198	177	213	44
N. Dak.	-	1	71	55	15	16	2	3
S. Dak.	-	-	44	72	31	26	8	19
Nebr.	-	-	2	2	40	53	14	177
Kans.	1	2	43	51	80	97	17	11
S. ATLANTIC	128	103	836	1,075	2,107	1,986	905	1,220
Del.	1	1	3	17	41	23	5	7
Md.	36	37	179	236	269	282	52	86
D.C.	9	7	-	-	35	40	25	9
Va.	21	17	217	280	261	314	32	56
W. Va.	1	-	49	39	36	55	4	7
N.C.	10	8	178	283	348	299	81	112
S.C.	1	3	63	66	115	123	40	66
Ga.	12	13	71	66	356	272	87	283
Fla.	37	17	76	88	646	578	579	594
E.S. CENTRAL	9	13	113	126	583	516	477	373
Ky.	2	1	19	16	128	115	60	71
Tenn.	4	7	39	72	152	151	331	58
Ala.	2	3	55	36	179	142	47	216
Miss.	1	2	-	2	124	108	39	28
W.S. CENTRAL	8	12	44	76	772	802	717	1,248
Ark.	-	1	-	1	119	72	42	63
La.	6	4	-	-	136	41	64	71
Okla.	1	1	44	75	108	103	206	86
Tex.	1	6	-	-	409	586	405	1,028
MOUNTAIN	22	28	78	72	1,002	747	287	450
Mont.	3	-	29	21	21	32	6	1
Idaho	1	3	-	-	36	42	5	11
Wyo.	1	-	27	36	11	26	2	-
Colo.	8	7	1	1	312	181	47	60
N. Mex.	2	8	2	-	122	68	36	90
Ariz.	5	4	19	14	297	219	156	256
Utah	1	1	-	-	137	119	19	14
Nev.	1	5	-	-	66	60	16	18
PACIFIC	88	94	75	154	1,852	2,108	847	927
Wash.	5	7	-	-	166	142	39	49
Oreg.	10	9	1	-	139	121	29	52
Calif.	68	77	68	137	1,415	1,748	758	807
Alaska	-	-	6	17	16	14	-	3
Hawaii	5	1	-	-	116	83	21	16
Guam	-	1	-	-	-	9	-	19
P.R.	-	-	30	24	149	244	17	25
V.I.	U	U	U	U	-	-	-	-
Amer. Samoa	U	U	U	U	-	-	-	-
C.N.M.I.	-	-	-	-	-	9	-	10

N: Not notifiable U: Unavailable -: no reported cases

*Individual cases may be reported through both the National Electronic Telecommunications System for Surveillance (NETSS) and the Public Health Laboratory Information System (PHLIS).

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending June 5, 1999, and June 6, 1998 (22nd Week)

Reporting Area	Shigellosis*				Syphilis (Primary & Secondary)		Tuberculosis	
	NETSS		PHLIS					
	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999†	Cum. 1998†
UNITED STATES	7,134	10,478	1,667	3,011	2,633	2,941	2,213	3,334
NEW ENGLAND	594	710	111	173	26	33	149	173
Maine	27	25	-	-	-	1	6	3
N.H.	21	69	5	6	-	1	1	2
Vt.	23	20	3	-	1	2	-	1
Mass.	339	405	69	115	16	21	78	94
R.I.	45	36	9	12	1	-	17	21
Conn.	139	155	25	40	8	8	47	52
MID. ATLANTIC	821	1,945	161	953	109	127	800	907
Upstate N.Y.	305	434	25	61	15	16	121	124
N.Y. City	304	586	80	384	47	22	507	555
N.J.	212	389	56	356	13	49	172	228
Pa.	-	536	-	152	34	40	U	U
E.N. CENTRAL	961	1,345	260	231	531	465	136	181
Ohio	117	387	14	63	37	70	U	U
Ind.	92	220	8	20	136	79	U	U
Ill.	271	243	172	129	263	193	U	U
Mich.	322	309	51	4	95	89	101	136
Wis.	159	186	15	15	U	34	35	45
W.N. CENTRAL	595	765	237	160	50	71	191	154
Minn.	206	228	45	73	5	5	78	50
Iowa	58	103	8	22	4	-	19	2
Mo.	242	266	167	29	34	53	72	68
N. Dak.	-	35	-	2	-	-	2	3
S. Dak.	26	32	4	15	-	1	3	9
Nebr.	-	10	-	11	4	4	7	5
Kans.	63	91	13	8	3	8	10	17
S. ATLANTIC	1,461	1,554	173	440	848	1,136	406	477
Del.	47	38	2	1	4	15	12	8
Md.	255	294	10	24	182	319	U	U
D.C.	-	-	-	-	14	34	19	48
Va.	161	290	5	23	65	74	83	118
W. Va.	32	51	2	4	2	2	19	21
N.C.	300	322	39	73	224	323	158	160
S.C.	110	109	15	25	108	139	115	122
Ga.	419	308	27	105	128	126	U	U
Fla.	137	142	73	185	121	104	U	U
E.S. CENTRAL	253	483	217	218	491	488	188	261
Ky.	-	60	-	38	43	50	U	U
Tenn.	129	267	197	73	273	242	U	U
Ala.	107	128	19	105	115	105	132	158
Miss.	17	28	1	2	60	91	56	103
W.S. CENTRAL	622	823	299	463	381	368	124	882
Ark.	75	61	21	15	27	53	71	41
La.	66	209	29	124	108	115	U	U
Okla.	65	58	60	30	89	22	53	48
Tex.	416	495	189	294	157	178	-	793
MOUNTAIN	697	703	122	254	83	96	61	102
Mont.	1	14	-	2	-	-	5	12
Idaho	34	36	3	6	-	-	-	4
Wyo.	8	24	1	-	-	-	1	2
Colo.	315	181	35	46	1	5	U	U
N. Mex.	79	61	13	36	-	12	22	27
Ariz.	207	213	64	147	78	71	U	U
Utah	-	111	-	10	2	3	18	28
Nev.	53	63	6	7	2	5	15	29
PACIFIC	1,130	2,150	87	119	114	157	158	197
Wash.	193	239	40	49	28	9	66	105
Oreg.	178	158	28	50	1	1	U	U
Calif.	653	1,652	-	-	82	147	U	U
Alaska	5	10	-	2	1	-	28	20
Hawaii	101	91	19	18	2	-	64	72
Guam	-	-	-	-	-	-	-	37
P.R.	-	-	-	-	79	105	41	65
V.I.	-	-	-	-	U	U	U	U
Amer. Samoa	-	-	-	-	U	U	U	U
C.N.M.I.	-	-	-	-	-	110	-	54

N: Not notifiable U: Unavailable -: no reported cases

*Individual cases may be reported through both the National Electronic Telecommunications System for Surveillance (NETSS) and the Public Health Laboratory Information System (PHLIS).

†Cumulative reports of provisional tuberculosis cases for 1998 and 1999 are unavailable ("U") for some areas using the Tuberculosis Information System (TIMS)

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending June 5, 1999, and June 6, 1998 (22nd Week)

Reporting Area	*H. influenzae*, invasive		Hepatitis (Viral), by type				Measles (Rubeola)					
			A		B		Indigenous		Imported*		Total	
	Cum. 1999†	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	1999	Cum. 1999	1999	Cum. 1999	Cum. 1999	Cum. 1998
UNITED STATES	518	525	6,766	9,630	2,587	3,405	1	27	-	13	40	34
NEW ENGLAND	35	33	77	133	37	70	-	5	-	4	9	1
Maine	4	2	2	13	-	-	-	-	-	-	-	-
N.H.	6	1	7	6	6	7	-	-	-	1	1	-
Vt.	4	2	3	10	1	2	-	-	-	-	-	-
Mass.	14	26	20	43	18	31	U	4	U	2	6	1
R.I.	-	2	9	9	12	18	-	-	-	-	-	-
Conn.	7	-	36	52	-	12	-	1	-	1	2	-
MID. ATLANTIC	67	78	444	726	343	555	-	-	-	2	2	11
Upstate N.Y.	36	27	102	145	88	131	-	-	-	2	2	2
N.Y. City	10	21	71	273	76	174	-	-	-	-	-	-
N.J.	21	26	57	132	40	95	-	-	-	-	-	8
Pa.	-	4	214	176	139	155	-	-	-	-	-	1
E.N. CENTRAL	69	85	1,374	1,301	245	407	-	1	-	-	1	11
Ohio	27	32	326	144	42	28	U	-	U	-	-	-
Ind.	12	18	92	80	23	42	-	1	-	-	1	3
Ill.	23	31	207	339	-	108	-	-	-	-	-	-
Mich.	7	-	723	632	179	188	-	-	-	-	-	8
Wis.	-	4	26	106	1	41	-	-	-	-	-	-
W.N. CENTRAL	45	31	296	741	142	165	-	-	-	-	-	-
Minn.	12	17	25	28	16	11	-	-	-	-	-	-
Iowa	15	1	66	338	23	24	-	-	-	-	-	-
Mo.	12	8	163	304	81	108	-	-	-	-	-	-
N. Dak.	-	-	1	2	-	2	-	-	-	-	-	-
S. Dak.	1	-	8	8	1	1	U	-	U	-	-	-
Nebr.	3	-	16	11	7	7	-	-	-	-	-	-
Kans.	2	5	17	50	14	12	-	-	-	-	-	-
S. ATLANTIC	122	98	806	635	487	353	-	1	-	3	4	6
Del.	-	-	1	3	-	-	-	-	-	-	-	1
Md.	31	32	142	150	70	75	-	-	-	-	-	1
D.C.	3	-	32	25	11	6	U	-	U	-	-	-
Va.	10	12	63	119	41	45	-	1	-	2	3	2
W. Va.	4	4	13	1	11	3	-	-	-	-	-	-
N.C.	21	12	52	41	100	81	-	-	-	-	-	-
S.C.	2	3	16	15	38	1	-	-	-	-	-	-
Ga.	24	19	212	127	60	59	-	-	-	-	-	1
Fla.	27	16	275	154	156	83	-	-	-	1	1	1
E.S. CENTRAL	42	33	207	196	205	176	-	-	-	-	-	-
Ky.	6	5	32	11	24	21	-	-	-	-	-	-
Tenn.	22	20	102	111	90	124	-	-	-	-	-	-
Ala.	12	7	34	44	46	31	-	-	-	-	-	-
Miss.	2	1	39	30	45	-	-	-	-	-	-	-
W.S. CENTRAL	30	27	1,260	1,733	220	542	-	1	-	2	3	-
Ark.	1	-	22	27	21	34	-	-	-	-	-	-
La.	7	12	52	23	64	32	-	-	-	-	-	-
Okla.	20	13	215	245	49	31	-	-	-	-	-	-
Tex.	2	2	971	1,438	86	445	-	1	-	2	3	-
MOUNTAIN	55	72	674	1,497	274	347	1	1	-	-	1	-
Mont.	1	-	12	43	15	3	-	-	-	-	-	-
Idaho	1	-	26	103	14	15	-	-	-	-	-	-
Wyo.	1	-	4	22	5	2	-	-	-	-	-	-
Colo.	6	13	116	107	41	41	-	-	-	-	-	-
N. Mex.	11	3	21	78	100	133	-	-	-	-	-	-
Ariz.	30	36	418	940	60	88	1	1	-	-	1	-
Utah	4	3	25	97	14	30	-	-	-	-	-	-
Nev.	1	17	52	107	25	35	-	-	-	-	-	-
PACIFIC	53	68	1,628	2,668	634	790	-	18	-	2	20	5
Wash.	1	3	114	512	26	58	-	-	-	-	-	1
Oreg.	20	29	123	212	41	79	-	8	-	-	8	-
Calif.	26	30	1,382	1,905	554	640	-	10	-	2	12	4
Alaska	4	1	3	12	8	7	-	-	-	-	-	-
Hawaii	2	5	6	27	5	6	-	-	-	-	-	-
Guam	-	-	-	-	-	1	U	-	U	-	-	-
P.R.	1	2	68	24	66	240	-	-	-	-	-	-
V.I.	U	U	U	U	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	-	-	1	-	29	U	-	U	-	-	-

N: Not notifiable U: Unavailable -: no reported cases

*For imported measles, cases include only those resulting from importation from other countries.

†Of 109 cases among children aged <5 years, serotype was reported for 47 and of those, 11 were type b.

TABLE III. (Cont'd.) Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending June 5, 1999, and June 6, 1998 (22nd Week)

Reporting Area	Meningococcal Disease		Mumps			Pertussis			Rubella		
	Cum. 1999	Cum. 1998	1999	Cum. 1999	Cum. 1998	1999	Cum. 1999	Cum. 1998	1999	Cum. 1999	Cum. 1998
UNITED STATES	1,158	1,368	7	156	369	107	2,176	1,922	8	46	253
NEW ENGLAND	46	63	-	3	-	-	169	360	-	5	36
Maine	4	4	-	-	-	-	-	5	-	-	-
N.H.	-	4	-	1	-	-	51	25	-	-	-
Vt.	4	1	-	-	-	-	10	31	-	-	-
Mass.	30	28	U	2	-	U	97	283	U	5	8
R.I.	2	3	-	-	-	-	3	3	-	-	-
Conn.	6	23	-	-	-	-	8	13	-	-	28
MID. ATLANTIC	102	137	1	19	162	38	544	248	4	12	116
Upstate N.Y.	26	33	1	4	3	28	485	114	4	9	101
N.Y. City	25	17	-	3	153	-	10	13	-	-	9
N.J.	23	35	-	-	2	-	-	8	-	-	5
Pa.	28	52	-	12	4	10	49	113	-	3	1
E.N. CENTRAL	174	225	-	20	42	-	160	192	-	-	-
Ohio	77	73	U	6	17	U	98	63	U	-	-
Ind.	27	41	-	2	4	-	10	48	-	-	-
Ill.	46	64	-	6	6	-	33	13	-	-	-
Mich.	23	24	-	6	15	-	19	30	-	-	-
Wis.	1	23	-	-	-	-	-	38	-	-	-
W.N. CENTRAL	136	111	-	5	20	8	55	146	2	5	17
Minn.	28	16	-	1	10	6	24	79	-	-	-
Iowa	29	16	-	3	6	1	16	37	2	5	-
Mo.	54	48	-	1	3	1	12	12	-	-	2
N. Dak.	3	-	-	-	1	-	-	-	-	-	-
S. Dak.	5	6	U	-	-	U	2	4	U	-	-
Nebr.	5	4	-	-	-	-	1	6	-	-	-
Kans.	12	21	-	-	-	-	-	8	-	-	15
S. ATLANTIC	202	207	1	31	24	7	123	108	-	2	4
Del.	3	1	-	-	-	-	-	1	-	-	-
Md.	30	22	-	3	-	2	35	22	-	1	-
D.C.	1	-	U	2	-	U	-	1	U	-	-
Va.	24	21	-	8	4	-	13	6	-	-	-
W. Va.	4	7	-	-	-	-	1	1	-	-	-
N.C.	25	31	-	5	7	-	27	42	-	1	3
S.C.	24	31	-	3	4	-	8	13	-	-	-
Ga.	30	44	1	1	1	3	15	2	-	-	-
Fla.	61	50	-	9	8	2	24	20	-	-	1
E.S. CENTRAL	96	104	-	1	4	-	41	48	-	1	-
Ky.	25	15	-	-	-	-	3	18	-	-	-
Tenn.	32	36	-	-	-	-	24	14	-	-	-
Ala.	22	35	-	1	1	-	10	14	-	1	-
Miss.	17	18	-	-	3	-	4	2	-	-	-
W.S. CENTRAL	88	152	2	20	30	2	54	123	-	5	62
Ark.	19	22	-	-	-	-	4	14	-	-	-
La.	31	25	-	2	2	-	3	-	-	-	-
Okla.	15	25	-	1	-	-	7	15	-	-	-
Tex.	23	80	2	17	28	2	40	94	-	5	62
MOUNTAIN	85	78	1	10	22	11	228	374	2	14	5
Mont.	2	2	-	-	-	1	2	1	-	-	-
Idaho	8	3	1	1	3	2	92	121	-	-	-
Wyo.	3	3	-	-	1	-	2	7	-	-	-
Colo.	22	17	-	3	2	3	54	90	-	-	-
N. Mex.	10	13	N	N	N	-	19	61	-	-	1
Ariz.	28	28	-	-	4	5	29	62	2	13	1
Utah	7	8	-	5	3	-	28	19	-	-	2
Nev.	5	4	-	1	9	-	2	13	-	1	1
PACIFIC	229	291	2	47	65	41	802	323	-	2	13
Wash.	34	34	-	1	5	35	474	128	-	-	9
Oreg.	40	48	N	N	N	2	15	25	-	-	-
Calif.	147	204	2	40	44	3	303	166	-	2	2
Alaska	4	1	-	1	2	-	3	-	-	-	-
Hawaii	4	4	-	5	14	1	7	4	-	-	2
Guam	-	2	U	-	2	U	-	-	U	-	-
P.R.	3	5	-	-	1	-	7	2	-	-	-
V.I.	U	U	U	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	-	U	-	2	U	-	1	U	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE IV. Deaths in 122 U.S. cities,* week ending June 5, 1999 (22nd Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	566	416	87	40	9	14	39
Boston, Mass.	147	101	22	14	2	8	10
Bridgeport, Conn.	50	38	7	2	3	-	1
Cambridge, Mass.	15	11	3	1	-	-	1
Fall River, Mass.	39	34	4	1	-	-	4
Hartford, Conn.	57	38	10	6	2	1	6
Lowell, Mass.	17	11	5	1	-	-	2
Lynn, Mass.	7	6	1	-	-	-	-
New Bedford, Mass.	24	20	2	2	-	-	1
New Haven, Conn.	29	24	4	-	-	1	2
Providence, R.I.	58	43	5	4	2	4	-
Somerville, Mass.	5	3	1	1	-	-	-
Springfield, Mass.	25	17	7	1	-	-	4
Waterbury, Conn.	32	25	5	2	-	-	3
Worcester, Mass.	61	45	11	5	-	-	5
MID. ATLANTIC	2,118	1,479	415	142	49	31	93
Albany, N.Y.	45	31	9	2	3	-	5
Allentown, Pa.	U	U	U	U	U	U	U
Buffalo, N.Y.	82	61	14	3	1	3	1
Camden, N.J.	39	24	6	7	1	1	-
Elizabeth, N.J.	14	9	5	-	-	-	-
Erie, Pa.	41	33	6	1	1	-	3
Jersey City, N.J.	40	26	12	2	-	-	-
New York City, N.Y.	1,126	766	228	93	28	11	25
Newark, N.J.	49	24	10	10	1	3	4
Paterson, N.J.	20	14	4	1	-	1	-
Philadelphia, Pa.	298	205	63	14	9	6	26
Pittsburgh, Pa.§	54	41	9	3	1	-	6
Reading, Pa.	38	32	6	-	-	-	6
Rochester, N.Y.	135	100	27	2	3	3	7
Schenectady, N.Y.	U	U	U	U	U	U	U
Scranton, Pa.	26	25	1	-	-	-	4
Syracuse, N.Y.	70	52	12	3	-	3	5
Trenton, N.J.	21	18	2	-	1	-	-
Utica, N.Y.	20	18	1	1	-	-	1
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	1,783	1,156	350	155	48	74	124
Akron, Ohio	46	35	5	3	3	-	-
Canton, Ohio	38	28	8	1	1	-	-
Chicago, Ill.	393	207	90	47	15	34	32
Cincinnati, Ohio	82	53	15	4	3	7	12
Cleveland, Ohio	91	65	14	8	1	3	5
Columbus, Ohio	150	108	23	14	4	1	11
Dayton, Ohio	98	70	22	4	1	1	9
Detroit, Mich.	158	91	40	16	5	6	4
Evansville, Ind.	47	31	11	5	-	-	2
Fort Wayne, Ind.	60	44	8	8	-	-	2
Gary, Ind.	11	6	3	2	-	-	-
Grand Rapids, Mich.	68	42	13	5	4	4	6
Indianapolis, Ind.	183	125	37	14	3	4	6
Lansing, Mich.	29	20	6	2	-	1	4
Milwaukee, Wis.	116	81	23	7	3	2	12
Peoria, Ill.	45	34	5	4	-	2	4
Rockford, Ill.	56	38	11	4	-	3	4
South Bend, Ind.	44	31	7	4	-	2	6
Toledo, Ohio	68	47	9	3	5	4	5
Youngstown, Ohio	U	U	U	U	U	U	U
W.N. CENTRAL	635	455	117	33	13	17	41
Des Moines, Iowa	100	73	14	8	1	4	9
Duluth, Minn.	14	7	6	-	-	1	2
Kansas City, Kans.	U	U	U	U	U	U	U
Kansas City, Mo.	103	66	24	7	2	4	2
Lincoln, Nebr.	28	23	4	-	-	1	-
Minneapolis, Minn.	135	100	23	8	3	1	10
Omaha, Nebr.	79	60	17	1	1	-	4
St. Louis, Mo.	90	63	17	4	3	3	4
St. Paul, Minn.	86	63	12	5	3	3	10
Wichita, Kans.	U	U	U	U	U	U	U
S. ATLANTIC	832	547	162	78	18	25	38
Atlanta, Ga.	U	U	U	U	U	U	U
Baltimore, Md.	134	72	31	21	3	6	6
Charlotte, N.C.	77	47	16	7	4	3	6
Jacksonville, Fla.	97	71	18	5	1	2	5
Miami, Fla.	100	68	17	13	1	1	1
Norfolk, Va.	27	21	2	1	2	1	-
Richmond, Va.	40	18	14	4	1	3	1
Savannah, Ga.	36	24	6	4	1	1	2
St. Petersburg, Fla.	63	49	9	3	-	2	3
Tampa, Fla.	136	96	22	12	2	4	9
Washington, D.C.	97	60	24	8	3	2	5
Wilmington, Del.	25	21	3	-	-	-	-
E.S. CENTRAL	729	481	142	74	11	19	49
Birmingham, Ala.	128	89	19	11	1	6	8
Chattanooga, Tenn.	70	52	8	6	2	2	5
Knoxville, Tenn.	60	42	13	4	-	1	1
Lexington, Ky.	58	43	8	6	-	1	6
Memphis, Tenn.	202	119	46	25	6	6	14
Mobile, Ala.	59	37	14	7	1	-	-
Montgomery, Ala.	25	22	2	1	-	-	9
Nashville, Tenn.	127	77	32	14	1	3	6
W.S. CENTRAL	1,024	677	218	76	32	21	73
Austin, Tex.	81	63	11	3	2	2	6
Baton Rouge, La.	9	5	1	-	2	1	-
Corpus Christi, Tex.	44	34	6	4	-	-	4
Dallas, Tex.	104	68	25	6	4	1	2
El Paso, Tex.	54	36	14	3	-	1	3
Ft. Worth, Tex.	89	61	14	9	-	5	10
Houston, Tex.	302	177	73	29	16	7	22
Little Rock, Ark.	64	41	17	2	4	-	2
New Orleans, La.	U	U	U	U	U	U	U
San Antonio, Tex.	159	104	37	13	3	2	12
Shreveport, La.	44	37	6	1	-	-	5
Tulsa, Okla.	74	51	14	6	1	2	7
MOUNTAIN	693	453	143	55	20	22	43
Albuquerque, N.M.	75	40	20	9	5	1	5
Boise, Idaho	32	25	3	2	1	1	2
Colo. Springs, Colo.	54	29	17	6	2	-	1
Denver, Colo.	56	38	8	5	1	4	8
Las Vegas, Nev.	172	111	41	13	4	3	14
Ogden, Utah	29	19	6	2	1	1	2
Phoenix, Ariz.	67	50	9	5	2	1	-
Pueblo, Colo.	20	19	-	-	1	-	1
Salt Lake City, Utah	80	49	16	5	3	7	6
Tucson, Ariz.	108	73	23	8	-	4	4
PACIFIC	1,448	1,011	271	101	31	30	130
Berkeley, Calif.	15	10	5	-	-	-	-
Fresno, Calif.	134	103	21	7	2	1	12
Glendale, Calif.	21	16	5	-	-	-	1
Honolulu, Hawaii	57	40	12	2	1	2	2
Long Beach, Calif.	68	50	14	3	-	1	10
Los Angeles, Calif.	329	225	63	28	9	4	19
Pasadena, Calif.	34	28	3	-	1	2	1
Portland, Oreg.	U	U	U	U	U	U	U
Sacramento, Calif.	130	82	29	13	2	3	18
San Diego, Calif.	118	80	24	6	5	3	15
San Francisco, Calif.	151	104	27	13	2	5	17
San Jose, Calif.	122	75	31	12	2	2	12
Santa Cruz, Calif.	29	25	1	2	-	1	6
Seattle, Wash.	96	60	17	11	5	3	3
Spokane, Wash.	66	52	9	1	1	3	10
Tacoma, Wash.	78	61	10	3	1	-	4
TOTAL	9,828¶	6,675	1,905	754	231	253	630

U: Unavailable -: no reported cases

*Mortality data in this table are voluntarily reported from 122 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 this Pennsylvania city, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

Contributors to the Production of the *MMWR* (Weekly)
Weekly Notifiable Disease Morbidity Data and 122 Cities Mortality Data

Samuel L. Groseclose, D.V.M., M.P.H.

State Support Team
Robert Fagan
Jose Aponte
Gerald Jones
David Nitschke
Carol A. Worsham

CDC Operations Team
Carol M. Knowles
Deborah A. Adams
Willie J. Anderson
Patsy A. Hall
Kathryn Snavely

The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available free of charge in electronic format and on a paid subscription basis for paper copy. To receive an electronic copy on Friday of each week, send an e-mail message to *listserv@listserv.cdc.gov*. The body content should read *SUBscribe mmwr-toc*. Electronic copy also is available from CDC's World-Wide Web server at *http://www.cdc.gov/* or from CDC's file transfer protocol server at *ftp.cdc.gov*. To subscribe for paper copy, contact Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone (202) 512-1800.

Data in the weekly *MMWR* are provisional, based on weekly reports 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 following Friday. Address inquiries about the *MMWR* Series, including material to be considered for publication, to: Editor, *MMWR* Series, Mailstop C-08, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30333; telephone (888) 232-3228.

☆**U.S. Government Printing Office: 1999-733-228/08003 Region IV**