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Leading Work-Related Diseases and Injuries — United States

The National Institute for Occupational Safety and Health (NIOSH) has developed a suggested list of the 10 leading work-related diseases and injuries. Summaries of three of these categories ("Occupational Lung Diseases," "Musculoskeletal Injuries," and "Occupational Cancers") have recently been published (1-3). The fourth category "Amputations, Fractures, Eye Loss, Lacerations, and Traumatic Death," is summarized below.

SEVERE OCCUPATIONAL TRAUMATIC INJURIES

Severe occupational traumatic injuries usually occur suddenly on the job and are either fatal or require immediate medical care. Data on these events are available from several different sources, including: the National Electronic Injury Surveillance System (NEISS) of the Consumer Product Safety Commission (*4*); the Supplementary Data System (SDS) of the Bureau of Labor Statistics (BLS) (*5*); the Annual Survey of Occupational Injuries and Illnesses conducted by the BLS (*6*); and the National Safety Council (*7*). The National Safety Council and the Annual Survey of the BLS estimate occupational traumatic deaths.

These sources report different aspects of the problem because of differences in the scope of events that each system tries to reflect. NEISS reports cases of occupational trauma from a representative sample of U.S. hospital emergency rooms. SDS records information from Workers' Compensation claims filed in 33 states. As required by the Occupational Safety and Health Administration, the Annual Survey of the BLS reports traumatic events occurring in the private sector; thus, it does not include traumatic events in the public sector, on farms with 10 or fewer employees, and in firms regulated by other federal health and safety laws. The National Safety Council reports data from the National Health Survey (based on 41,000 annual interviews with heads of households) and data from several participating public and private organizations. The definition of "recordable injury" varies considerably among these systems.

Because of these differences, it is not easy to achieve a reliable national composite of severe occupational traumatic injuries. Within the limitations of these data sources, NIOSH estimates that at least 10,000,000 persons suffer traumatic injuries on the job each year. About 30% (at least 3,000,000) of these injuries are severe, and at least 10,000 are fatal.

Traumatic Deaths: Each year, an estimated 10,000 persons are killed on the job. The major causes of these deaths are (1) highway motor-vehicle incidents, including to and from work and job-related travel (34%); (2) falls (13%); (3) nonhighway industrial-vehicle incidents (11%), (4) blows (other than by vehicles or equipment) (8%); and (5) electrocutions (7%) (Table 1). Industries with the highest estimated rates of fatal traumatic injury are (1) mining and quarrying, (2) agriculture (including forestry and fishing), and (3) construction (Table 2).

Amputations: Although amputations account for less than 1% of estimated injuries, they often impair a worker's skills. An estimated 21,000 workers suffered amputations in 1982. Based on NEISS data, approximately 93% of these amputations were of fingers (*8*); and 4%, of hands and toes. Amputations of fingers most frequently resulted from fingers being caught

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Leading Work-Related Diseases – Continued

in machines or hand tools (11%) or cut by moving objects, such as saws or slicers (10%). Other important sources of amputations included presses (6%), belts (5%), powered hand tools (2%), and doors or gates (2%). Other specific sources accounted for less than 2% each of occupational amputations.

According to SDS data, amputations occurred in a wide range of industries and occupations. The largest single proportion of amputations (2%) occurred in the manufacture of miscellaneous plastic products, and machine operators had the largest proportion of occupational amputations (8%).*

Fractures: Falls and blows from falling objects produce many types of injuries, the less severe forms being contusions, abrasions, and sprains. During 1982, an estimated 400,000 work-related fractures occurred. SDS data for 1980 included approximately 208,000 compensation claims for fractures. The most frequently listed sources of fractures included floors (13%), the ground (10%), and metal items (7%), suggesting falls as the main cause of such injuries. Specifically, falls to a working surface accounted for 15% of the fractures; blows from unspecified or falling objects accounted for 31%. Fractures occurred most frequently among truck drivers (5%), miscellaneous laborers (4%), and construction laborers (3%).*

Eye Loss: Although it is difficult to measure the extent of eye loss or blindness among workers, NIOSH estimates (based on NEISS data) indicate that approximately 900,000 occupational eye injuries occurred in 1982. For 84% of these, the trauma was minor, caused mostly by foreign bodies (e.g., pieces of metal, wood, or glass) in the eyes. Burns and avulsions—44% of which were caused by chemicals or acids—accounted for nearly 15% of the estimated occupational eye injuries.*

Lacerations: An estimated 2,250,000 work-related lacerations occurred in 1982, representing 24% of all job-related injuries treated in hospital emergency rooms. Data from compensation claims described in SDS indicate that fingers (48%), arms (24%), legs (13%), and the head and neck (9%) were most likely to be seriously lacerated. These lacerations resulted primarily from being struck by an object (32%) or from striking against a stationary object (25%). The major sources of lacerations are knives (13%), other sharp metal items (13%), saws (6%), glass items (5%), nails (5%), and machines (3%). The settings in which workers in-

*The remaining percentages are divided among a variety of specific categories, each accounting for less than the smallest percentage given.

TABLE 1. Distribution of occupational traumatic deaths, by cause—United States, 1980-1981*

Cause	Percentage
Highway motor-vehicles incidents	34.1
Falls	12.5
Industrial vehicles or equipment	11.4
Blows (other than by vehicles or equipment)	8.0
Electrocutions	6.8
Gun shots	4.5
Aircraft crashes	3.4
Entrapment	3.4
Fires	3.4
Plant machinery operations	3.4
Explosions	2.3
Gas inhalations	2.3
Other	4.5
Total	100.0

*Adapted from Bureau of Labor Statistics: Occupational Injuries and Illnesses in the United States by Industry, 1981. U.S. Department of Labor Bulletin 2164, January 1983. These revised statistics pertain to private-sector establishments (excluding nonmetal mining and railroads) with 11 or more employees.

Leading Work-Related Diseases – Continued

curred the largest proportion of lacerations were eating and drinking establishments (7%), grocery stores (4%), general building construction (2%), and meat packing (2%).*

Reported by Div of Safety Research, National Institute for Occupational Safety and Health, CDC

Editorial Note: Recent analyses of potential life lost due to various causes indicate that "accidents and adverse effects" are the leading cause of the loss of potential years of life in this country (*9*). Occupational injuries occur at a rate† twice that of injuries in the home or in public places (*7*), and severe traumatic injuries are an important component of all occupational injuries. Severe occupational trauma is second only to motor-vehicle incidents as a cause of unintentional death in the United States (*7*).

Despite the number of occupational injuries, effective prevention is practiced in many workplaces, and approximately 48% of all employment establishments report no recordable injuries in a given year (*6*). As with other occupational health hazards, the prevention of severe occupational traumatic injuries rests on the basic principles of control technology: engineering controls, work practices, personal protective equipment, and monitoring of the workplace for emerging hazards. Severe occupational traumatic injuries can be prevented by such specific measures as physical barriers between the worker and the source of injury (e.g., machine guards, light curtains, worker-independent safety circuits, proximity sensors on robots); changes in the design of tools (e.g., knives and slicers) and tasks to reduce the hazard; use of personal protective equipment (e.g., seat belts, protective eye- and footwear, helmets, harnesses); training of workers in the safe performance of tasks; and repeated systematic inspection of the workplace for emerging or previously undetected hazards. A visible, serious, and persistent commitment to safety by both management and labor appears crucial for preventing severe occupational traumatic injuries.

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†Injuries per million exposure hours.

TABLE 2. Occupational traumatic death rates per 100,000 workers, by industry—United States, 1982*

Industry	Rate
Mining and quarrying	55
Agriculture	52
Construction	40
Transportation and public utilities	26
Government	10
Services	6
Manufacturing	6
Trade	5

*Adapted from (7) Accident Facts, National Safety Council, 1983 Edition. These rates are estimated by the National Safety Council based on data from the National Center for Health Statistics, state departments of health, state industrial commissions, and the Bureau of Labor Statistics. Agriculture includes forestry and fishing; services includes finance, insurance, and real estate, government includes federal, state, and local; trade includes wholesale and retail.

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Purpuric Fever – Continued

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Perspectives in Disease Prevention and Health Promotion

Leading Work-Related Diseases and Injuries — United States

The National Institute for Occupational Safety and Health (NIOSH) has developed a suggested list of the leading work-related diseases and injuries (Table 1). The first four categories have been described previously (1-4); *a discussion of the fifth category, "Cardiovascular Diseases," appears below.*

CARDIOVASCULAR DISEASES

Cardiovascular diseases, including hypertensive disease (International Classification of Diseases 9th Revision [ICD] codes 401-405), ischemic heart disease (ICD codes 410-414), other forms of heart disease (ICD codes 420-429), and cerebrovascular disease (ICD codes 430-438), are responsible for more deaths in the United States each year than any other category of disease (*5*). In 1980, cardiovascular diseases claimed over 960,000 lives, with ischemic heart disease responsible for over 565,000 of these deaths (*6*). Although the rates of death from cardiovascular diseases have declined gradually over the last decade, coronary atherosclerosis and acute myocardial infarction remain the leading causes of death in the United States.

The role of occupation as a factor in cardiovascular disease is far from clear (*7*). Most investigators believe that personal risk factors, such as cigarette smoking, blood pressure, diet, personality, and heredity, are more important than environmental factors (*8*). Specific data are sparse on the role of occupational factors. Nevertheless, some occupational factors are clearly associated with heart diseases, and evidence on other factors is accumulating (*9*). Be-

Table 1. The 10 leading work-related diseases and injuries — United States, 1982*

1. Occupational lung diseases: asbestosis, byssinosis, silicosis, coal workers' pneumoconiosis, lung cancer, occupational asthma
2. Musculoskeletal injuries: disorders of the back, trunk, upper extremity, neck, lower extremity; traumatically induced Raynaud's phemonenon
3. Occupational cancers (other than lung): leukemia; mesothelioma; cancers of the bladder, nose, and liver
4. Severe occupational traumatic injuries: amputations, fractures, eye loss, lacerations, and traumatic deaths
5. Cardiovascular diseases: hypertension, coronary artery disease, acute myocardial infarction
6. Disorders of reproduction: infertility, spontaneous abortion, teratogenesis
7. Neurotoxic disorders: peripheral neuropathy, toxic encephalitis, psychoses, extreme personality changes (exposure-related)
8. Noise-induced loss of hearing
9. Dermatologic conditions: dermatoses, burns (scaldings), chemical burns, contusions (abrasions)
10. Psychologic disorders: neuroses, personality disorders, alcoholism, drug dependency

*The conditions listed under each category are to be viewed as *selected examples*, not comprehensive definitions of the category.

MMWR 1985;34:219-22,227.

Leading Work-Related Diseases and Injuries – Continued

cause heart diseases are still so prevalent in the United States, identifying and preventing occupational factors that result in even a small increase in the relative risk of cardiovascular disease would involve large numbers of persons. Thus, preventing any occupational contribution to this problem would be an important public health measure.

In 1978, an ad hoc task force was formed by the American Heart Association to review the data regarding the environmental impact on cardiovascular disease (*8*). Its report, "The Impact of the Environment on Cardiovascular Disease," was published in 1981. The task force identified and reviewed six environmental factors that have potential impact on cardiovascular health: water hardness; trace elements; inhalant occupational exposures; carbon monoxide, noise and radiofrequency; and physical and psychosocial stress. The workplace is a specific source of potential exposure for all but the first.

Metals, Dusts, Trace Elements. The development of congestive heart failure that results from restrictive lung disease (cor pulmonale) has been observed in studies of occupational respiratory diseases, such as chronic beryllium disease and silicosis. Other metals, such as antimony, cobalt, and lead, have been implicated as possible causes of cardiovascular diseases.

Occupational Inhalants and Other Chemical Exposures. These include:

1. **Carbon monoxide**: Carbon monoxide decreases the oxygen-carrying capacity of hemoglobin and thus reduces the oxygen supply available to heart muscle and other tissues. In persons with preexisting coronary artery disease, occupational exposures to carbon monoxide may precipitate acute cardiovascular events, such as untoward changes in cardiac rhythm. In animal studies, life-threatening arrhythmias, such as ventricular tachycardia and ventricular fibrillation, have been observed in response to exposures to carbon monoxide that produced a carboxyhemoglobin concentration of 9% and above.

   In one study of workers, short-term exposure to carbon monoxide at levels within the current Occupational Safety and Health Administration permissible exposure limit (50 ppm) was associated with decreased exercise tolerance and electrocardiographic evidence of myocardial ischemia. In another study among Finnish foundry workers exposed to carbon monoxide, the overall prevalence of angina pectoris was increased; this was most pronounced among workers who also smoked. Among British steelworkers, investigators found end-of-shift carboxyhemoglobin saturations substantially higher among blast furnace workers than among steelworkers in other jobs. This was observed for both smoking and nonsmoking employees.
2. **Carbon disulfide**. Carbon disulfide, a widely used solvent, has been shown to increase the risk of cardiovascular disorders, including coronary artery disease and hypertension, in both epidemiologic and experimental studies. It has also been shown to pose a significant risk for coronary death (*10*). The atherogenic potential of carbon disulfide involves both cerebrovascular and cardiovascular systems.
3. **Halogenated hydrocarbons**. Acute exposures to many common industrial solvents (e.g., chloroform, trichloroethylene) and fluorocarbon aerosol propellants have precipitated sudden death probably due to cardiac arrhythmias in workers exposed at high levels. Other common aerosols or solvents may be arrhythmogenic at concentrations permitted by current occupational exposure standards. A recent study of pathologists exposed to monochlorodifluoromethane (a fluorocarbon aerosol propellant) in hospitals showed an increased incidence of "palpitations" at levels of exposure far below the recommended standard.
4. **Nitroglycerin and nitrates**. Workers exposed to nitroglycerin and nitrates during the manufacture of explosives experienced increased risk of cardiac chest pain, myocardial infarction, and sudden death, particularly after a period of time away from exposure. The mechanism is thought to be "rebound vasospasm" as a consequence of withdrawal from exposure.

Leading Work-Related Diseases and Injuries – Continued

Noise Tens of millions of workers are exposed to high levels of sustained and or intermittent noise in the workplace A number of studies have demonstrated that single exposures to noise cause transient increases in blood pressure. Chronic exposure to occupational noise has also been associated with sustained increases in blood pressure, particularly in workers with noise-induced hearing loss (*11,12*). Increases in serum cholesterol and changes in circulating hormones have been observed in humans in association with noise. In studies of animals, abnormalities in platelet aggregation have been documented following exposure to noise

Psychosocial Stress. Stress has long been thought to adversely affect the cardiovascular system (*13*). A relationship between psychologic factors and cardiovascular disease is supported by the correlation between "Type A personality" and such disorders. A 1976 assessment suggested that "work-overload," role conflicts, and thwarted career goals were related to evidence of cardiovascular disease. A prospective evaluation of health changes among air traffic controllers, published in 1978, showed an increased prevalence of hypertension among controllers, attributed by the authors to difficulties in coping with working conditions.

An updated analysis of the Framingham heart study in 1980 (*14,15*), indicated that rates of coronary heart disease were nearly twofold greater among women employed in clerical jobs than among housewives. Significant predictors of the risk of coronary heart disease included a "nonsupportive supervisor" and decreased job mobility. Occupation may also affect the risk of cardiovascular disease in a spouse. Men whose wives worked in white collar jobs were observed to experience heart disease at a rate three times greater than men whose wives worked in clerical or blue collar jobs or were housewives. Similarly, men appeared to have a higher risk of cardiovascular disease if they had well-educated, working wives who reported nonsupportive supervisors or few opportunities for job promotion. These and similar results suggest that adjustments to the conflicting demands of job and family may be important factors in the risk of cardiovascular disease.

Recent evaluations of data from a large random sample of the Swedish working male population (*16*), and from other surveys, also suggest that certain working conditions, such as limited autonomy and heavy workloads, are associated with clinical indicators of coronary heart disease.

Epidemiologic studies are clearly needed to define the significance of these and other occupational stress factors in the etiology of cardiovascular diseases. Such physical stresses as noise, vibration, and heat also merit investigation for possible interaction with the psychologic risk factors of cardiovascular disease.

Reported by Div of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, CDC.

Editorial Note: Because cardiovascular diseases are so prevalent, they clearly affect large numbers of workers in the United States. A proportion of these diseases are caused or aggravated by risk factors in the work environment. NIOSH is currently collecting epidemiologic data to properly evaluate the role of the workplace in these diseases.

Since some occupational exposures clearly contribute to the morbidity and mortality attributable to cardiovascular diseases, further epidemiologic research is essential to define the extent of their occupational role and to define etiologic mechanisms. In addition, since cardiovascular diseases cause so much mortality in the United States, preventing even a small increase in relative risk due to occupational exposures would have major consequences to the public health. That mortality from cardiovascular disease has declined markedly in recent years indicates that these diseases are preventable.

The workplace is an important focus for efforts to prevent cardiovascular disease because: (1) it is the source of some preventable environmental exposures and psychosocial stresses that adversely affect cardiovascular health; (2) it offers unique opportunities for health promotion activities that encourage workers to improve their personal health behaviors (e.g., smoking

Leading Work-Related Diseases and Injuries — Continued

cessation, appropriate exercise, and sound nutrition) and; (3) it provides an advantageous setting for delivering preventive services, such as screening for hypertension.

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*Additional references are available on request from the National Institute for Occupational Safety and Health, CDC.

(Continued on page 227)

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

Disease	16th Week Ending			Cumulative 16th Week Ending		
	Apr 20, 1985	Apr 21, 1984	Median 1980-1984	Apr 20, 1985	Apr 21, 1984	Median 1980-1984
Acquired immunodeficiency Syndrome (AIDS)	158	88	N	2,041	1,095	N
Aseptic meningitis	41	63	63	1,066	1,228	1,228
Encephalitis Primary (arthropod-borne & unspec.)	10	21	14	271	250	250
Post-infectious	2	4	4	40	31	29
Gonorrhea Civilian	15,279	15,630	17,485	239,292	248,229	283,524
Military	252	358	484	5,485	6,224	8,203
Hepatitis Type A	445	423	423	6,458	6,463	7,169
Type B	463	493	412	7,535	7,539	6,248
Non-A, Non-B	88	73	N	1,600	1,086	N
Unspecified	114	115	166	1,594	1,436	2,607
Legionellosis	10	11	N	160	152	N
Leprosy	15	4	4	107	62	62
Malaria	15	26	23	199	206	231
Measles Total*	94	128	88	803	878	878
Indigenous	79	116	N	600	773	N
Imported	15	12	N	203	105	N
Meningococcal infections Total	52	72	81	935	1,104	1,104
Civilian	51	71	81	934	1,102	1,102
Military	1	1	-	1	2	5
Mumps	82	93	93	1,275	1,156	1,708
Pertussis	25	118	21	387	651	328
Rubella (German measles)	5	16	68	122	172	799
Syphilis (Primary & Secondary) Civilian	490	552	564	7,551	8,705	9,335
Military	3	6	6	56	102	115
Toxic Shock syndrome	11	16	N	110	144	N
Tuberculosis	476	432	569	5,857	6,159	7,396
Tularemia	-	-	2	24	19	31
Typhoid fever	5	10	6	77	99	114
Typhus fever, tick-borne (RMSF)	1	8	8	14	30	26
Rabies, animal	71	126	160	1,366	1,467	1,752

TABLE II. Notifiable diseases of low frequency, United States

	Cum 1985		Cum 1985
Anthrax	-	Plague	-
Botulism Foodborne	1	Poliomyelitis, Total	1
Infant (Calif. 3)	13	Paralytic	1
Other	-	Psittacosis (Calif. 1)	42
Brucellosis (Md. 1, Okla. 2)	26	Rabies, human	-
Cholera	-	Tetanus (Upstate N.Y. 1, Mich. 1)	15
Congenital rubella syndrome	-	Trichinosis (Upstate N.Y. 1, Calif. 2, Alaska 2)	28
Diphtheria (Colo. 1)	1	Typhus fever, flea-borne (endemic, murine)	3
Leptospirosis	8		

*Twelve of the 94 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

ending

All Causes, By Age (Years)						P&I** Total
	≥65	45-64	25-44	1-24	<1	
	766	264	88	32	48	50
	103	30	15	6	-	3
	116	46	16	4	7	3
	41	25	8	1	5	6
	79	20	3	4	4	4
	63	21	8	2	3	1
	37	11	5	3	5	1
	42	15	6	1	3	1
	30	5	5	2	1	9
	73	15	3	2	1	7
	51	14	3	3	2	5
	111	54	16	3	17	9
	18	8	-	1	-	1
	528	220	54	20	21	37
	69	23	14	4	8	4
	38	12	2	2	1	1
	49	20	4	2	2	2
	93	31	7	2	2	8
	108	50	12	6	4	10
	46	16	3	2	-	4
	41	17	4	1	2	4
	84	51	8	1	2	4
	851	324	155	51	57	64
	28	12	3	4	-	4
	37	23	6	2	3	4
	30	9	6	1	1	-
	123	39	23	7	9	11
	36	19	12	3	3	2
	62	20	10	3	7	5
	240	100	62	19	19	14
	36	10	1	-	1	4
	52	24	9	6	2	1
	112	35	19	6	5	13
	32	13	2	-	-	1
	63	20	2	-	7	5
	377	149	40	36	40	37
	38	18	4	9	5	4
	24	9	4	4	1	5
	63	27	11	2	14	5
	52	31	4	3	-	5
	18	5	1	-	1	1
	64	30	7	9	9	4
	15	4	1	-	-	1
	32	7	3	4	5	3
	71	18	5	5	5	9
	1,117	389	132	61	52	105
	8	7	4	-	-	-
	49	16	7	5	4	7
	13	1	-	-	-	1
	41	11	6	5	-	2
	60	20	5	6	4	4
	157	54	21	10	3	9
	52	17	4	4	4	5
	34	5	-	1	-	2
	81	26	3	2	7	4
	103	25	9	3	1	15
	97	32	18	3	6	17
	115	53	11	3	3	6
	121	51	18	11	6	13
	94	40	17	6	4	12
	41	13	3	1	4	5
	51	18	6	1	6	3
	8,148	2,641	875	362	413	627

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counts for the current week. Com-

Leading Work-Related Diseases and Injuries – Continued

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Epidemiologic Notes and Reports

Disseminated *Mycobacterium bovis* Infection from BCG Vaccination of a Patient with Acquired Immunodeficiency Syndrome

In December 1982, Kaposi's sarcoma and acquired immunodeficiency syndrome (AIDS) were diagnosed in a 29-year-old white homosexual man. A trial of vinblastine sulfate failed to decrease the progression of his skin lesions. In February 1984, when seen in a clinic in Tijuana, Mexico, he was given a BCG vaccination. The expected local lesion from the BCG vaccination healed normally within the next few weeks. In June, he developed chills and fever to 39.4 C (103 F), weakness, fatigue, anorexia, and a mild headache. In July, the site of BCG vaccination on his left arm ulcerated, draining a small amount of pus and blood. A previously enlarged lymph node in the left axilla increased substantially in size and became very tender. Because of the possibility of disseminated BCG infection, treatment was begun with INH 300 mg/day, ethambutol 25 mg/kg/day, and pyridoxine. He rapidly became afebrile and regained his feeling of well-being. The ulcer healed slowly, and the enlarged lymph node decreased in size and tenderness. Two blood cultures taken June 28 and a culture of the ulcerating lesion taken July 16 grew *Mycobacterium bovis*, BCG strain. A blood culture taken July 23, just before therapy, grew *M. fortuitum*.

Reported by RE Winters, MD, School of Medicine, University of California, Los Angeles, LQ Hanh, MD, Tuberculosis Control Unit, Los Angeles County Dept of Health Svcs, J Chin, MD, State Epidemiologist, California State Dept of Health Svcs; Div of Tuberculosis Control, Center for Prevention Svcs, AIDS Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: BCG vaccine contains live mycobacteria derived from a strain of *M. bovis* attenuated through years of serial passage in culture by Calmette and Guerin at the Pasteur Institute, Lille, France. Although BCG has been widely used throughout the world, its use in the United States is limited to those uncommon situations in which uninfected persons are repeatedly exposed to infectious tuberculosis, and other means of preventing infection cannot be applied (*1*). BCG has also been used to stimulate the immune system of patients with various cancers, especially malignant melanoma, with the objective of causing regression of the tumors (*2*). As with any vaccine containing live organisms, however, it is contraindicated in persons with severely impaired immune responses, including those with AIDS, because disseminated infection with the organism contained in the vaccine may result.

M. bovis and *M. tuberculosis* (the *M. tuberculosis* complex) are pathogenic for man and are

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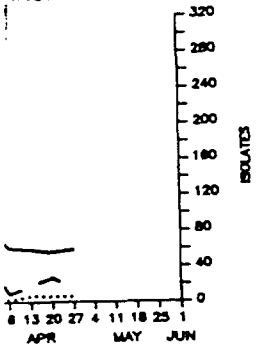

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OCCUPATIONAL HAZARDS — The 10 leading work-related diseases and injuries, United States

1. Occupational lung diseases
2. Musculoskeletal injuries
3. Occupational cancers (other than lung)
4. Severe occupational traumatic injuries
5. Cardiovascular diseases
6. Disorders of reproduction
7. Neurotoxic disorders
8. Noise-induced loss of hearing
9. Dermatologic conditions
10. Psychologic disorders

Based on an evaluation of current occupational problems in the United States, the National Institute for Occupational Safety and Health (NIOSH) has developed and published* a suggested list of the 10 leading work-related diseases and injuries. Three criteria were used to develop the list: the disease's or injury's frequency of occurrence, its severity in the individual case, and its amenability to preventive efforts. The list is suggested with three purposes: 1) to encourage deliberation and debate among professionals about the major problems in this field of public health, 2) to assist in setting national priorities for efforts to prevent health problems related to work, and 3) to convey to a diverse audience the concerns of the leadership of NIOSH and the focus of the Institute's activities. This tabulation serves as a guide for the NIOSH research program. Efforts are now under way to develop a comprehensive control strategy for each problem on the list and to study the need for establishing or modifying standards. The list is intended to be dynamic; it will be reviewed periodically for necessary updating as knowledge increases and as conditions change and are brought under better control.

*CDC. Leading work-related diseases and injuries—United States. MMWR 1983;32:25-6, 32.

MMWR Annual Summary 1984

OCCUPATIONAL HAZARDS — Occupational lung diseases

The U.S. Public Health Service (PHS) objective for occupational lung diseases in the year 1990 states that among workers newly exposed after 1985, there should be virtually no new cases of four preventable occupational diseases—asbestosis, byssinosis, silicosis, and coal workers' pneumoconiosis. Because no national reporting system currently exists for these diseases, mortality data are used to monitor trends for some occupational lung diseases. Important deficiencies in these data, however, detract from their value as a surveillance tool. Mortality data may underestimate the problem because lung diseases may not be listed on the death certificate or may not, if listed, be selected as the underlying cause of death. In addition, mortality data do not explain the course of disease development or the exposures that lead to disease development. Thus, present trends may not accurately reflect future patterns of morbidity and mortality from these diseases.

Because information on the incidence and course of disease is essential for mounting an effective prevention/control program, surveillance methods must be developed to detect environmental hazards that lead to occupational lung disease and to track the incidence of these diseases. NIOSH is collaborating with the Conference of State and Territorial Epidemiologists to establish a reporting system for occupational diseases, and initial efforts have involved occupational lung diseases. In addition, both the Surveillance Cooperative Agreements Between NIOSH and States (SCANS) and the NIOSH Cooperative Agreement Program for Capacity Building in Occupational Safety and Health are supporting pilot projects to evaluate several types of reporting mechanisms.

OCCUPATIONAL HAZARDS — Musculoskeletal injuries

Musculoskeletal disorders are currently the leading cause of lost workdays among American workers. The PHS has stated that by the year 1990, lost workdays due to injuries should be reduced to 55/100 workers annually. At the present time, comprehensive and reliable surveillance data are lacking in this area.

The principal musculoskeletal injuries result from cumulative trauma associated with repetitive work activities—such as assembly-line production—and from acute trauma associated with a wide variety of tasks. A work activity is termed a *traumatogen* if it presents excess biomechanical stress to muscles, tendons, ligaments, nerves, joints, and supporting vasculature. Common traumatogens include bending, twisting, reaching, gripping, pinching, kneeling, squatting, and lifting.

NIOSH is studying several aspects of musculoskeletal disorders and has prepared a *Manual for Detecting Cumulative Trauma Disorders of the Upper Extremity*. This manual identifies the elements of job tasks that are implicated in musculoskeletal disorders of the wrist, hand, arm, and shoulder, and describes methods for preventing these disorders.

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OCCUPATIONAL HAZARDS — Selected occupational cancers

ICD-9	Condition	Industry/occupation	Agent
155	Hemangiosarcoma of the liver	Vinyl chloride polymerization	Vinyl chloride monomer
		Industry vintners	Arsenical pesticides
160.0	Malignant neoplasm of nasal cavities	Woodworkers, cabinet/furniture makers	Hardwood dusts
		Boot and shoe producers	Unknown
		Radium chemists, processors, dial painters	Radium
		Nickel smelting and refining	Nickel
161	Malignant neoplasm of larynx	Asbestos industries and utilizers	Asbestos
158, 163	Mesothelioma (peritoneum) (pleura)	Asbestos industries and utilizers	Asbestos
170	Malignant neoplasm of bone	Radium chemists, processors, dial painters	Radium
187.7	Malignant neoplasm of scrotum	Automatic lathe operators, metalworkers	Mineral cutting oils
		Coke oven workers, petroleum refiners, tar distillers	Soots and tars, tar distillates
188	Malignant neoplasm of bladder	Rubber and dye workers	Benzidine, alpha and beta naphthylamine, auramine, magenta, 4-aminobiphenyl, 4-nitrophenyl
189	Malignant neoplasm of kidney; other, and unspecified urinary organs	Coke oven workers	Coke oven emissions
204	Lymphoid leukemia, acute	Rubber industry	Unknown
		Radiologists	Ionizing radiation
205	Myeloid leukemia, acute	Occupations with exposure to benzene	Benzene
		Radiologists	Ionizing radiation
207.0	Erythroleukemia	Occupations with exposure to benzene	Benzene

Exposure to certain chemicals has been shown to produce cancer in humans; many of these chemicals are found in the workplace. The increased volume and diversity of synthetic chemicals manufactured since World War II have raised concern about possible increased rates of occupational cancer. As exposed cohorts of workers age, this issue may become more clear. The PHS has stated that by the year 1990 generic standards and other forms of technology transfer should be established, when possible, for standardized employer attention to such major common problems as carcinogenic hazards and medical monitoring requirements.

NIOSH conducts investigations to determine whether work within certain occupational groups or specific occupational exposures are associated with an increased risk of acquiring cancer. The ultimate objective is to determine whether specific industrial chemicals cause cancer.

OCCUPATIONAL HAZARDS — Severe occupational traumatic injuries

In 1981, about one of every 12 workers in the private sector was involved in an occupational injury requiring treatment beyond first aid. The National Safety Council estimates that 2.1 million workers experienced disabling injuries in 1981 and that 70,000 of them were permanently impaired. In all, the toll on human and economic resources is enormous; the estimated total cost for workplace injuries in 1981 reached $32.5 billion.

The PHS has stated that by the year 1990 the rate of work-related injuries should be reduced to 8.3 cases/100 full-time workers. Although comprehensive and reliable surveillance data are currently lacking in this area, data from the National Electronic Injury Surveillance System (NEISS), which tabulates occupational injuries treated at 66 representative U.S. hospital emergency rooms, show a considerable rise in such injuries since 1981

Severe occupational traumatic injuries include amputations, fractures, lacerations, eye loss, burns, and fatalities. NIOSH researchers are investigating the causes and possible prevention for such problems as traumatic injury hazards associated with machines, high-risk occupations and activities in the construction industry, and exposure to hazardous energy sources during maintenance and servicing tasks.

OCCUPATIONAL HAZARDS—Neurotoxic disorders

As many as 150 major industrial chemicals are considered neurotoxic at levels at or below the level needed to produce other adverse health effects. Exposure to these chemicals results in mild-to-severe neurotoxic effects, including changes in motor, sensory, and cognitive function. From 1972 to 1974, NIOSH conducted the National Occupational Hazard Survey (NOHS) to identify a variety of potential hazards in the workplace. One hazard identified was industrial exposure to lead, and data from NOHS have been used to pinpoint sites for targeting resources to combat the problem. The county map generated from NOHS data shows approximate sites of greatest workplace exposures to lead. Although lead poisoning is a well-known neurotoxic disorder, lead is still used in industries widely distributed throughout the United States. In 1976-1980, 92% of adult males in the United States with blood lead levels over 30 μg/dl worked in jobs that had been judged in 1972 as having potential for occupational exposure to lead. Blood lead levels of 30 μg/dl are currently accepted as indicating cause for concern.

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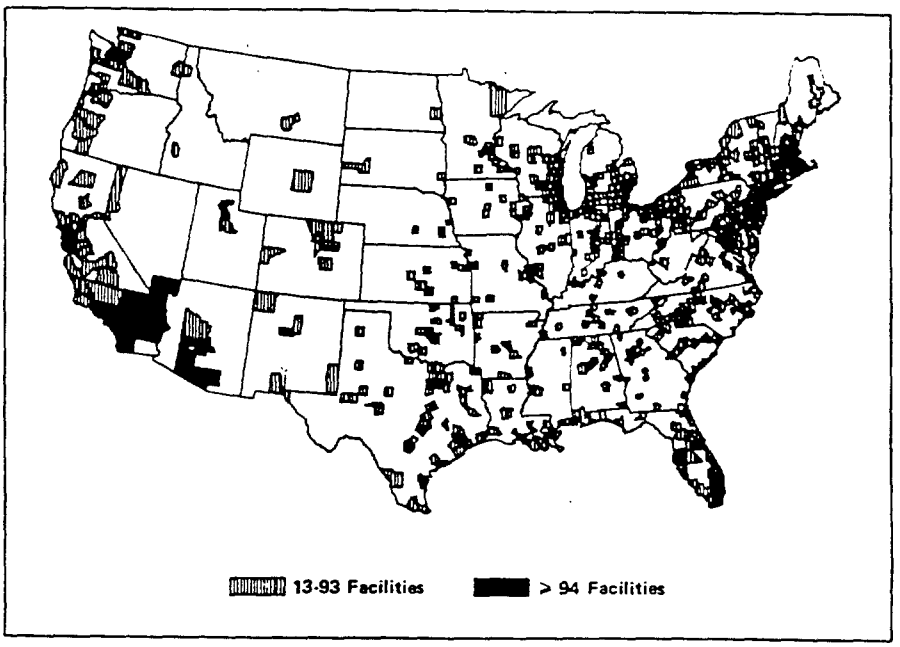
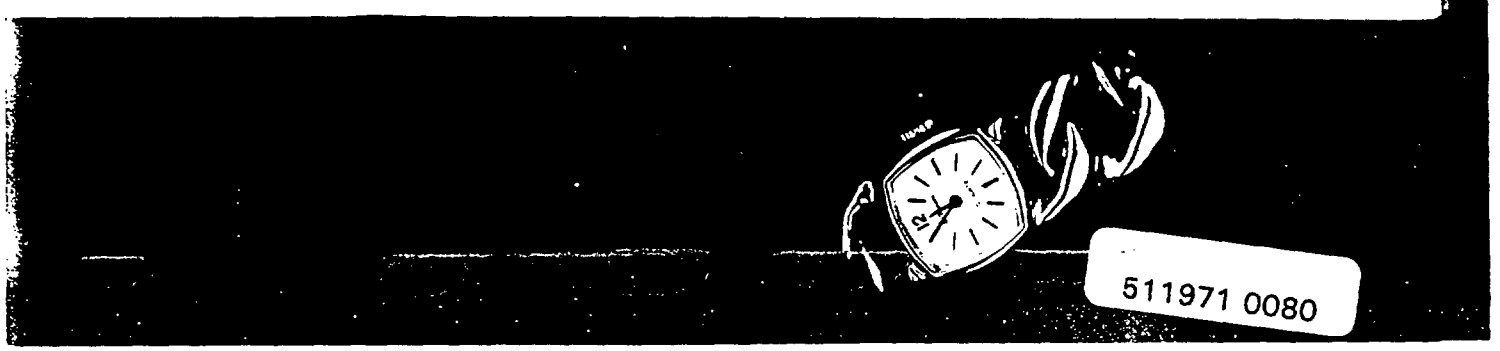
OCCUPATIONAL HAZARDS — Distribution of facilities potentially using inorganic leads,* by county, United States, 1972-1974



*Based on National Occupational Hazard Survey (NOHS) observation of inorganic leads and trade-name resolution.

Selection criteria: industries in which 1% or more of the workforce is potentially exposed (NOHS)

The PHS has stated that by 1990 occupational heavy metal poisoning (lead, arsenic, and zinc) should be virtually eliminated. NIOSH is conducting research to facilitate a strategy for detecting neurotoxic chemicals in the workplace and for evaluating the impact on the nervous system of short-term and long-term exposures.



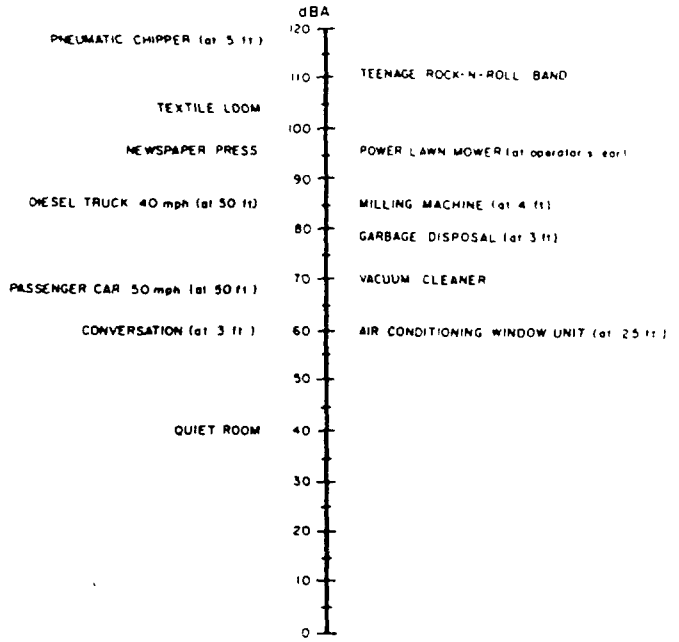
OCCUPATIONAL HAZARDS — Noise-induced loss of hearing

The Occupational Safety and Health Administration estimates that 9.4 million U S workers (7.9 million active and 1.5 million retired) are or have been in jobs where noise-exposure levels are 80 decibels (dBA) or higher. Increased risk of hearing loss due to occupational noise generally begins at this level. As a result, about 1.6 million workers (17%) may have at least mild hearing loss resulting from this occupational noise exposure, 1.1 million (11%) may have measurable hearing loss, and nearly 0.5 million may have moderate-to-severe loss. These estimates generally agree with the findings of surveys by NIOSH, which indicate that one of four persons 55 years of age or older exposed to an average of 90 dBA over a working lifetime has experienced a significant loss of hearing.

Occupational noise-induced hearing loss is preventable. The PHS has stated that by 1990 the prevalence of occupational noise-induced hearing loss should be reduced by 415,000 cases.

NIOSH has developed a program with three goals for reducing noise-induced hearing loss: 1) to establish baseline data on occupational noise-induced hearing loss by monitoring the history of hearing-loss claims, 2) to determine the relative hazards from different types of noise and to define the interactions between noise and other hazards in the workplace, and 3) to develop initiatives in environmental controls and behavioral methods that foster hearing conservation.

OCCUPATIONAL HAZARDS — Typical A-weighted noise levels in decibels*



*The decibel is a logarithmic measure of sound intensity; the "A-weighted scale" is used to weigh the various frequency components of the noise to approximate the response of the human ear.

OCCUPATIONAL HAZARDS — Dermatologic conditions

Dermatologic conditions of occupational origin were estimated to account for more than 40% of all reported occupational illnesses each year from 1972 through 1981. As much as 1% of the workforce may be affected by occupational skin disease at any given time. Although comprehensive and reliable surveillance data are lacking, the estimated cost in lost productivity from all occupational skin disease is nearly $10 million annually.

Efforts are under way to create an increased awareness of the toxicity of substances found in the workplace and to improve the protection afforded to workers. NIOSH is particularly concerned with the degree of protection afforded by commercially available chemical protective clothing materials and products. The basic thrust of the NIOSH chemical protective clothing program is to provide users with information on which to base decisions for selecting and using such clothing.

OCCUPATIONAL HAZARDS — Investigating problems with respirators

The Federal Mine Safety and Health Amendments Act of 1977 authorizes a program for approving respirators. It is carried out jointly by NIOSH and the Mine Safety and Health Administration (MSHA). This program is conducted in accordance with requirements published in the Code of Federal Regulations, Title 30, Part 11 (30 CFR 11). The Occupational Safety and Health Administration and several other federal regulatory agencies require that respirators used in industry be approved by NIOSH and MSHA.

NIOSH receives reports of problems identified in approved respirators from respirator users and from investigations carried out by manufacturers. Such problems may be due to faulty design and/or function. From July 1, 1983, through June 30, 1984, NIOSH received 35 reports of problems with respirators. Investigations revealed that 21 (60%) of these involved self-contained breathing devices; nine showed deficiencies that were classified as life-threatening or likely to cause illness or injury.

When serious problems are found, i.e., deficiencies that could affect health and safety, users are alerted immediately. If a manufacturer is unable to identify and notify the purchasers of defective respirators, NIOSH will issue a general warning to users of respirators and to other interested persons.

1990 Prevention Objectives – Continued .

are sponsoring workshops with schools of medicine and public health to identify ways of incorporating prevention methods into training programs for health professionals. The Office of Disease Prevention and Health Promotion (in the Office of the Assistant Secretary for Health), the National Center for Health Statistics, and CDC are identifying existing sources of data and the additional data needed to track progress toward the 1990 Objectives. PHS will also consider and analyze the seminar's recommendations during the program-planning process for fiscal year 1985 and beyond.

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Leading Work-Related Diseases and Injuries — United States

The National Institute for Occupational Safety and Health (NIOSH) has recently developed a suggested list of the 10 leading work-related diseases and injuries (Table 1). Three criteria were used to develop the list: the disease's or injury's frequency of occurrence, its severity in the individual case, and its amenability to prevention. The list is suggested with three purposes: 1) to encourage deliberation and debate among professionals about the major problems in this field of public health, 2) to assist in setting national priorities for efforts to prevent health problems related to work, and 3) to convey to a diverse audience the concerns of the leadership of NIOSH and the focus of the Institute's activities. The list is intended to be dynamic; it will be reviewed periodically for necessary updating as knowledge increases and as conditions change and are brought under better control.

The following article contains a detailed discussion of occupational lung disease, the problem top-ranked on the list; future articles will elaborate on the others.

OCCUPATIONAL LUNG DISEASES

The lung is both a target organ and a portal of entry for toxic substances. The likelihood of toxic exposure is high; for example, an estimated 1.2 million workers each year are potentially exposed to silica dust alone (2). The recognition of occupational lung diseases may be difficult, since the latent period for such diseases may be long—as long as 15 years for silicosis and 30 years or more for asbestos-related diseases. Other factors, such as cigarette smoking, may also contribute significantly to the disease process and hence obscure the association between work and the disease (3).

Six important components of occupational lung diseases are described below. Each is preventable, although years of effective control measures will be required to eliminate diseases of long latency. Because of the rapid rate at which new potentially toxic agents are introduced into the workplace, vigorous pre-market toxicologic testing of agents and effective

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MMWR 1983; 32: 24-26, 32.

Work-Related Diseases and Injuries — Continued

disease surveillance are essential if epidemics of occupational lung diseases are to be avoided. The U.S. Public Health Service has established the following national objective for the prevention of occupational lung diseases: "by 1990, among workers newly exposed after 1985, there should be virtually no new cases of four preventable occupational diseases—asbestosis, byssinosis, silicosis, and coal workers' pneumoconiosis" (*4*). These diseases, as well as lung cancer and occupational asthma, are briefly discussed below.

Asbestosis: Asbestosis is charactenzed by diffuse, extensive scarring of the lung and progressive shortness of breath. Once established, the disease progresses even after exposure ends, there is no specific treatment. The latent period is 10-20 years. Smoking appears to increase the risk of death from asbestosis by a factor of two to three. Longitudinal studies of groups of asbestos insulation workers and shipyard workers have revealed that 10%-18% may be expected to die of asbestosis (*5*).

Byssinosis: This condition, characterized by both acute (reversible) and chronic lung disease, is associated with inhalation of the dusts of cotton, flax, or hemp. Symptoms include "chest tightness," cough, and obstruction of the small airways. Severely impaired lung function has disabled an estimated 35,000 current and retired textile workers (*6*). The specific causal agent(s) in the various dusts are yet to be identified (*7*).

Silicosis: Although the ill effects of exposure to free crystalline silica have been known for centuries, the prevalence of disabling silicosis remains high in certain groups of workers (*8*). Nearly 60,000 currently exposed workers in mines and foundries, in abrasive blasting operations, and in stone, clay, and glass manufacturing may be expected to suffer some degree of silicosis (*9*).

Coal workers' pneumoconiosis (CWP): The estimated prevalence of CWP among currently employed coal miners is about 4.5%. Approximately 0.2% of coal workers have been di-

TABLE 1. The ten leading work-related diseases and injuries — United States, 1982*

1. Occupational lung diseases, asbestosis, byssinosis, silicosis, coal workers' pneumoconiosis, lung cancer, occupational asthma	6 Disorders of reproduction: infertility, spontaneous abortion, teratogenesis
2. Musculoskeletal injuries, disorders of the back, trunk, upper extremity, neck, lower extremity, traumatically induced Raynaud's phemonenon	7. Neurotoxic disorders: peripheral neuropathy, toxic encephalitis, psychoses, extreme personality changes (exposure-related)
3. Occupational cancers (other than lung), leukemia, mesothelioma, cancers of the bladder, nose, and liver	8 Noise-induced loss of hearing
4 Amputations, fractures, eye loss, lacerations, and traumatic deaths	9. Dermatologic conditions, dermatoses, burns (scaldings), chemical burns, contusions (abrasions)
5 Cardiovascular diseases hypertension, coronary artery disease, acute myocardial infarction	10 Psychologic disorders, neuroses, personality disorders, alcoholism, drug dependency

*The conditions listed under each category are to be viewed as *selected examples*, not comprehensive definitions of the category

Work-Related Diseases and Injuries – Continued

agnosed as having progressive massive fibrosis, a potentially disabling form of CWP (*10*). In 1974, there were an estimated 19,400 cases of CWP. Some 4,000 deaths each year are attributed to legislatively defined "black lung disease" (*9*). Industrial bronchitis, another medical condition associated with exposure to coal dust, may lead to decreased ventilation capacity, but it is not well correlated with chest roentgenographic changes (*11*).

Lung cancer: The single most important cause of lung cancer is tobacco smoke (*12*). However, numerous occupational agents are associated with lung cancer, including arsenic, asbestos, chloroethers, chromates, ionizing radiation, nickel, and polynuclear aromatic hydrocarbon compounds (*13*). Tobacco smoke may interact synergistically with some of these agents (e.g., asbestos) to sharply increase the risk (*5*). Of special concern in this regard are workers currently or previously exposed to asbestos (estimated from 7.6 to 13.2 million) (*14, 15*); as many as 6,000 asbestos-related lung cancers may occur annually (*15*).

Occupational asthma: Hypersensitivity reactions to a wide variety of occupational organic and inorganic agents can cause asthma and hypersensitivity pneumonitis. The prevalence of occupational asthma varies from 10% to nearly 100% of workers in certain occupations (*16*). Many agents are incriminated as etiologic for occupational asthma, including grain dusts,

(Continued on page 32)

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

Disease	2nd Week Ending			Cumulative, Second Week Ending		
	January 15, 1983	January 16, 1982	Median 1978-1982	January 15 1983	January 16, 1982	Median 1978-1982
Aseptic meningitis	89	82	65	161	159	114
Encephalitis Primary (arthropod-borne & unspec.)	18	12	12	33	20	20
Post-infectious	1	-	1	1	1	1
Gonorrhea Civilian	16,968	18,672	18,672	35,052	38,313	35,012
Military	621	630	496	963	1,054	1,054
Hepatitis Type A	373	313	378	701	631	731
Type B	350	277	283	677	578	516
Non A, Non B	44	21	N	70	33	N
Unspecified	139	152	152	232	263	275
Legionellosis	10	6	N	20	8	N
Leprosy	1	-	1	9	1	2
Malaria	10	7	9	14	19	19
Measles Total	-	6	61	4	16	80
Indigenous	-	N	N	3	N	N
Imported*	-	N	N	1	N	N
Meningococcal infections Total	49	51	51	90	87	85
Civilian	49	51	51	88	87	85
Military	-	-	-	2	-	-
Mumps	41	91	231	97	133	328
Pertussis	15	10	15	23	21	23
Rubella (German measles)	12	35	46	27	51	68
Syphilis (Primary & Secondary) Civilian	686	582	564	1,294	1,160	898
Military	21	12	5	23	18	18
Toxic-shock syndrome	7	N	N	11	N	N
Tuberculosis	377	314	399	636	591	643
Tularemia	-	1	2	3	1	3
Typhoid fever	11	10	6	14	14	9
Typhus fever, tick-borne (RMSF)	-	2	1	1	9	2
Rabies, animal	73	78	77	158	151	140

TABLE II. Notifiable diseases of low frequency, United States

	Cum 1983		Cum 1983
Anthrax	-	Plague	-
Botulism Foodborne	-	Poliomyelitis Total	-
Infant (Calif. 1)	1	Paralytic	-
Other	-	Psittacosis (Upstate N.Y. 1, Calif. 1)	4
Brucellosis (Va. 1, Idaho 1)	2	Rabies, human	-
Cholera	-	Tetanus (Oreg. 1)	2
Congenital rubella syndrome (Calif. 1)	1	Trichinosis (Mass. 1)	1
Diphtheria	-	Typhus fever, flea-borne (endemic, murine)	-
Leptospirosis	-		

*For measles only, imported cases includes both out-of-state and foreign importations

TAE

Reporting Area	Aseptic Meningitis
	1983
UNITED STATES	89
NEW ENGLAND	5
Maine	
N.H.	
Vt.	1
Mass.	4
R.I.	
Conn.	
MID ATLANTIC	1
Upstate N.Y.	1
N.Y. City	
N.J.	
Pa.	
E.N. CENTRAL	2
Ohio	1
Ind.	
Ill.	
Mich.	
Wis.	
W.N. CENTRAL	
Minn.	
Iowa	
Mo.	
N. Dak.	
S. Dak.	
Nebr.	
Kans.	
S. ATLANTIC	1
Del.	
Md.	
D.C.	
Va.	
W. Va.	
N.C.	
S.C.	
Ga.	
Fla.	
E.S. CENTRAL	
Ky.	
Tenn.	
Ala.	
Miss.	
W.S. CENTRAL	
Ark.	
La.	
Okla.	
Tex.	
MOUNTAIN	
Mont.	
Idaho	
Wyo.	
Colo.	
N. Mex.	
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Utah	
Nev.	
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Hawaii	
Guam	
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V.I.	
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N: Not notifiable

Work-Related Diseases and Injuries — Continued

flour, metals, inorganic chemicals, isocyanates, enzymes, and fungi. The list of agents associated with hypersensitivity pneumonitis is also long. If exposure continues, these conditions may result in progressive, irreversible pulmonary fibrosis.

Reported by Div of Surveillance, Hazard Evaluation, and Field Studies, Office of Director, NIOSH, CDC.

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Epidemiologic Notes and Reports

Impact of Influenza on a Nursing Home Population — New York

During December 1982, 49 (60.5%) of 81 residents at a skilled-nursing facility in upstate New York experienced influenza-like illness (*1*) with elevated temperature (≥ 37 8 C [100.0 F] oral or ≥ 38 C [100 4 F] rectal) and at least one of the following symptoms: cough, congestion, or sore throat. Six of the clinically diagnosed cases occurred sporadically before December 18, when the main cluster began, and the outbreak peaked on December 21

week ending

	All Causes, By Age (Years)						
	All Ages	≥65	45-64	25-44	1-24	<1	P&I
	1 175	713	272	95	43	52	
	154	88	38	13	4	11	
	197	131	44	9	6	7	
	84	55	20	4	3	2	
	86	54	22	6	5	1	
	124	66	34	15	3	6	
	50	28	15	1	3	3	
	67	40	12	4	4	7	
	35	17	12	4	1	1	
Fla	102	81	13	3	-	5	
	68	32	13	13	6	4	
C	160	105	34	13	4	4	
	46	16	15	10	4	1	
	759	480	177	48	22	32	
la	114	75	22	9	5	3	
Tenn	71	48	17	3	2	1	
	47	27	13	3	3	1	
	137	92	32	6	-	7	
	167	97	34	16	8	12	
	83	56	17	4	2	4	
Ala	45	29	12	3	1	-	
	95	56	30	4	1	4	
	1 433	873	364	85	61	50	
	66	43	13	6	2	2	
La	31	22	7	1	-	-	
Tex	42	28	11	2	1	1	
	168	107	43	8	7	3	
	54	32	17	2	2	1	
	113	70	25	11	4	3	
	417	226	121	30	23	17	
	73	37	22	5	5	4	
La	116	75	24	9	7	1	
Tex	176	114	42	5	4	11	
	52	29	16	2	2	1	
	125	90	21	4	4	6	
	661	409	149	53	27	23	
N Mex	99	53	21	15	5	5	
Colo	29	21	7	1	-	-	
	130	84	26	9	6	5	
	73	43	18	8	2	2	
	15	13	1	-	-	1	
	158	104	30	10	8	6	
	17	7	7	2	1	-	
Utah	44	21	19	2	1	1	
	96	63	20	6	4	3	
	1 876	1 281	359	124	51	59	
	22	14	4	2	1	1	
	99	80	10	3	4	1	
	20	14	4	1	-	1	
	81	47	24	7	-	3	
Calif	105	71	23	4	3	4	
Calif	517	340	97	48	19	13	
	77	53	16	3	2	3	
	33	28	4	-	1	-	
	133	101	19	5	4	3	
Calif	64	49	14	1	-	-	
Calif	171	103	43	11	7	7	
Calif	157	110	20	16	3	8	
	187	126	39	15	2	5	
	131	89	30	3	3	6	
	40	30	5	2	-	3	
	39	26	7	3	2	1	
	12 511††	8 161	2 759	799	359	431	647

...es, most of which have populations of 100,000 or ...he death certificate was filed. Fetal deaths are not

...mbers are partial counts for the current week. Com-

Food Poisoning — Continued

...m have almost always been caused by *S. aureus*. In 1981, eight of nine ham-associated ...utbreaks were caused by this organism. (The etiologic agent of the ninth outbreak was ...known.)

The effect of USDA intervention cannot be assessed, since production of the specialty ...m product was discontinued after investigation of these outbreaks.

Perspectives in Disease Prevention and Health Promotion

Leading Work-Related Diseases and Injuries — United States

The National Institute for Occupational Safety and Health (NIOSH) has developed a suggested list of the 10 leading work-related diseases and injuries (Table 1). Problems in the first category, occupational lung diseases, were recently described (1); a discussion of the second category, musculoskeletal injuries, appears below.

MUSCULOSKELETAL INJURIES

In 1982, musculoskeletal injuries accounted for 580,000 (18%) of the estimated 3.2 million emergency-room-treated occupational injuries in the United States (*2*). Physical demands of many jobs make the musculoskeletal system highly vulnerable to a variety of occupational injuries and illnesses. Manual handling of materials, repetitive motions, and vibration are especially important etiologic factors in the development of these disorders.

Injuries associated with the manual handling of materials (e.g., unaided lifting and lowering): Low back injuries, often due to improper manual handling of materials, are the largest single subset of musculoskeletal injuries. The Bureau of Labor Statistics recently reported that approximately one million workers sustained back injuries in 1980 and that back injuries account for one of every five injuries and illnesses in the workplace. Approximately one-fourth of all workers' compensation indemnity expenditures in eight states were for back injuries (*3*).

Repetitive motion-associated trauma: Repetitive motion can cause "cumulative trauma disorders," including carpal tunnel syndrome, tendinitis, ganglionitis, tenosynovitis, bursitis, and epicondylitis. These disorders may be caused or aggravated by repeated twisting or awkward postures, particularly when combined with high force. The population at risk includes persons employed in such industries or occupations as construction, food preparation, clerical work, product fabrication, and mining.

Data from the National Occupational Hazard Survey suggest that 15%-20% of workers in these jobs are potentially at risk of cumulative trauma disorders (*4*). Data from the Bureau of Labor Statistics indicate that in 1980 approximately 23,200 occupational injuries were associated with repeated trauma (*5*).

Vibration-associated injuries: An estimated seven million workers in such occupations as vehicle operation are intermittently exposed to whole-body vibration, which significantly stresses the musculoskeletal system (*6*). Although the effects are poorly understood, preliminary data suggest that low back pain, vertebrogenic pain, and degenerative disk disease may be associated with whole-body vibration (*7,8*).

An estimated 1.2 million workers are exposed to "segmental" vibration, i.e., vibration principally of a part or parts of the body, of which the principal sources are handheld power tools, such as chain saws and jackhammers (*9*). These exposures are associated with "vibration syndrome," characterized by intermittent numbness and blanching of the fingers with reduced sensitivity to heat, cold, and pain (*10*). Vibration syndrome may affect up to 90% of workers in such occupations as chipping, grinding, and chain sawing (*11*).

Reported by Div of Surveillance, Hazard Evaluations, and Field Studies, Div of Safety Research, NIOSH, CDC

Work-Related Diseases and Injuries – Continued

Editorial Note: Musculoskeletal injuries can be prevented or reduced with such appropriate intervention measures as

1. Substitution. Machines, such as hoists, cranes, and dollies, can substitute for workers in some aspects of the manual handling of materials
2. Improved equipment design. Research has shown that improved design of some vibrating tools virtually eliminates hazardous vibration; suspension or isolation systems may be added to vehicles to greatly reduce whole-body vibration
3. Task design. Manual tasks can be altered to minimize biomechanical stress to the worker (*12*)
4. Worker education. Injuries due to musculoskeletal stresses may be reduced by preplacement strength testing, training in proper ways to do a task, and on-site programs of exercise and physical therapy.
5. Variation of work practices. Periodic rotation of workers into jobs with different physical demands may help reduce the sequelae of biomechanical stress

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TABLE 1. The ten leading work-related diseases and injuries – United States, 1982*

1. Occupational lung diseases: asbestosis, byssinosis, silicosis, coal workers' pneumoconiosis, lung cancer, occupational asthma	6. Disorders of reproduction: infertility, spontaneous abortion, teratogenesis
2. Musculoskeletal injuries: disorders of the back, trunk, upper extremity, neck, lower extremity, traumatically induced Raynaud's phemonenon	7. Neurotoxic disorders: peripheral neuropathy, toxic encephalitis, psychoses, extreme personality changes (exposure-related)
3. Occupational cancers (other than lung): leukemia; mesothelioma, cancers of the bladder, nose, and liver	8. Noise-induced loss of hearing
4. Amputations, fractures, eye loss, lacerations, and traumatic deaths	9. Dermatologic conditions: dermatoses, burns (scaldings), chemical burns, contusions (abrasions)
5. Cardiovascular diseases: hypertension, coronary artery disease, acute myocardial infarction	10. Psychologic disorders: neuroses, personality disorders, alcoholism, drug dependency

*The conditions listed under each category are to be viewed as *selected examples*, not comprehensive definitions of the category.

Work-Related Diseases

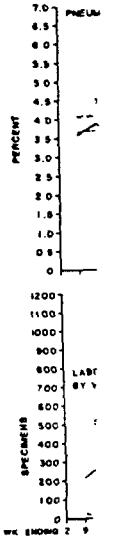
9. Gruber GJ. Relationshi truck drivers. Cincinnat publication no. 75-104
10. Wasserman DE, Badg (American Society of S.
11. Taylor W, Pelmear PL. Acta Chir Scand 1976,
12. National Institute for C National Institute for C 81-122.

Current Trends

Update: In

United States: Mor cline in influenza outbr Mexico) reported regio reports of influenza vir cline in influenza activ despite increases in in excess in the ratio of p 121 cities for the thirt ratio was 4.1 (Figure 2)

FIGURE 2. Indicator



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*ected examples, not comprehensive

Work-Related Diseases and Injuries — Continued

9 Gruber GJ. Relationship between whole-body vibration and morbidity patterns among interstate truck drivers. Cincinnati, National Institute for Occupational Safety and Health, Sept. 1974 (NIOSH publication no. 75-104.)
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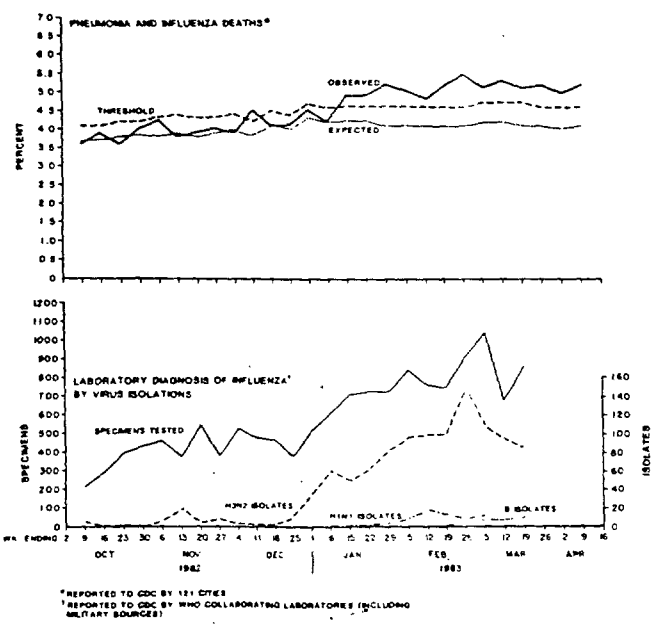
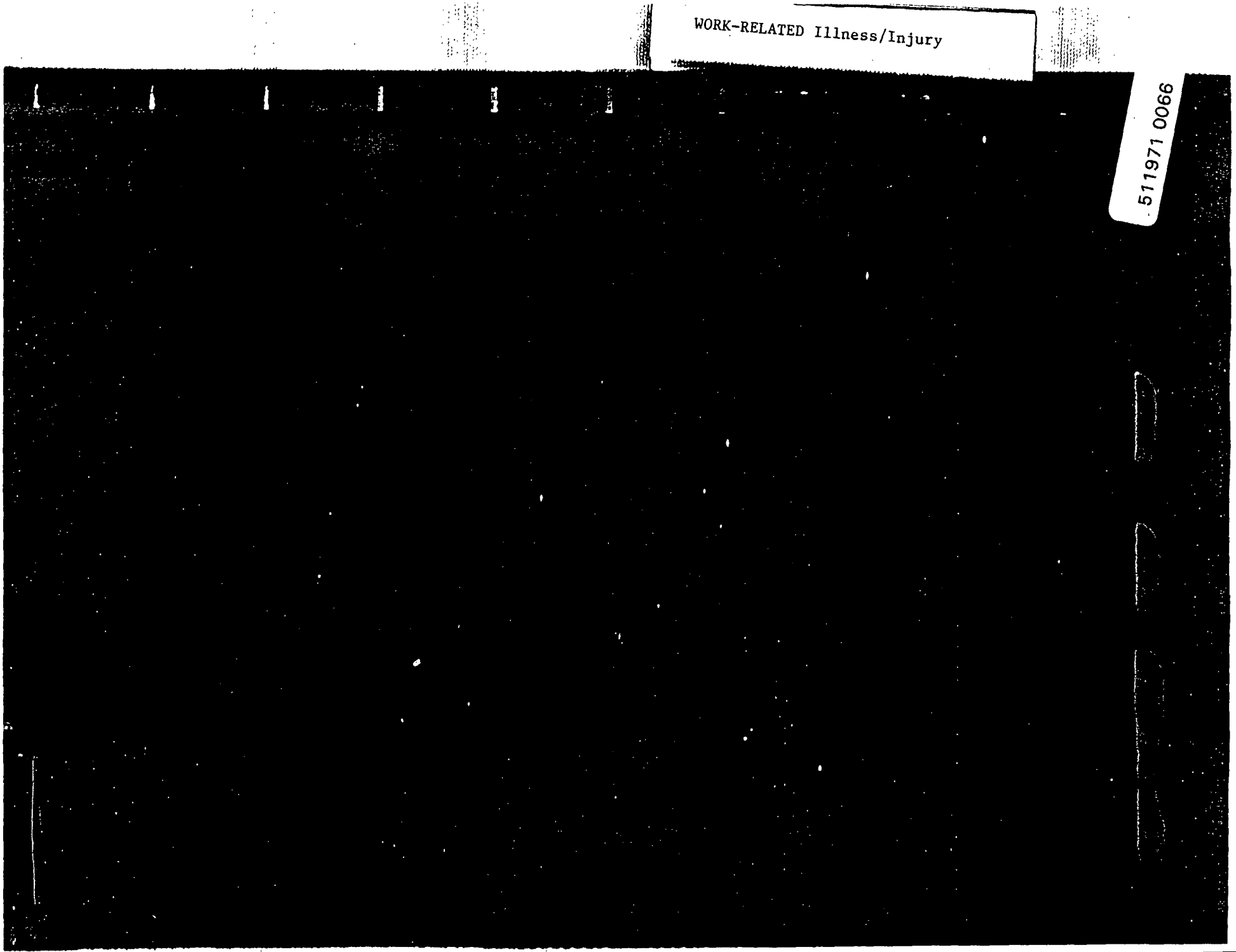
Current Trends

Update: Influenza Activity — United States, Worldwide

United States: Morbidity reports collected weekly by each state indicate a continuing decline in influenza outbreaks. For the week ending April 9, 1983, 2 states (Kentucky and New Mexico) reported regional activity, and no state reported widespread activity. In recent weeks, reports of influenza virus isolations from collaborating laboratories have also indicated a decline in influenza activity (Figure 2). Most isolates (89%) continue to be type A(H3N2) virus, despite increases in influenza B and type A(H1N1). For the week ending April 9, 1983, an excess in the ratio of pneumonia and influenza (P&I) deaths to total deaths was reported from 121 cities for the thirteenth consecutive week. The observed ratio was 5.2 and the expected ratio was 4.1 (Figure 2).

FIGURE 2. Indicators of influenza activity — United States, 1982-1983

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Work-Related Illness/Injury

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