

2001

Oak Ridge National Laboratory Annual Epidemiologic Surveillance Report



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Additional information about the Department of Energy's Office of Health Studies, the Epidemiologic Surveillance Program, and annual reports for DOE sites participating in this program can be found at:

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Oak Ridge National Laboratory 2001

At A Glance

Illness and Injury

Twenty-two percent of all reported diagnoses among men were due to muscles and skeleton conditions.

We saw no indication that any particular diagnosis occurred disproportionately in a specific job category among either men or women.

Women and men classified as Crafts/Laborers had the highest rates for all illnesses and injuries combined in 2001. Compared with workers in other job categories, they were also at substantially increased risk for a variety of occupational injuries, as noted below. OSHA-recordable rates among both men and women have been highest among Crafts and Laborers since epidemiologic surveillance was initiated at ORNL in 1999.

OSHA

Laborers had the highest rate of OSHA events among women (18 per 100 workers) and men (17 per 100 workers). The next highest rates for both men and women were among the Crafts workers (11 per 100 male workers and 8 per 100 female workers), but the high rate for female Crafts workers was based on only 1 event.

When the rate for OSHA-recordable injuries was considered separately from other health conditions, the Crafts/Laborers had the highest rates for both men and women workers. These workers accounted for 15 percent of the work force and 62 percent of the OSHA-recordable events.

Back sprains and strains, one of the more common types of injury among workers, were an increased risk for Laborers, Crafts, and Operators. Crafts workers and Laborers were at higher risk for sprains and strains other than those involving the back and for conditions affecting the muscles and skeleton. Open wounds were most common among Laborers.

No consistent trends were seen in the rates of OSHA-recordable events among men during the 1999-2001 period. Among women in the Crafts, the rate decreased sharply during this period. In contrast, the rate increased among women Laborers, but the dramatic changes in both groups may simply reflect fluctuating rates affected by the small number of women in these 2 job categories. Continued monitoring of these groups should help to clarify these trends.

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Introduction

The U.S. Department of Energy's (DOE) commitment to assuring the health and safety of its workers includes the conduct of epidemiologic surveillance activities that provide an early warning system for health problems among workers. The Epidemiologic Surveillance Program monitors illnesses and health conditions that result in an absence of 5 or more consecutive workdays, occupational injuries and illnesses, and disabilities and deaths among current workers.

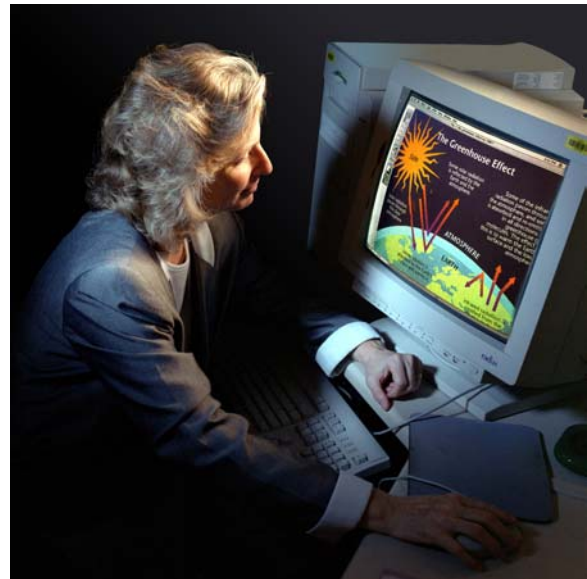
This report provides a summary of epidemiologic surveillance data collected from Oak Ridge National Laboratory (ORNL) from January 1, 2001 through December 31, 2001. The data were collected by a coordinator at ORNL and submitted to DOE's Epidemiologic Surveillance Data Center, located at Oak Ridge Institute for Science and Education, where quality control procedures and data analyses were carried out. Epidemiologic surveillance began in 1999 for ORNL.

The information presented in this report provides highlights of the data analyses conducted. Additional supporting tables are posted on the Office of Health Studies' Web site (www.eh.doe.gov/health/epi/surv) or are available by request. The main sections of the report include: work force characteristics; absences due to

injury or illness of 5 or more consecutive workdays; workplace injuries, illnesses, and deaths that were reportable to the Occupational Safety and Health Administration ("OSHA-recordable" events); and disabilities and deaths among current workers.

Note: In the figures and calculations that follow, percentages have been rounded to the nearest whole number.

DOE sites vary by mission, function, job classification, and worker exposures. Therefore, comparisons of ORNL with other DOE sites should be made with caution. In addition, many factors can affect the completeness and accuracy of health information reported at the sites, thereby affecting the observed patterns of illness and injury.



Site Overview

Originally known as Clinton Laboratories, ORNL was established in 1943 to carry out a single, well-defined mission: the pilot-scale production and separation of plutonium for the World War II Manhattan Project. The Clinton Pile, originally designated X-10, the first true plutonium production reactor, began operations in November 1943.



ORNL's primary site is approximately 4,250 acres; the National Environmental Research Park (also part of ORNL) is approximately 20,000 acres; and the additional reservation area for which ORNL currently has contractual responsibility for management (Solway Bend) is approximately 350 acres. ORNL is about 10 miles southwest of Oak Ridge, Tennessee.

Approximately 531 buildings and other major facilities, totaling about 3.1 million square feet, are located throughout the primary ORNL site. ORNL facilities are also located outside the primary site boundary as well as at the DOE Y-12 site, for a total of about 4 million square feet in facilities.

ORNL is a multiprogram science and technology laboratory. Their mission today is to conduct basic and applied research and development to create scientific knowledge and technological solutions that strengthen the nation's leadership in key areas of science; increase the availability of clean, abundant energy; restore and protect the environment; and contribute to national security. ORNL also performs other work for DOE, including isotope

production, information management, and technical program management, and provides research and technical assistance to other organizations.

The site continues to evolve to meet DOE's changing needs. Currently under construction at ORNL is the Spallation Neutron Source (SNS). The SNS will be an accelerator-based neutron scattering facility to be used for research in broad areas of physical, chemical, materials, biological, and medical sciences. When completed in 2005, the SNS will provide the U.S. scientific community with a neutron source having greater intensity, power, and instrumentation than any other existing neutron source.

In October 2001, ORNL's Superconductivity program was selected to partner on 3 new super-conductivity proposals that are being negotiated by U.S. industry. The 3 proposals include the development of a new high-temperature super-conductor generator, a long-length high-temperature superconducting power cable, and the transformer component of a high-temperature superconducting substation. ORNL will provide supporting research to each project team.

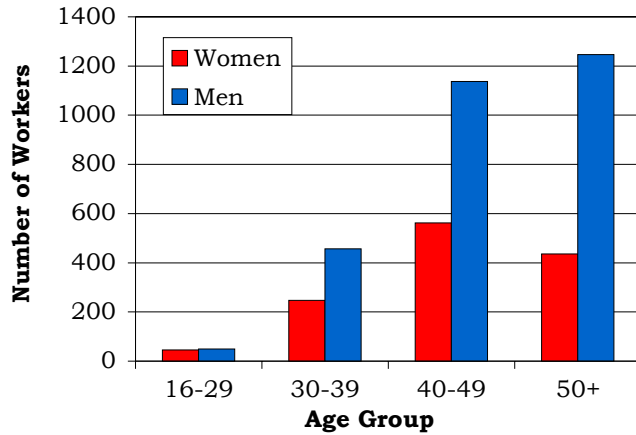
ORNL, as part of the Oak Ridge Reservation, was placed on the National Priorities List under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) in December 1989. The CERCLA remediation activities are covered under a 1992 tri-party Federal Facility Agreement among the Environmental Protection Agency, DOE, and the Tennessee Department of Environment and Conservation.

The site is managed through a contract with UT-Battelle, a partnership between the University of Tennessee and Battelle.

The ORNL Work Force - 2001

A total of 4,180 ORNL employees were included in epidemiologic surveillance in 2001, a decrease of 328 workers from 2000. The gender and age distribution of the 2001 work force is shown in Figure 1. There were 1,290 (31 percent) women and 2,890 (69 percent) men in the work force. The average age of male ORNL workers was 48 years and 46 years for females.

Figure 1. The Work Force by Gender and Age



The distribution of workers by job category and gender is shown in Figure 2. Individual job titles reported by ORNL were grouped together into 9 job categories because the small number of workers or health events in some categories limited the type of analyses that could be conducted. Men and women were not distributed equally among the various job categories. Sixty-three percent of female workers were in the Administrative and Professional categories, while Scientists and Engineering categories accounted for the largest percentage of male workers (45 percent).

Figure 2. The Work Force by Job Category and Gender

Job Category	Women	Men
Administrative	528 41%	17 1%
Management	75 6%	395 13%
Professional	284 22%	340 12%
Engineering	63 5%	627 22%
Scientists	124 9%	658 23%
Technicians	127 10%	257 9%
Crafts	13 1%	366 12%
Laborers	72 5%	166 6%
Operators	4 <1%	64 2%



Number and Length of Absences

Epidemiologic surveillance examines absences of 5 or more consecutive workdays (also referred to as “5-day absences”). This absence threshold is based on DOE Order 440.1, which requires contractor management to notify Occupational Medicine when a worker has been absent for 5 or more



consecutive workdays. If an absence on a Friday continues through Tuesday, the length of that

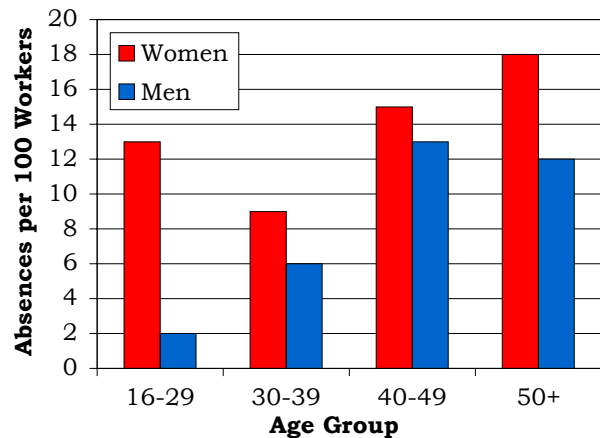
absence includes the weekend. All injuries and illnesses due to a work-related incident also must be reported. Non-occupational illnesses and injuries that involve absences of fewer than 5 days do not routinely require a medical clearance for return to work and are therefore excluded from these analyses.

Specific absences of 5 or more consecutive workdays that were not the result of an injury or illness were excluded. These include 10 women with reported absences due to maternity leave and 2 women who reported absences for conditions unrelated to the treatment of an illness or injury.

Throughout this report, analyses take gender, age, and occupation into account because the risk of illness and injury varies by these factors.

The rate of 5-day absences due to injury or illness varied by gender and age (Figure 3). The 5-day absence rate among women was 15 per 100 workers (193/1,290) and 11 per 100 workers (330/2,890) among men. The rate increased with age among men up to age 50 and among women 30 years of age and older.

Figure 3. Absence Rate by Gender and Age



The average length of absence was 29 days for men and 31 days for women (Figure 4). The average duration of absence decreased with increasing age among women. Among men, the length of absence increased with increasing age.

Figure 4. Number of Days Absent by Gender and Age

Gender	Age	Number of Absences	Number of Days Absent	Average Number of Days Absent
Women	16-29	6	235	39
	30-39	22	728	33
	40-49	87	2,891	33
	50+	78	2,065	26
	Total	193	5,919	31
Men	16-29	1	14	14
	30-39	28	683	24
	40-49	153	3,909	26
	50+	148	4,946	33
	Total	330	9,552	29

The rate of 5-day absences due to illness or injury varied by job category for both men and women (Figure 5). Women had a higher rate of absence than did men within the same job category, except for those in the Scientists, Technicians, and Operators categories. Men and women in the Management group had the same

Figure 5. Absence Rate by Job Category and Gender

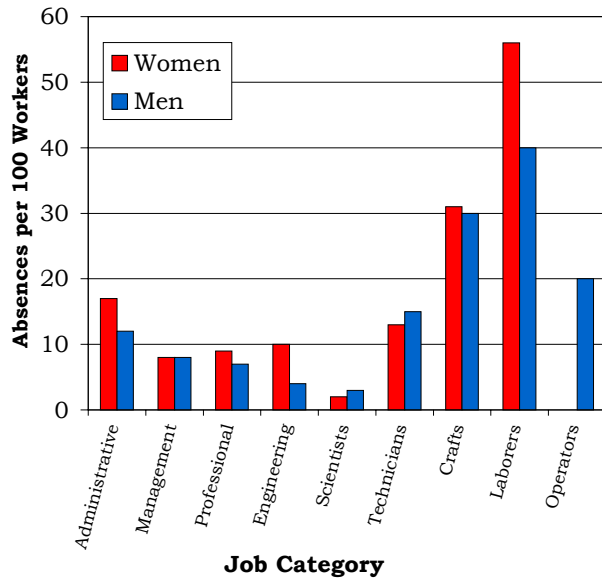
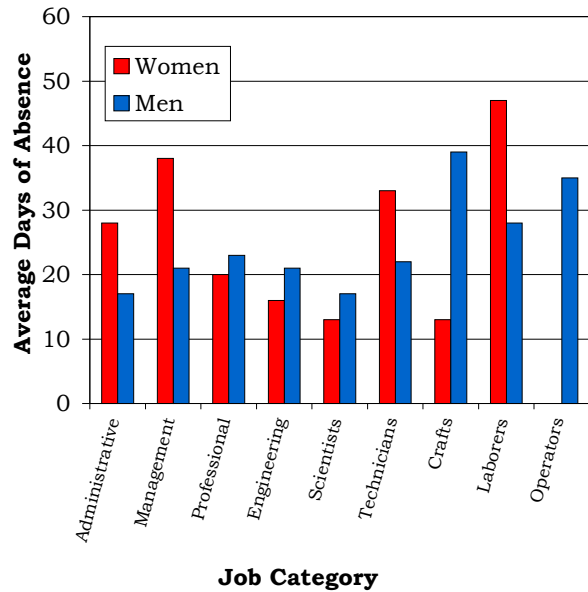


Figure 6. Average Duration of Absence by Job Category and Gender



absence rate. Workers in the Crafts and Laborers groups had the highest absence rates among male workers; men in the Engineering and Scientists groups had the lowest absence rates. The same job categories with the highest rates among men also had the highest rates among women. Women Operators did not report any absences during 2001.

Women tended to have a shorter duration of absence than did men within a job category (Figure 6). Crafts workers, who had one of the highest absence rates among men, also had the longest average duration of absence (39 days). Male Administrative workers and Scientists had the shortest average number of days absent, 17 days. Among women, Scientists and Crafts workers had the shortest average absence, 13 days. Women Laborers had the longest average length of absence, 47 days. These patterns of absence duration are similar to those observed

at other epidemiologic surveillance sites. In general, salaried workers are less likely to report absences; hourly workers under more direct supervision are more likely to report absences to the occupational medical clinic. The reader is cautioned that interpretation of absence duration among the various job categories can be biased by these differences in completeness of reporting absences.



Diagnostic Categories

Epidemiologic surveillance monitors *all* illnesses and injuries among active workers because it is not always possible to determine which health effects are due to occupational exposures and which ones are due to other causes. Most illness and injury diagnoses were reported to the occupational medicine clinic by workers who required return-to-work clearances. An absence due to illness or injury may involve more than 1 diagnosis, and epidemiologic surveillance includes all reported diagnoses. In addition, the OSHA 200 Log provides information on recorded occupational injuries and illnesses whether or not they involve absences.

This report organizes illness and injury categories based on a standard reference, the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). This reference is used to classify health events for statistical purposes. You can find specific health conditions in the Explanation of Diagnostic Categories.

The number of reported diagnoses categorized according to the ICD-9-CM and the number of lost calendar days are presented in Figure 7. Women reported 246 diagnoses and men reported 398 diagnoses in 2001. The most frequently reported diagnoses varied by gender. Among men, respiratory conditions, disorders of the muscles and skeleton, and injuries were among the more frequently reported diagnoses. Disorders of the muscles and skeleton, respiratory conditions, and genitourinary conditions were among the more frequently reported diagnoses by women. These diagnoses have been among the more commonly reported diagnoses since 1999.

Figure 7. Number of Diagnoses and Lost Calendar Days by Diagnostic Category (Categorized by ICD-9-CM) and Gender

Diagnostic Category	Women		Men	
	Number of Diagnoses	Number of Lost Calendar Days	Number of Diagnoses	Number of Lost Calendar Days
Benign Growths	4	122	2	102
Blood	0	0	1	43
Cancer	0	0	5	137
Digestive	22	522	25	540
Endocrine/ Metabolic	5	100	9	115
Existing Birth Condition	0	0	1	14
Genitourinary	37	850	19	371
Heart/ Circulatory	9	129	36	1,025
Infections/ Parasites	11	119	11	174
Injury	29	616	68	1,542
Miscarriage	0	0	NA	NA
Muscles & Skeleton	42	2,463	87	4,271
Nervous System	10	390	20	485
Psychological	12	368	12	323
Respiratory	53	636	85	963
Skin	2	34	3	44
Unspecified Symptoms	10	161	14	195

Note: Lost calendar days for each absence are counted more than once when multiple diagnoses occur in different diagnostic categories for the same absence.

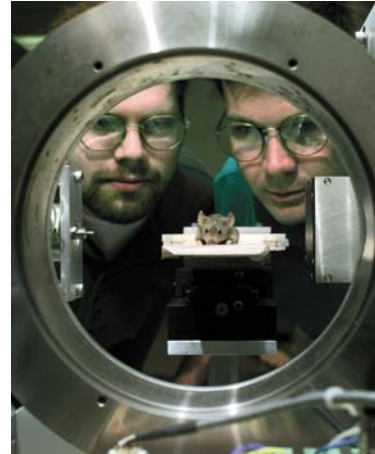
The number of diagnoses reported among women changed little between 2000 (239 diagnoses) and 2001. Among men, the number of diagnoses fell 13 percent from 2000 to 2001. Similarly, the number of days of absence decreased 14 percent among women and 11 percent among men in 2001. These fluctuations are much less than what were seen in comparisons of the 2000 and 1999 data. With ORNL's third year of epidemiologic surveillance reporting, the data fluctuations seen in 2001 are consistent with what are expected after several years of participation in the program.

Women lost 5,919 calendar days due to injury and illness. Respiratory diseases (22 percent), muscles and skeleton conditions (17 percent), and genitourinary disorders (15 percent) accounted for 54 percent of their reported diagnoses. The majority of the respiratory conditions were acute respiratory infections and other diseases of the upper respiratory system (57 percent), followed by bronchitis (not specified as acute or chronic) and asthma (34 percent). Joint disorders made up 48 percent of the muscles and skeleton conditions, followed by disk and back problems (29 percent). Seventy-eight percent of the genitourinary disorders were female reproductive diseases.



Men lost 9,552 calendar days due to injury and illness. Sixty percent of all reported diagnoses among men were due to muscles and skeleton conditions (22 percent), respiratory conditions (21 percent), and injuries (17 percent). A closer look at diagnoses affecting the muscles and skeleton showed that about 41 percent were back problems and disk disorders and 39 percent were joint disorders. Acute respiratory infections and other diseases of the upper respiratory system accounted for 42 percent of the respiratory conditions, followed by bronchitis (not specified as acute or chronic) and asthma (32 percent) and pneumonia and influenza (24 percent). Sprains and

strains (50 percent) and fractures (25 percent) were the most frequently reported injuries. One diagnosis for complications of medical care was among the 68 injury diagnoses.



The previously mentioned diagnoses did not vary much by age. Conditions affecting the respiratory system, diagnoses of the muscles and skeleton, and injuries were among the more frequently reported categories for men of all ages except the youngest age group. Among women, respiratory disorders and conditions of the muscles and skeleton were reported frequently for workers 30 years old and older. Workers younger than 30 reported only 11 diagnoses in 2001; men reported 1 and women reported 10.

Figure 8 shows the frequency of reported diagnoses by job category for men and women. The types of diagnoses did not vary significantly by job category. Among men, respiratory conditions, muscles and skeleton conditions, and injuries appeared frequently in most job categories. Genitourinary disorders, muscles and skeleton conditions, and respiratory diseases were common across many job categories among women. We saw no indication that any particular diagnoses occurred disproportionately in a specific job category.

Figure 8. Most Frequently Reported Diagnoses by Job Category and Gender

Job Category	Men	Women
Administrative	Muscles & Skeleton (1) Nervous System (1)	Respiratory (29) Genitourinary (16) Muscles & Skeleton (16)
Management	Injury (10) Muscles & Skeleton (9) Digestive (5)	Genitourinary (5) Digestive (1) Muscles & Skeleton (1) Psychological (1)
Professional	Respiratory (8) Heart/Circulatory (5) Muscles & Skeleton (5)	Respiratory (11) Muscles & Skeleton (7) Genitourinary (3) Injury (3)
Engineering	Respiratory (10) Injury (8) Muscles & Skeleton (4)	Respiratory (3) Digestive (2) Endocrine/Metabolic (2)
Scientists	Muscles & Skeleton (5) Respiratory (5) Injury (3)	Unspecified Symptoms (2) Benign Growths (1) Digestive (1) Heart/Circulatory (1) Injury (1) Psychological (1)
Technicians	Respiratory (15) Muscles & Skeleton (9) Injury (8)	Genitourinary (5) Injury (4) Muscles & Skeleton (4)
Crafts	Muscles & Skeleton (28) Respiratory (24) Injury (17)	Heart/Circulatory (2) Benign Growths (1) Genitourinary (1) Injury (1) Nervous System (1)
Laborers	Muscles & Skeleton (21) Respiratory (21) Injury (16)	Muscles & Skeleton (14) Respiratory (8) Genitourinary (7)
Operators	Muscles & Skeleton (5) Injury (4) Benign Growths (1) Cancer (1) Digestive (1) Infections/Parasites (1) Respiratory (1)	None

Note: Numbers in parentheses represent the number of reported diagnoses.

Rates of Disease Occurrence

A Word about Rates: The previous section considered the number of absences and health conditions among various worker groups. For example, Figure 7 shows that men reported 87 and women reported 42 diagnoses involving muscles and skeleton disorders during 2001. Men, therefore, reported more than twice as many muscles and skeleton disorders as women. As there were more than 2 times as many men than women at ORNL, it seems reasonable to expect more muscles and skeleton disorders among men than women. Does this mean that men were at greater risk of muscles and skeleton disorders compared with women in 2001? To correctly answer that question, the total number of men and women in the work force must be considered. To compare risk among men and women, it is necessary to calculate the muscles and skeleton rate for each gender. Rates are calculated by dividing the number of muscles and skeleton diagnoses in a given gender by the total number of employees of that gender. Multiply this number by 1,000 to get the diagnosis rate per 1,000 workers. For example:

$$87 \text{ muscles and skeleton diagnoses} \div 2,890 \text{ men} = .030 \times 1,000 = 30 \text{ muscles and skeleton diagnoses per 1,000 men}$$

$$42 \text{ muscles and skeleton diagnoses} \div 1,290 \text{ women} = .033 \times 1,000 = 33 \text{ muscles and skeleton diagnoses per 1,000 women}$$

Comparing these rates now correctly suggests that the rate of reported muscles and skeleton disorders among women was about 10 percent higher than the rate for men. They are called **crude rates** because they do not account for possible differences between men and women such as age and other factors that might affect the individual's risk of having a muscles and skeleton disorder. Because age is so strongly related to the risk of disease and injury, epidemiologists almost always take age into account when comparing groups. This is done by using age-specific categories or by statistical methods of adjustment.

The diagnosis rate, also called the illness and injury rate, is the number of occurrences of a given disease or health condition observed over the course of a year per 1,000 workers at risk of getting that condition (see shaded box). One health condition, arthritis for example, may result in several 5-day absences over a year. Conversely, 1 absence lasting 5 days may be associated with multiple diagnoses (e.g., the flu and a sprained wrist) recorded for epidemiologic surveillance.

In the following set of analyses, the 4 age groups previously used were collapsed into 2 groups: workers younger than 50 years of age and those 50 or older. In addition, the 9 job categories were combined into 5 larger groups. The rates of all illnesses and injuries combined are presented in Figure 9.

Four groups of diagnoses of particular interest to workers are presented in Figure 10: cancer, heart/circulatory system, respiratory system, and injury. Additional information about 11 other disease groups is also analyzed and can be found in the Supporting Tables.

Figure 9. Rates for All Illnesses and Injuries Combined by Job Category, Gender, and Age

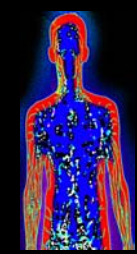
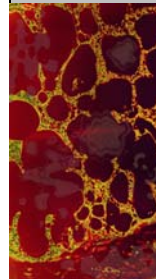



Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Administrative/Management	<50	74	193
		50+	108	226
	Professional	<50	80	112
		50+	93	115
	Scientists/Engineering	<50	37	58
		50+	60	146
	Technicians/Operators	<50	192	149
		50+	152	133
	Crafts/Laborers	<50	421	735
		50+	375	556

Figure 10. Rates for Selected Diagnostic Categories by Job Category, Gender, and Age

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Administrative/Management	<50	0	0
		50+	0	0
	Professional	<50	0	0
		50+	0	0
	Scientists/Engineering	<50	1	0
		50+	4	0
	Technicians/Operators	<50	4	0
		50+	0	0
	Crafts/Laborers	<50	0	0
		50+	4	0

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Administrative/Management	<50	5	0
		50+	14	4
	Professional	<50	10	0
		50+	21	23
	Scientists/Engineering	<50	0	0
		50+	5	21
	Technicians/Operators	<50	13	0
		50+	11	0
	Crafts/Laborers	<50	48	82
		50+	25	28

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Administrative/Management	<50	5	46
		50+	0	51
	Professional	<50	20	41
		50+	29	34
	Scientists/Engineering	<50	14	14
		50+	9	21
	Technicians/Operators	<50	57	20
		50+	33	0
	Crafts/Laborers	<50	79	61
		50+	92	139

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Administrative/Management	<50	21	30
		50+	27	17
	Professional	<50	0	15
		50+	14	0
	Scientists/Engineering	<50	5	0
		50+	13	21
	Technicians/Operators	<50	35	30
		50+	43	33
	Crafts/Laborers	<50	68	41
		50+	54	111

The rates for all illnesses and injuries combined among men and women tended to be greater for ORNL workers 50 years of age and older compared with younger workers. Women had higher rates than men in all job categories for all illnesses and injuries combined except for the Technicians/Operators group. Women and men classified as Crafts/Laborers had the highest rates in 2001.

Cancer rates presented in this report are based on reported 5-day absences during the year. A worker may experience several periods of absence from 1 cancer diagnosis due to medical complications or treatment regimens. Each absence results in the report of a cancer diagnosis; however, it



does not imply that this is a new cancer. The cancer rates in this report are not comparable to the *incident rates* frequently

published in many articles on cancer. Incident cancer rates are based on the number of *new* cancer cases diagnosed within a given time, usually a year.

The likelihood that an individual in the U.S. develops cancer increases with age. Our data did not reflect this pattern. Among the 5 workers who reported cancer in 2001, 2 were less than 50 years old. The 5 workers, who were all men, reported 5 cancer diagnoses: 2 genitourinary cancers, 1 skin cancer, 1 lymphoma, and 1 digestive cancer. These 5 men represented 4 different occupational categories. None of these men reported cancer in 1999 or 2000.

Older workers tended to have higher rates of heart/circulatory disease than younger workers among men and women, but for both men and women, the highest rates were seen among younger workers in the Crafts/Laborers category. Seven of the 14 diagnoses reported by the 9 younger men in the Crafts/Laborers category were for hypertension or ischemic heart disease. All 4 diagnoses reported by women less than 50 years old were among Crafts/Laborers workers. Sixteen of the 33 absences among men occurred in workers aged 50 or older; 24 of 36 diagnoses among men of all ages involved hypertension or ischemic heart disease (restricted blood flow through an artery). Six of 9 diagnoses for heart/circulatory problems reported among women were for hypertension, with no reported diagnoses for ischemic heart disease. Compared with other workers, Crafts workers were over 3 times and Laborers over 4 times more likely to report heart/circulatory conditions compared with workers in other job categories.

Crafts/Laborers had the highest rates of respiratory disease for men and women. Laborers were over 4 times more likely to report a respiratory condition and Crafts workers were almost 3 times as likely to report these conditions than were other workers. Women tended to have higher rates of respiratory disease than did men in all job categories. Similar patterns were seen in 1999 and 2000.

Injury rates were generally higher among older women and men. The highest rates of injury were among men and women in the Crafts/Laborers group. Crafts workers were at over twice the risk and Laborers at almost 5

times the risk of reporting an injury compared with other workers. Compared with other workers, Crafts workers were over 5 times more likely to report a back sprain or strain. Laborers were at 8 times the risk of reporting a back sprain or strain, at almost 7 times the risk of a sprain or strain other than the back, and at almost 6 times the risk of an upper limb fracture. Operators were over 3 times more likely to report an injury, with the risk of reporting a back sprain or strain being almost 6 times more likely.

In other analyses, we compared the risk of illness and injury among workers classified in 1 job category with the risk to workers in the remaining 8 job categories. Overall, Laborers were at over 3 times and Crafts and Operators workers at around 2 times the risk of other groups for illness or injury. Crafts workers were at increased risk for many types of conditions compared with workers in other job categories: 12 times the risk of a disorder of the nervous system, 9 times the risk of a psychological disorder, over 5 times the risk of a genitourinary condition or endocrine disorder, over 3 times the risk of an infectious disease, and over 2 times the risk of a condition of the muscles and skeleton. Laborers were almost 6 times more likely to report a muscles and skeleton condition; over 4 times more likely to report a psychological disorder, a nervous system condition, or an unspecified symptom; at least 3 times more likely to report an infectious disease or a genitourinary condition; and almost 3 times more likely to report a digestive disorder.

Time Trends

Why Are Rates Age-Adjusted?

The injury and illness rates in this section of the report are **age-adjusted**. Differences in the age composition among groups of workers are taken into consideration in the analyses, and 1 rate is calculated for an entire group. This allows us to make comparisons between groups of different ages. Age-adjusted rates are calculated using the age distribution of the 1970 U.S. population as a reference.

The availability of 3 years of epidemiologic surveillance data for ORNL workers permitted us to analyze illness and injury trends over time in the work force. The overall diagnosis rate for women was higher than that of men throughout the 1999-2001 period, with the greatest difference in the rates for men and women occurring from 2000 to 2001 when the rates for men declined (Figure 11). The rate for women almost doubled from 1999 to 2001. The rates of nervous system disorders and injuries showed a similar trend as the overall diagnosis rate for men and women. The rates for both of these disease categories increased over the 3-year period for women and decreased among men in 2001 after increasing from 1999 to 2000 (Figure 12). Chronic respiratory disease has been stable over the 3-year period among both men and women. The rate of muscles and skeleton disorders decreased slightly in 2001, ending an increase in the rate for men and women.

Figure 11. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men from 1999 to 2001

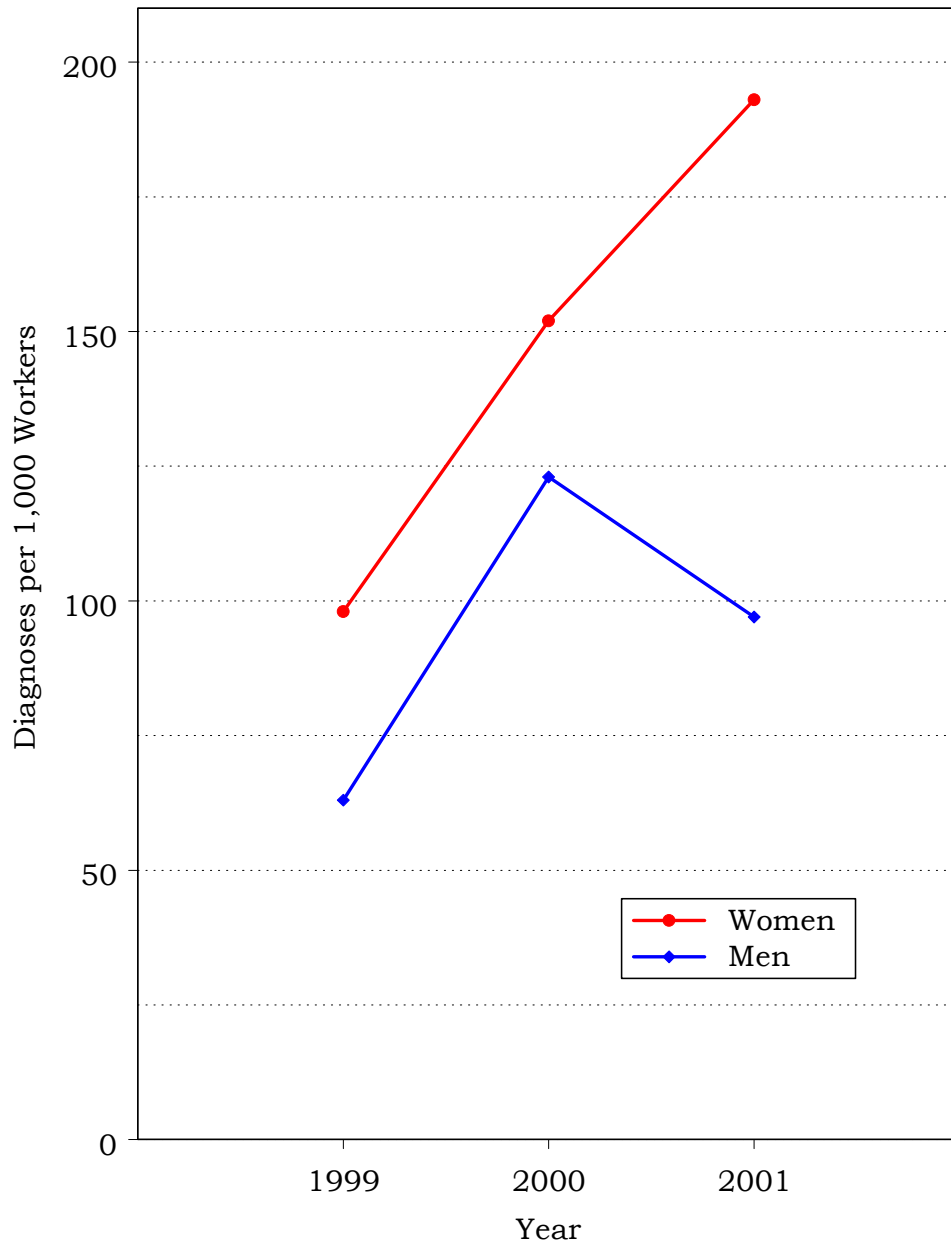


Figure 12. Age-Adjusted Rates for Selected Diagnostic Categories Among Women and Men from 1999 to 2001

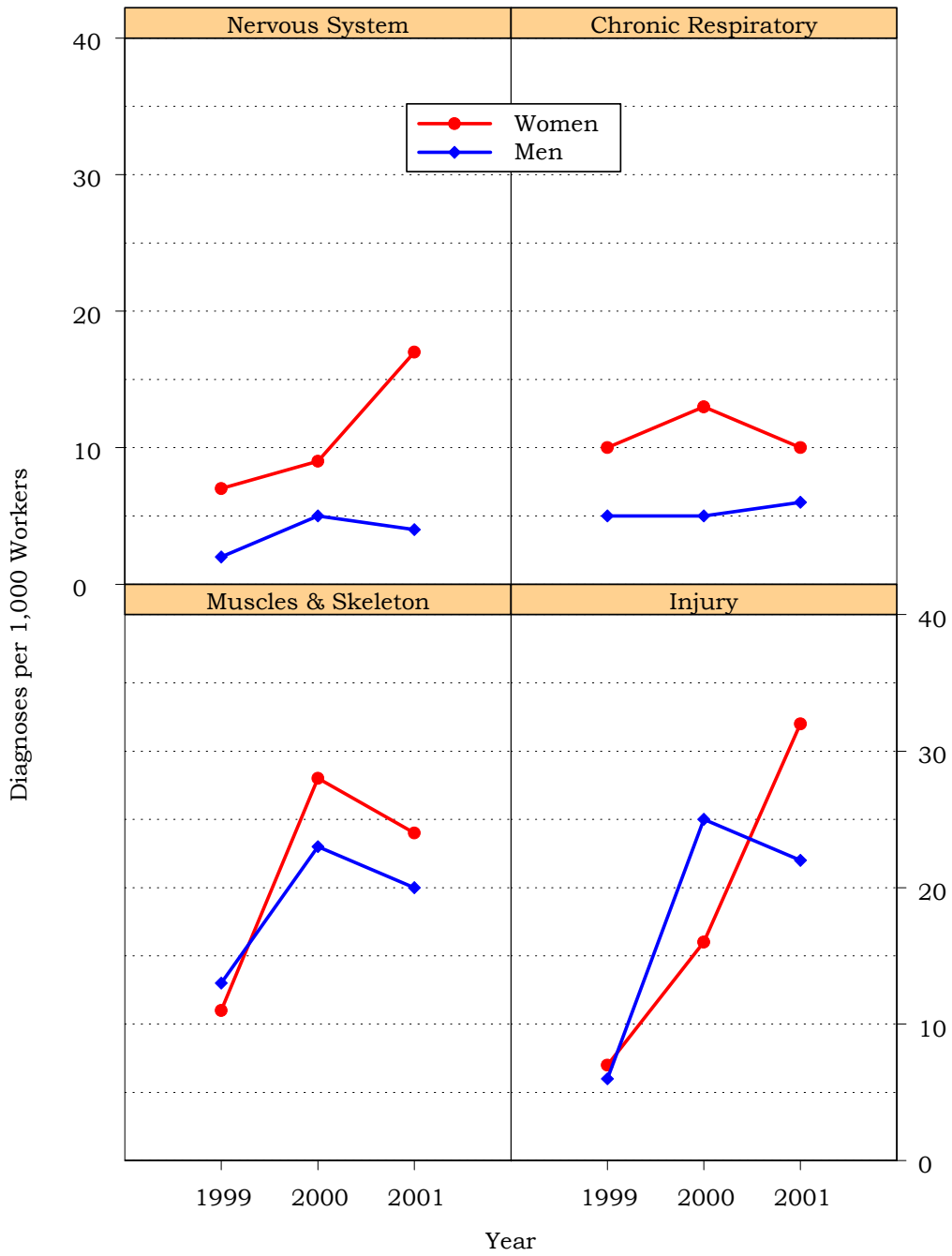
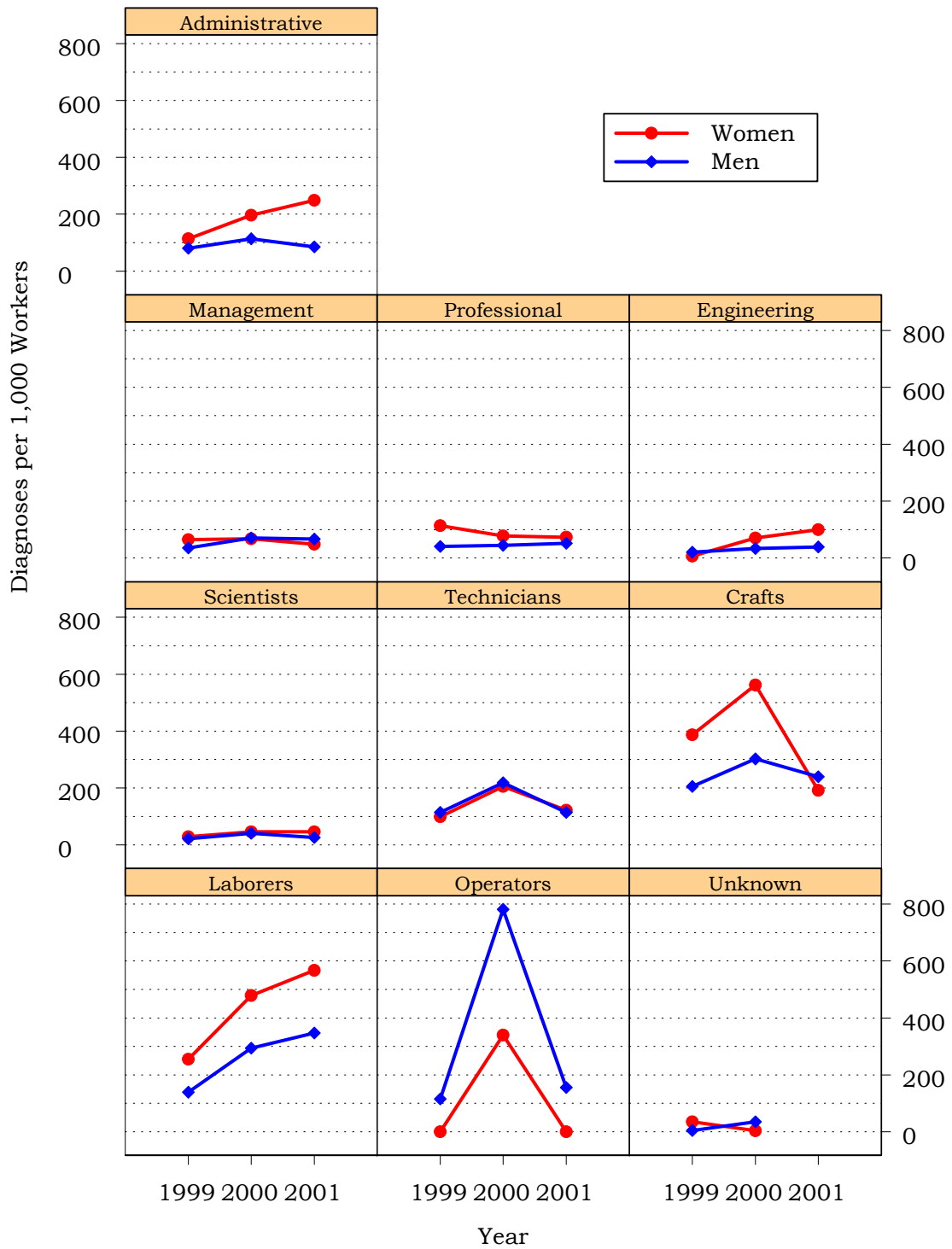


Figure 13. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men by Job Category from 1999 to 2001



Note: Unknown job category had no employees in 2001 only.

The rates for all diagnoses combined showed a similar trend for women and men over the 3-year period. The rates for women were similar to or slightly greater than those for men in most job categories (Figure 13). The only exception is among Operators, among whom rates for men have been consistently greater than those for women each year. Also noteworthy is the steady increase in the rates among Laborers from 1999 to 2001 for both men and women. For both of these occupational groups, the large change in rates over the period may have resulted from the instability of rate estimates based on the small number of workers in these occupational categories. Nonetheless, these groups will continue to be monitored closely to determine whether the apparent trend toward increasing rates continues.

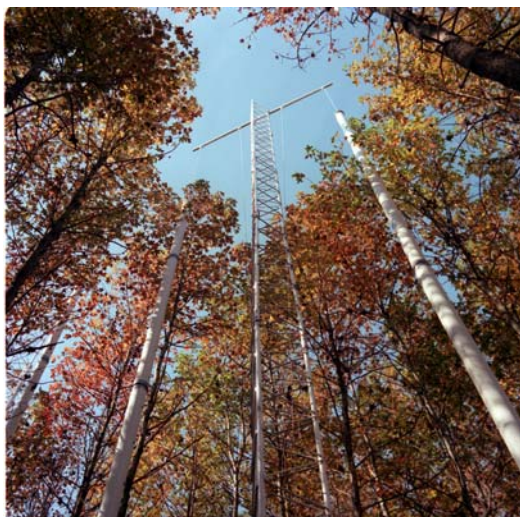


Sentinel Health Events for Occupations

A sentinel health event for occupation (SHEO) is a disease, disability, or death that is likely to be occupationally related. Its occurrence may serve as a warning signal that materials substitution, engineering control, personal protection, or medical care may be required to reduce the risk of injury or illness among the work force. Sixty-four medical conditions associated with workplace exposures from studies of many different industries have been identified as sentinel health events. Although sentinel health events may indicate an occupational exposure, many may also result from non-occupational exposures. Due to this uncertainty, sentinel health events are assessed in 2 categories.

Definite Sentinel Health Events: Conditions that are unlikely to occur in the absence of an occupational exposure. Asbestosis, a lung disease resulting from exposure to asbestos, is an example.

Possible Sentinel Health Events: Conditions such as lung cancer or carpal tunnel syndrome may or may not be related to occupation. Detailed occupational and non-occupational information is required to determine the work-relatedness of the illness. For example, lung cancer may result from asbestos exposure or smoking. Carpal tunnel syndrome may result from a job requiring typing or from a hobby such as playing the piano.



Seven diagnoses were identified as possible sentinel health events, 6 of which were due to carpal tunnel syndrome reported by 1 female and 4 male workers (Figure 14). They resulted in 274 lost calendar days for 2 Laborers and 3 Crafts workers, all of whom were aged 40 and older. The remaining



event, which was reported by an older male in the Scientists job category, accounted for an additional 28 days lost due to cancer of the bladder.

No definite sentinel health events were identified in 2001.

Figure 14. Characteristics of SHEOs by Gender

	Total Number of SHEO Diagnoses		Total Number of Days Absent	
	Men	Women	Men	Women
Definite	0	0	0	0
Possible	6	1	281	21
Total	6	1	281	21

Disabilities Among Active Workers

There were no disability data reported among ORNL workers in 2001.

Deaths Among Active Workers

There were no death data reported among ORNL workers in 2001.

OSHA-Recordable Events

The Occupational Safety and Health Administration (OSHA) requires employers to maintain a record of occupational injuries and illnesses that have occurred among employees and to make that information available to OSHA on request. Employers maintain the information from these OSHA-recordable events in the OSHA 200 Log. OSHA-recordable events differ from health events captured through return-to-work clearances in at least 2 important respects: 1) they do not necessarily result in days lost from work, and 2) they are usually accompanied by a specific determination that they are work-related.

The distribution of OSHA-recordable events by gender is shown in Figure 15 and by job category in Figure 16. There were 35 OSHA-recordable events among women and 100 among men. The rate of OSHA-recordable events was the same for men and women (3 per 100 workers). The number of lost and restricted workdays increased with age for men aged 30 or older; there were no lost and restricted workdays reported for males under 30 years old. Women aged 30-39 had the highest average number of lost and restricted workdays (28 days), while women aged 16-29 had the lowest average number of lost and restricted workdays (5 days).

Figure 15. OSHA-Recordable Events by Gender and Age

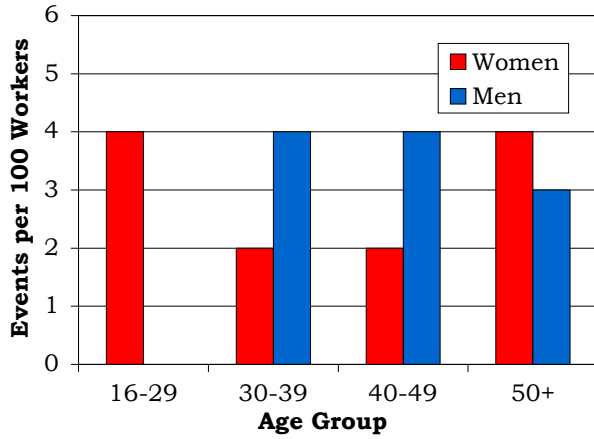
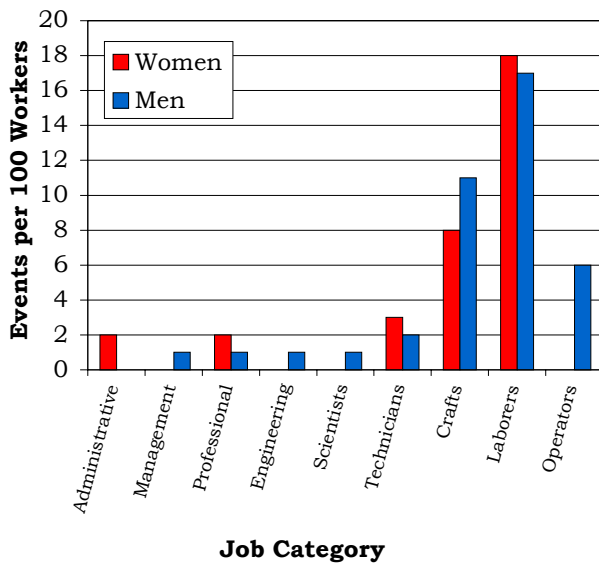


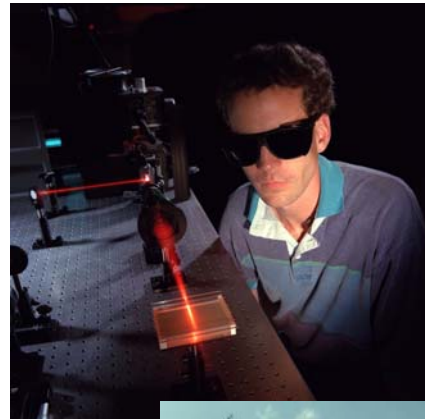
Figure 16. OSHA-Recordable Events by Job Category and Gender



Men had higher rates of OSHA-recordable events than did women in the Crafts job category. Women in the Management, Engineering, Scientists, and Operators categories and men in the Administrative category did not report any OSHA events. The Laborers had the highest rate of OSHA events among women and men (18 per 100 workers and 17 per 100 workers, respectively). The next highest rates for both men and women were among the Crafts workers (11 per 100 male

workers and 8 per 100 female workers); however, the high rate for female Crafts workers was based on 1 event.

The average number of workdays lost or with restricted activity due to an OSHA event was 18 days for men and 13 days for women. Workers in the Operators job category had the highest average number of lost or restricted workdays among male workers (62 days). Four male Operators reported 4 OSHA events, resulting in 249 lost and restricted workdays due to various sprains and strains. Among women, the Laborers group averaged the highest number of lost or restricted workdays (29 days). This was based on 13 OSHA events, accounting for 374 lost or restricted workdays.



Diagnostic and Accident Categories for OSHA-Recordable Events

The 135 OSHA events recorded on the OSHA 200 Logs contained 55 diagnoses among women and 156 diagnoses among men (Figure 17).



Injuries accounted for 51 percent of the diagnoses reported among women, the most common of which were sprains and strains (43 percent). Among men,

injuries accounted for 63 percent of the diagnoses reported, again primarily due to sprains and strains (49 percent). Open wounds (16 percent) were also frequently reported among men. The second most common type of OSHA-recordable diagnoses among workers were conditions involving the muscles and skeleton, frequently involving pain, soreness, and inflammation in the joints and muscles for both women (61 percent) and men (52 percent).

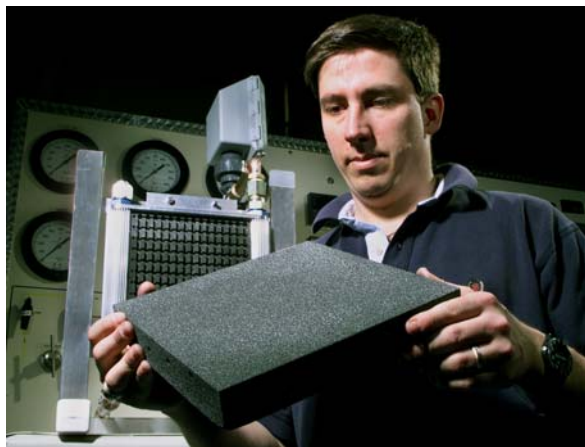


Figure 17. OSHA-Recordable Diagnoses by Diagnostic Category and Gender

Diagnostic Category	Gender	
	Women	Men
Benign Growths	0	1
Digestive	0	2
Muscles & Skeleton	23	27
Nervous System	0	7
Respiratory	1	1
Skin	0	4
Unspecified Symptoms	3	15
Injury	28	99
Fractures – Neck, Trunk	0	1
Fractures – Upper Limb	1	1
Fractures – Lower Limb	1	1
Dislocations	1	2
Back Sprains & Strains	7	29
Other Sprains & Strains	5	20
Open Wounds – Head, Neck, Trunk	0	4
Open Wounds – Upper Limb	5	10
Open Wounds – Lower Limb	0	2
Superficial Injuries	1	8
Bruises	4	8
Foreign Bodies Entering Orifice	0	2
Burns	2	6
Poisonings by Drugs	1	0
Adverse Reactions to Non-Medical Substances	0	5

Ninety-nine percent (133) of the 135 OSHA events were described as “an accident” in the OSHA logs (Figure 18). The majority of events were described as “other accidents,” a broad category including 83 percent of the accidents among women and 79 percent among men. Overexertion and strenuous movements were responsible for 66 percent of the “other accidents,” followed by being struck by an object (11 percent) and cutting/piercing instrument/objects (7 percent). After “other accidents,” falls were the second most common type of accident (11 percent).

Figure 18. OSHA-Recordable Accidents by Type and Gender

Accident Category	Gender	
	Women Number of Accidents	Men Number of Accidents
Motor Vehicle Traffic	0	1
Motor Vehicle Non-Traffic	0	2
Overdose/Wrong Drug	1	0
Poisoning – Non-Medicinal	0	4
Falls	5	10
Natural/Environmental Factors	0	1
Submersion/Suffocation/ Foreign Bodies	0	3
Other Accidents	29	77
Struck by an Object	2	10
Caught Between Objects	2	3
Machinery	1	1
Cutting/Piercing Instrument/Object	1	6
Hot, Corrosive, or Caustic Material/Steam	2	2
Overexertion/Strenuous Movements	18	52
Repetitive Trauma	3	3
Total	35	98



Rates of OSHA-Recordable Events

The rates of all OSHA-recordable events by age and job categories and gender are shown in Figures 19 and 20. The rates for younger and older female workers tended to be higher than male workers in most job categories. Women in the Scientists/Engineering job category reported no OSHA-recordable events. The OSHA-recordable rates among both men and women were highest among Crafts/Laborers workers. Most of the OSHA health conditions involved injury. When the rate for OSHA-recordable injuries was considered separately from other OSHA-recordable health conditions, the Crafts/Laborers workers had the highest rates for both men and women workers. These workers accounted for 15 percent of the work force and 62 percent of the OSHA-recordable events.

Laborers were 9 times more likely to suffer a back sprain or strain and almost 9 times more likely to report a sprain or strain to areas other than the back than were other groups of workers. Crafts workers were at almost 3 times greater risk of a back sprain or strain and almost 8 times greater risk of suffering a sprain or strain to areas other than the back. Operators were also at a greater risk of reporting a sprain or strain to the back (5 times). Crafts workers were almost 8 times and Laborers 7 times more likely to report conditions affecting the muscles and skeleton. Laborers were at an increased risk of sustaining an open wound to the upper limb (almost 12 times) and reporting bruises (almost 23 times).

Figure 19. OSHA-Recordable Rates by Age and Job Categories Among Women, All Diagnoses Combined

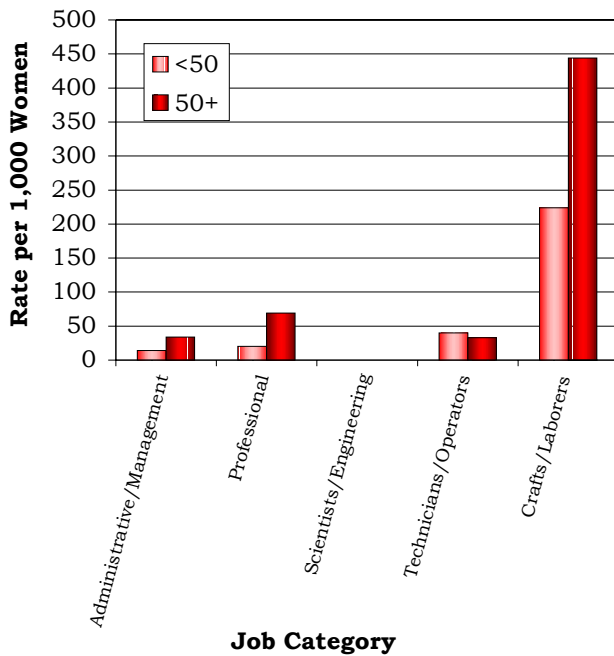
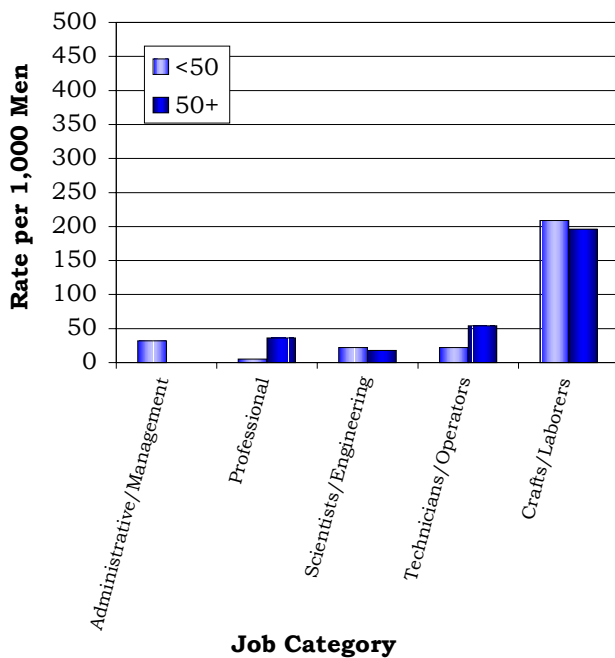


Figure 20. OSHA-Recordable Rates by Age and Job Categories Among Men, All Diagnoses Combined



Time Trends for OSHA-Recordable Events

The age-adjusted OSHA-recordable rates from 1999 to 2001 are shown in Figure 21. We found no consistent trends in rates for women in most job categories over the 3-year period. The exceptions were in the Crafts and Laborers worker groups. Large increases in the rate among women in the Laborers group and large decreases in the rate among women in the Crafts job category were likely to be related to fluctuations in rates associated with small numbers of workers in these job categories. Female workers in the Management, Scientists, Operators, and Unknown job categories reported events in only 1 of the 3 years from 1999 to 2001.

No consistent trends were seen for men during the 3-year period. Administrative male workers did not report any OSHA-recordable events in 2001.

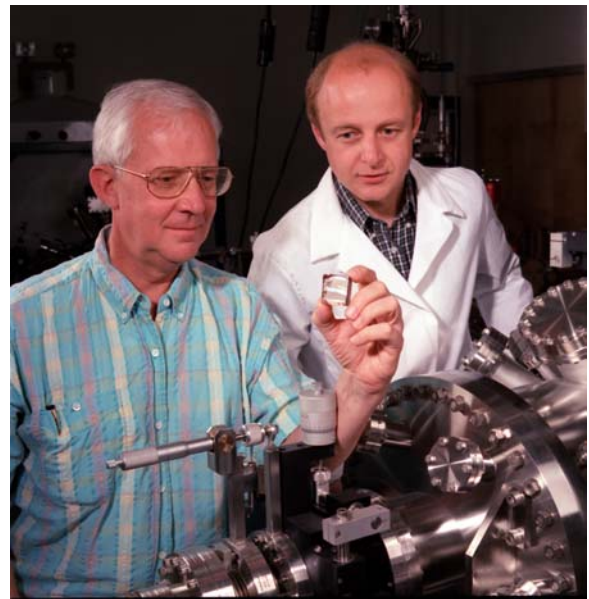
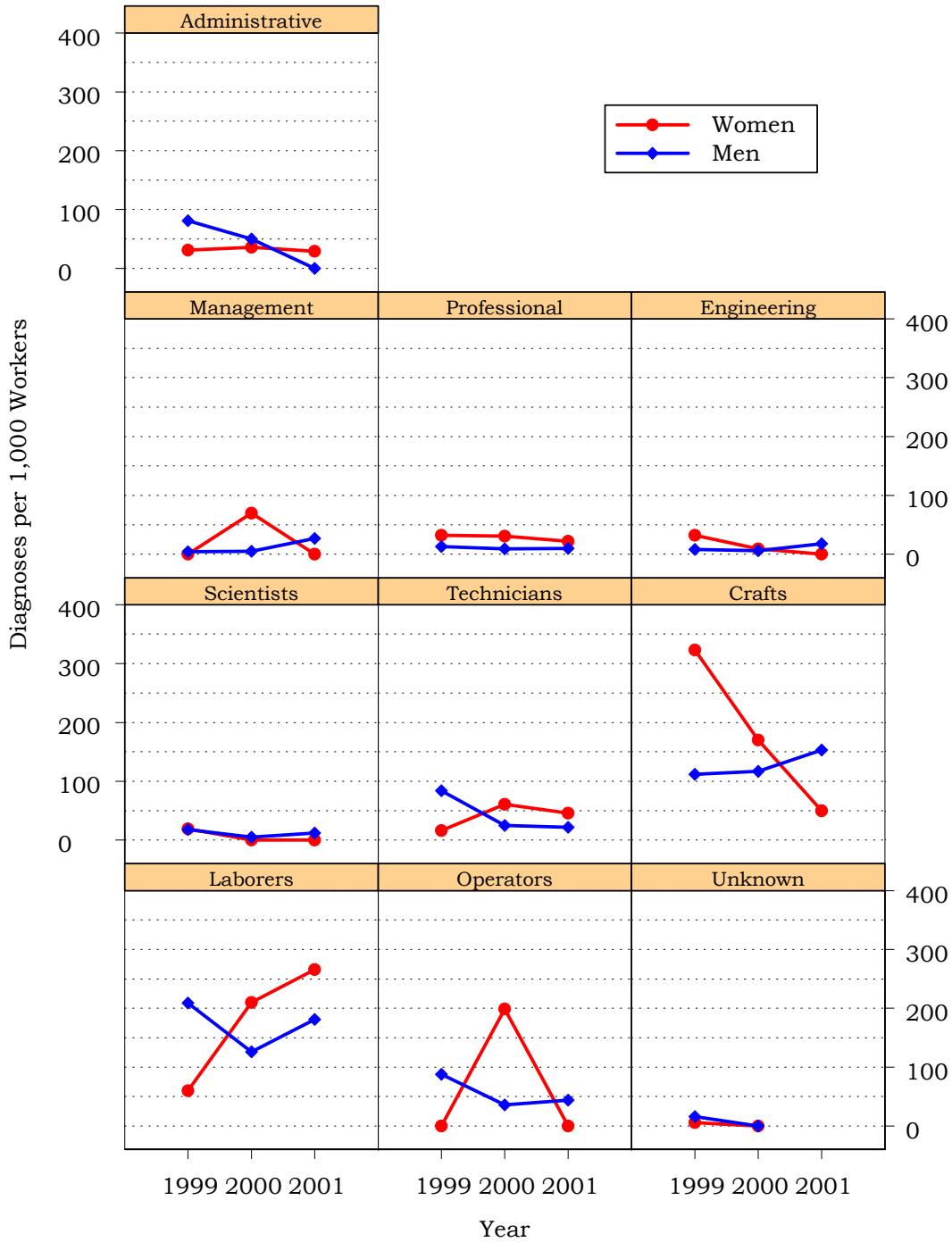


Figure 21. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Women and Men by Job Category from 1999 to 2001



Note: Unknown job category had no employees in 2001 only.

Glossary

Adjustment: A mathematical procedure for rates in which the effects of differences of a characteristic (such as age or gender) between groups have been removed. The purpose of adjustment is to allow comparisons between 2 or more groups with the effect of the differences for the characteristic removed.

Age-Adjusted Rate: A rate that has been mathematically adjusted to account for the effects of differences in the age composition between groups.

Age-Specific Rate: A rate that is calculated for a specific age group (e.g., 16 to 29 years old). Only people in the specific age group are included in the calculation of the rate.

Confidence Interval: A range of values determined by the degree of random variability in the data. The width of the confidence interval is affected by the size of the group being studied and how often the event whose true value is sought occurs. Generally, as the size of the group or the frequency of the event increases, the width of the confidence interval decreases. The level of confidence, for example a 95 percent confidence level, indicates the percentage (e.g., 95 percent) of time that the true value is expected to fall within the confidence interval if the mathematical procedure is repeated 100 times.

Demographics: Characteristics of human populations related to their size, density, age distribution, and vital status.

Diagnosis (diagnoses): Identification of a disease or health condition from signs and symptoms.

Diagnosis Rate: The number of occurrences of a given disease or health condition observed during a given time period per the number of workers at risk of getting that disease during that time period. It is usually multiplied by 100 or 1,000 to produce a rate expressed as a convenient number.

Diagnostic Category: A particular type of disease, a group of related health conditions, or diseases that all affect the same organ system.

Epidemiologic Surveillance: The ongoing evaluation of the health of a human population which is based on the collection and interpretation of demographic and health information for that population.

Epidemiology: The study of the distribution and determinants of diseases and health conditions in human populations.

ICD-9-CM Code: An abbreviation for the *International Classification of Diseases, 9th Revision, Clinical Modification*. An internationally accepted standardized system for the classification of disease and health data collected from medical records.

OSHA: An acronym for the Occupational Safety and Health Administration.

OSHA Event: An abbreviation used throughout this report for an OSHA-Recordable Event.

OSHA-Recordable Event: An accident that occurs on the job and involves fatalities (regardless of time between injury and death), time lost from work, transfer of employment, medical treatment other than first aid, loss of consciousness, or restriction of work or motion. Also included is any diagnosed occupational health event reported to the employer that is neither fatal nor results in workdays lost. By law, these events are recordable in the OSHA 200 Log.

Person-Year: A unit of measurement combining the number of people being studied with the time that each was observed equivalent to 1 person followed for 1 year. For example, 5 people followed for 1 year contribute 5 person-years, as do 10 people each followed for half a year.

Relative Risk: The ratio of the occurrence of a disease or health condition in 1 group compared with the rate of occurrence of that same disease or health condition in another group.

Explanation of Diagnostic Categories

Throughout this report, health conditions have been grouped into a number of diagnostic categories which come from the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). For the text of this report, the categories are abbreviated to make the report easier to read. The following table lists the abbreviated categories used throughout the annual report and the corresponding ICD-9-CM codes found in the supporting tables.

Abbreviated Categories Used in the Annual Report	ICD-9-CM Codes
Benign Growths	210-229 235-239
Blood	280-289
Cancer	140-208 230-234
Digestive	520-579
Endocrine / Metabolic	240-279
Existing Birth Conditions	740-759
Genitourinary	580-629
Heart / Circulatory	390-459
Infections / Parasites	001-139
Injury	800-999
Miscarriage	630-676
Muscles and Skeleton	710-739
Nervous System	320-389
Psychological	290-319
Respiratory	460-519
Skin	680-709
Unspecified Symptoms	780-799

ICD-9-CM Codes

All conditions	001-V82	All reported health events
Infectious and parasitic diseases	001-139	Diseases caused by bacteria, viruses, and parasites
• Intestinal infections	001-009	Infections of the bowel or gut
• Tuberculosis	010-018	TB in the lungs and other organs
• Zoonotic bacterial diseases	020-027	Bacterial diseases that animals transmit to humans
• Other bacterial diseases	030-041	Whooping cough, diphtheria, strep throat, and gangrene
• Human Immunodeficiency Virus (HIV) infection	042	AIDS
• Poliomyelitis and other non-arthropod diseases of the central nervous system	045-049	Viral meningitis (swelling of the layers covering the brain and spinal cord); viral encephalitis (swelling of the brain); and polio
• Viral diseases accompanied by exanthem	050-057	Diseases accompanied by rashes or blisters like chickenpox, measles, shingles, and herpes
• Arthropod-borne viral diseases	060-066	Encephalitis (swelling of the brain) caused by bites from virus-carrying ticks or mosquitoes
• Other diseases caused by viruses and chlamydiae	070-079	Viral hepatitis, mumps, rabies, and mononucleosis
• Rickettsioses and other arthropod-borne diseases	080-088	Rocky Mountain spotted fever, malaria, and lyme disease
• Other spirochetal diseases	100-104	Trench mouth and Weil's disease (jaundice caused by coil-shaped bacteria)
• Mycoses	110-118	Athlete's foot; fungal infections of fingernails and toenails; and thrush
• Helminthiases	120-129	Pinworms, tapeworms, roundworms, and whipworms

• Other infectious and parasitic diseases	130-136	Lice, chiggers, scabies, and mites
• Late effects of infectious or parasitic diseases	137-139	Side effects of TB, chickenpox, or polio even though the disease is no longer active
Malignant neoplasms	140-208, 230-234	All cancers, regardless of the part of the body affected
• Lip, oral cavity, and pharynx	140-149	Lip, mouth, throat, and tongue
• Digestive organs and peritoneum	150-159	Stomach, esophagus (tube that transports food to the stomach), intestines, colon, rectum, anus, liver, pancreas, and gallbladder
• Respiratory system and intrathoracic organs	160-165	Sinuses, throat, voice box, lungs, and heart
• Bone, connective tissue, skin, and breast	170-176	Bone, muscle, ligament, tendon, blood vessels, fat, skin, and breast
• Genitourinary organs	179-189	Kidney, bladder, and cervix, ovary, uterus, and prostate
• Other and unspecified sites	190-199	Eye, brain, and thyroid
• Lymphatic and hematopoietic tissue	200-208	Leukemia, lymphoma, Hodgkin's disease, multiple myeloma, lymphosarcoma, and reticulum cell sarcoma
• Carcinoma in situ	230-234	A cancer that is confined to the site of origin (has not spread to neighboring tissue)
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature	210-229 235-239	Tumors that are not cancerous or do not exhibit cancerous behavior, regardless of the part of the body affected
Endocrine, nutritional, and metabolic diseases and disorders of the immune system	240-279	Diseases affecting the hormone secreting glands and organs. Overactive thyroid; underactive thyroid; vitamin deficiency; diabetes; gout; and problems affecting the antibody producing system

Disorders of the blood and blood forming organs	280-289	Anemia and hemophilia (excludes leukemia)
Mental disorders	290-319	Psychiatric diagnoses - Non-psychotic disorders: depression; anxiety, fear, and stress disorders; alcoholism; drug dependence; and eating disorders, such as anorexia; Psychotic disorders: dementia, schizophrenia, and manic depression
Diseases of the nervous system and sense organs	320-389	Huntington's chorea; Alzheimer's and Parkinson's disease; epilepsy; multiple sclerosis; migraine; diseases of the eye, such as cataract and glaucoma
• Inflammatory diseases of the central nervous system	320-326	Bacterial meningitis (swelling of the layers covering the brain and spine); bacterial encephalitis (swelling of the brain); and brain and spinal abscesses
• Hereditary and degenerative diseases of the central nervous system	330-337	Alzheimer's and Parkinson's disease, tremors, and Huntington's chorea
• Other disorders of the central nervous system	340-349	Multiple sclerosis (MS), cerebral palsy, epilepsy, and migraine
• Disorders of the peripheral nervous system	350-359	Nerve disorders of the face, carpal tunnel syndrome, muscular dystrophy
• Disorders of the eye	360-379	Inflammation and ulcers of the eye and eyelid; detached retina; pink eye; problems with tear ducts; glaucoma; and cataracts
• Diseases of the ear and mastoid process	380-389	Infections of the outer, middle, or inner ear; ringing of the ears; hearing loss

Diseases of the circulatory system	390-459	Rheumatic fever, heart murmurs, heart attacks, angina, hardening of the arteries, varicose veins, hemorrhoids, and phlebitis
• Acute rheumatic fever	390-392	High fever and joint pain with possible heart damage
• Chronic rheumatic heart disease	393-398	Long lasting swelling and damage to the heart which results from rheumatic fever
• Hypertensive disease	401-405	High blood pressure
• Ischemic heart disease (Restricted blood flow to the heart)	410-414	Heart attack and angina
• Diseases of pulmonary circulation	415-417	Blood clots in the lung and pulmonary aneurysm (bulge that develops in the wall of the pulmonary artery, which is the artery that carries blood to the lungs)
• Other forms of heart disease	420-429	Swelling of the inner lining, middle lining, or sac enclosing the heart; heart failure; and irregular heartbeat
• Cerebrovascular disease	430-438	Stroke, bleeding in the brain, and blockage or low blood flow in blood vessels of the brain
• Diseases of the arteries and capillaries	440-448	Hardening of the arteries; aneurysm (bulge that develops in the walls of arteries); and blood clots
• Diseases of the veins, lymphatics, and other circulatory system diseases	451-459	Phlebitis (swelling of a vein), thrombophlebitis (swelling of a vein which has a blood clot), varicose veins, and hemorrhoids

Diseases of the respiratory system	460-519	Colds, sinusitis, laryngitis, pneumonia, influenza, chronic bronchitis, asthma, and emphysema
• Acute respiratory infections	460-466	Colds, sore throat, sinus infections, swollen tonsils, and bronchitis
• Other diseases of the upper respiratory tract	470-478	Allergies, hay fever, sinus infections, bronchitis, and sore throat that continue for a long time
• Pneumonia and influenza	480-487	“The flu” and pneumonia caused by a bacteria or virus
• Chronic obstructive pulmonary diseases and allied conditions	490-496	Emphysema and asthma
• Pneumoconiosis and other lung diseases caused by external agents	500-508	Black lung; miners’ asthma; asbestosis; silicosis; berylliosis; and conditions caused by chemical fumes and vapors
• Other diseases of the respiratory system	510-519	Pleurisy (swelling of the lining of the lungs), collapsed lung, and respiratory failure
Diseases of the digestive system	520-579	Diseases affecting the teeth and mouth, salivary glands, digestive tract, and the abdominal cavity. Examples include dental abscess, ulcers, appendicitis, hepatitis (excluding viral hepatitis), cirrhosis of the liver, gallstones, pancreatitis, abdominal hernia, and intestinal polyps
• Diseases of the oral cavity, salivary glands, and jaw	520-529	Tooth problems (too many, too few, abnormal shape or size, cavities, bleeding gums, toothaches), and infections and swelling of the mouth, jaw, and tongue
• Diseases of the esophagus, stomach, and duodenum	530-537	Ulcers of the esophagus (tube that transports food to the stomach), stomach, and small intestine; indigestion; and uncontrollable vomiting

• Appendicitis	540-543	Swelling of the appendix (rupture, surgery, or both may result)
• Hernia of the abdominal cavity	550-553	Ruptures of the groin and diaphragm (muscle which separates the chest area from the lower part of the trunk)
• Non-infectious enteritis and colitis	555-558	Crohn's disease and swelling of the intestine and colon
• Other diseases of the intestines and peritoneum	560-569	Irritable bowel syndrome, blockage of the intestine, constipation, and diarrhea
• Other diseases of the digestive system	570-579	Diseases of the liver, gallbladder, and pancreas; hepatitis; blood in stool; and bleeding in the stomach and intestine
Diseases of the genitourinary system	580-629	Diseases affecting the kidneys, the prostate, and testes; benign breast diseases; infertility (male and female); diseases of the ovary; pelvic inflammatory disease; and menstrual disorders
• Nephritis, nephrotic syndrome, and nephrosis	580-589	Swelling of the kidney; swelling of the small blood vessels in the kidney; and kidney failure
• Other diseases of the urinary system	590-599	Swelling and infection of the kidney and bladder; kidney stones; and difficulty urinating
• Diseases of the male genital organs	600-608	Enlarged prostate; swelling of the scrotum and prostate; and abscess of the prostate
• Disorders of the breast	610-611	Benign tumors, cysts, and infections of the breast
• Inflammatory disease of the female pelvic organs	614-616	Swelling of the uterus, ovary, fallopian tubes, or cervix
• Other diseases of the female genital tract	617-629	Conditions associated with menopause and postmenopause; PMS; infertility; and cramps

Complications of pregnancy, childbirth, and the puerperium	630-676	Miscarriage; complications of pregnancy, such as hemorrhage; pregnancy-related high blood pressure; preeclampsia; and premature labor or other complications of labor
• Ectopic and molar pregnancy	630-633	Development of fetus outside the uterus and growth of cysts
• Other pregnancy with abortive outcome	634-639	Miscarriage and complications associated with miscarriage
• Complications mainly related to pregnancy	640-648	Abnormal bleeding and possible miscarriage; infections; high blood pressure caused by pregnancy; and premature labor
• Normal delivery, and other indications for care in pregnancy, labor, and delivery	650-659	Delivery requiring little or no assistance; multiple births; breech birth; and problems of the fetus or placenta which affect care of mother
• Complications occurring mainly in the course of labor and delivery	660-669	Long labor; unusually fast delivery; and abnormal bleeding after delivery
• Complications of the puerperium	670-676	Infections of the breast; blood clot in lung; and varicose veins
Diseases of the skin and subcutaneous tissue	680-709	Acne, cellulitis, sunburn, psoriasis, and seborrhea
• Infections of the skin and subcutaneous tissue	680-686	Abscesses, boils, hair-containing cysts, and pus-filled blisters
• Other inflammatory conditions of skin and subcutaneous tissue	690-698	Skin rashes caused by detergents, oils, greases, solvents, sun, food, drugs, or medicine
• Other diseases of the skin and subcutaneous tissue	700-709	Corns, calluses, heat rash, swollen hair follicles, acne, and ingrown fingernails and toenails

Diseases of the musculoskeletal system and connective tissue	710-739	Arthritis, systemic lupus erythematosus, ankylosing spondylitis, herniated intervertebral disk (“slipped disk”), lumbago, sciatica, rheumatism, tendonitis, and osteoporosis
• Arthropathies and related disorders	710-719	Arthritis; joint pain and stiffness; and other diseases of the connective tissue which supports and connects internal organs, forms bones and blood vessel walls, and attaches to bones
• Dorsopathies	720-724	Swelling of the spine; herniated, slipped, and ruptured disk; rheumatoid arthritis of the spine; lumbago; and sciatica
• Rheumatism, excluding the back	725-729	Swelling and degeneration of joints, muscles, tendons; tennis elbow; and bursitis
• Osteopathies, chondropathies, and acquired musculoskeletal deformities	730-739	Fracture caused by bone disease; osteoporosis; curvature of the spine; flat foot; hammer toe; and development of deformities of the nose, toes, feet, legs, arms, and hands
Congenital anomalies	740-759	Spina bifida; cleft palate; harelip; and various chromosomal anomalies, such as Klinefelter’s syndrome
Certain conditions originating in the perinatal period	760-779	Maternal high blood pressure; maternal malnutrition; ectopic pregnancy; breech birth; fetal malnutrition or slow growth; injuries related to birth trauma; and perinatal jaundice
Symptoms, signs, and ill-defined conditions	780-799	Blackout, chills, dizziness, fatigue, pallor, abnormal weight loss, undiagnosed chest pain, and heartburn

• Symptoms	780-789	Hallucinations, fainting, convulsions, dizziness, fatigue, fever, sleep disturbance, rash, headache, sore throat, chest pain, nausea, vomiting, and heartburn
• Non-specific abnormal findings	790-796	Abnormal x-ray, blood, stool, and urine test results
• Ill-defined and unknown causes of morbidity and mortality	797-799	Senility; asphyxia; respiratory arrest; nervousness; and unexplained death within 24 hours of onset of symptoms
Injury and poisoning	800-999	Dislocation of joints; sprains and strains of associated muscles; concussions; bruises; cuts; internal injuries from crushing, puncture, tearing, or blunt impact; burns; blisters; poisoning; frostbite; heatstroke; and complications of medical or surgical care
• Fractures, all sites	800-829	Cracks or breaks of any bone
• Dislocations	830-839	Separation of a bone from its normal socket or joint
• Sprains and strains of joints and adjacent muscles	840-848	Strains are injuries to muscle from overuse or stretching the muscle beyond its normal limit; sprains are injuries involving tearing or overextending the ligaments of a joint
• Intracranial injuries excluding those with skull fractures	850-854	Concussions; internal bruises; and bleeding within the head without a fracture of the bones of the skull
• Internal injuries of the thorax, abdomen, and pelvis	860-869	Bruising, crushing, tearing, or rupturing the chest, abdomen, and pelvis and the organs within these areas of the body
• Open wounds	870-897	Animal bites; cuts; lacerations; punctures; and amputations, excluding the arteries and veins

<ul style="list-style-type: none"> • Other injuries and late effects of external causes 	900-999	Miscellaneous injuries, including injuries to the arteries and veins; problems that occur an extended period of time after the injury has taken place ("late effects"); superficial bruises and abrasions; burns; post-injury shock; poisoning; toxic side effects of chemicals; heatstroke; electrocution; and altitude sickness
<p>Supplementary classifications related to personal or family history of disease</p>	V10-V19	Covers situations in which the person is not ill or injured but has a personal or family history of problems, such as cancer, mental illness, allergies, or arthritis that may affect his or her risk of illness
<p>Supplementary classifications related to health care for reproduction and child development</p>	V20-V28	Problems related to pregnancy, postpartum care, contraception, outcome of delivery, and physical development of child
<p>Contact with health services for reasons other than illness or injury</p>	V50-V59	Care for workers who have been treated previously for an illness or injury that is no longer present but who receive care to complete treatment or prevent recurrence

NOTES