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Y-12 National Security Complex Annual Epidemiologic Surveillance Report

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2001 Epidemiologic Surveillance Report

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

www.eh.doe.gov/health/epi/surv

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Y-12 National Security Complex 2001

At A Glance

Illness and Injury

Nuclear Workers had the highest absence rate, and Engineering, Scientific, and Health Care workers had the lowest absence rate for both men and women.

Women lost 15,762 calendar days due to injury and illness. This 9 percent increase in the number of lost calendar days compared with 2000 occurred despite almost no change in the number of absences reported from 2000. The change suggests that the average length of absence increased among women.

Men lost 26,690 calendar days due to injury and illness. The 6 percent decrease in days lost paralleled the 5 percent decrease in the number of absences reported from 2000 to 2001, suggesting that the average length of absence did not change substantially.

Both men and women classified as Nuclear Workers had the highest rates of illness and injury, followed by workers in the Crafts/Operators/Laborers and General Workers categories. By contrast, workers in the Management/Professional/ Administrative and Engineering, Scientific, and Health Care/Technical occupations tended to have substantially lower rates. These variations in rates have been seen consistently since 1999. The difference is believed to reflect, in part, more complete reporting of absences by workers in bargaining unit occupations than is typical among salaried workers.

Crafts workers had over twice the risk of other groups for reporting a heart/circulatory condition. They tended to be at greater risk of diseases of the arteries and veins but had a lower occurrence of high blood pressure and restricted blood flow to an artery.

Among women and men, the Nuclear Workers group had the highest rate of respiratory disease. Workers in the Crafts and Nuclear Workers categories were 2 to 3 times as likely to report these conditions compared with other workers.

Crafts workers and Nuclear Workers were at least twice as likely to report an injury as other workers. Crafts workers were over 5 times more likely than other workers to report a fractured leg and 4 times more likely to report a dislocation or back sprain or strain. Nuclear Workers were over 4 times as likely as other workers to report a dislocation.

The rate of all illnesses and injuries combined tended to increase over the 4-year period among men. Among women, the rate increased steadily.

OSHA

The overall rate of OSHA-recordable events in 2001 was the same as in 2000 for men and women (3 per 100 workers).

Overall, the OSHA-recordable rates for Savannah River Site workers were highest in the combined Crafts/Operators/Laborers and General Workers group. Workers in this group comprised 30 percent of the work force but reported 63 percent of the OSHA events.

Among men, the Crafts and Laborers and General Workers groups had the highest rate of OSHA events (7 per 100 workers). Among women, Laborers and General Workers had the highest rate of OSHA events (9 per 100 workers).

Sprains and strains were the most common type of OSHA-recordable injury among both men and women, accounting for 34 percent of all work-related injuries. Other than injuries, conditions affecting the muscles and skeleton were the most common diagnoses (14%).

The number of restricted/lost workdays among men increased from 456 days in 2000 to 1,531 in 2001, while the number among women decreased from 579 to 340 days. Among men, 4 events accounted for 508 of the 1,531 days. All 4 of these were due to overexertion and strenuous movements.

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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 summarizes epidemiologic surveillance data collected from the Y-12 National Security Complex from January 1, 2001 through December 31, 2001. The data were collected by a coordinator at Y-12 and submitted to DOE's Epidemiologic Surveillance Data Center, located at Oak Ridge Institute for Science and Education, where quality control procedures and preliminary data analyses were carried out. The analyses were interpreted and the final report prepared by the DOE Office of Occupational Health.

Epidemiologic surveillance began at Y-12 in 1998. The information presented in this report provides highlights of the data analyses conducted. Additional supporting tables are posted on the Office of Occupational Health Web site **(www.eh.doe.gov/health/epi/surv)** or are available by request. The report includes the following main sections: 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. The report also includes a section on time trends that provides comparative information on the health of the work force from 1998 to 2001.

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 Y-12 with other DOE sites should be made with caution. In addition, many factors can affect the completeness and accuracy of health information reported by the sites, thereby affecting the observed patterns of illness and injury.

Site Overview

The Y-12 National Security Complex, formerly known as the Y-12 Plant, is a DOE facility located in Oak Ridge, Tennessee on 811 acres within the Oak Ridge Reservation. Its 250 buildings contain laboratory, research and development, machining, dismantlement, and storage areas. The site was established in 1943 to produce highly enriched uranium as part of the Manhattan Project. After World War II, the plant's focus changed to manufacturing components for nuclear weapons. Construction of the plant started in February 1943; enriched uranium production started in November of that year. Plant construction, however, was not entirely finished until 1945. At its peak during World War II, the plant employed approximately 22,000 workers.

For more than 50 years, the complex has been one of the DOE weapons complex's manufacturing facilities. Every weapon in the stockpile has some components manufactured at Y-12. Today, the mission of the complex is to meet the needs of DOE, other agencies, and private industry through production of complex components and assemblies; safe and secure storage of nuclear materials; dismantlement, disposition, evaluation, and assessment of weapon components; transitioning the plant size to meet DOE needs; transfer of technology to private industry; maintenance of DOE capabilities; and support of other national priorities.

The nation's first DOE Defense Programs deployment/user facility was located at the Y-12 National Security Complex, and the complex continues to be the home of 8 user centers. Such designation allows easier access to the centers, where manufacturers can conduct their own research using unique machinery available at Y-12.

Y-12 was placed on the National Priorities List under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 1989. The CERCLA activities are covered under a 1992 tri-party agreement among the Environmental Protection Agency, DOE, and the Tennessee Department of Environment and Conservation. This tri-party, umbrella agreement established a procedural framework and schedule to investigate and remediate contaminant releases and potential releases at the Oak Ridge Reservation in accordance with CERCLA requirements.

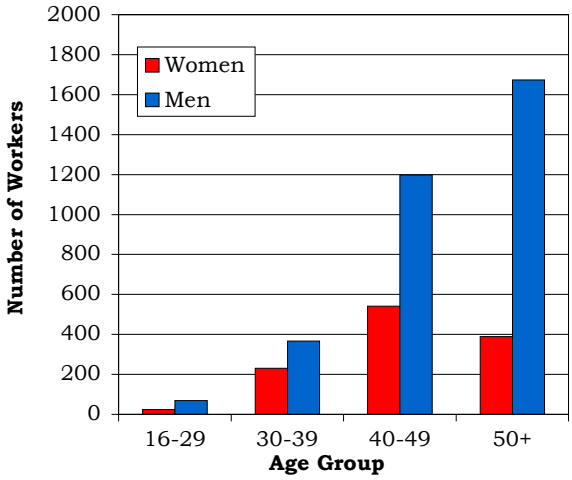
In 2001, the Y-12 National Security Complex's Pollution Prevention Program won the Tennessee Association of Business's 2001 TAB Environmental Award. The TAB award recognizes businesses that have demonstrated outstanding achievement toward environmental protection and enhancement. Since 1993, when the program was started, Y-12 has reduced overall waste generation by 86 percent. With 40 additional projects in various stages from planning to implementation, Y-12 continues to pursue aggressive pollution prevention activities both internally and externally through management support of pollution prevention policy; affirmative procurement, recycling, and program procedures; cross-organizational teams and groups; and outreach activities to schools and other groups.

BWXT Y-12, a limited liability enterprise of BWX Technologies Inc. and Bechtel National Inc., operates the Y-12 National Security Complex for the National Nuclear Security Administration. BWXT Y-12's goals are the safe and efficient operation of the Y-12 Complex and modernizing the facilities to ensure their long-term capability to meet national security missions.

The Y-12 Work Force - 2001

A total of 4,492 Y-12 employees were included in epidemiologic surveillance in 2001, a decrease of 557 workers from 2000. There were 1,186 (26 percent) women and 3,306 (74 percent) men in the work force. The average age of Y-12 workers was 49 years for men and 46 years for women. The gender and age distribution of the 2001 work force is shown in Figure 1.

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 Y-12 were grouped together into 9 job categories because there were either too few workers or too few health events within a particular job title, thereby limiting the type of analyses that could be conducted. Men and women were not distributed equally among the various job categories. Almost 30 percent of female employees were Administrative workers, while only 1 percent of men were in this category. The largest percentage of men (25 percent) were Crafts workers, followed by 24 percent of men in the Engineering, Scientific, and Health Care job category.

Figure 2. The Work Force by Job Category and Gender

Job Category	Women	Men
Management	105 9%	526 16%
Engineering, Scientific, & Health Care	190 16%	796 24%
Professional	235 20%	335 10%
Administrative	333 28%	22 1%
Technical	127 11%	225 7%
Crafts	31 2%	837 25%
Operators	8 1%	117 3%
Nuclear Workers	61 5%	185 6%
Laborers & General Workers	96 8%	263 8%

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 therefore are 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 9 women with 9 reported absences due to pregnancy and 3 female and 2 male workers with reported absences due to elective surgical procedures not related 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 936 absences reported in 2001 were similar to the 971 absences reported in 2000. This reflects the fact that the size of the Y-12 work force has remained relatively stable over the period. The absence rate increased among men and women over the 4-year period (from 14 per 100 workers for men and 22 per 100 workers for women in 1998 to 18 per 100 workers for men and 28 per 100 workers for women in 2001).

The 5-day absence rate among women was 28 per 100 workers (337/1,186), and among men it was 18 per 100 workers (599/3,306). These rates are very similar to the rates in 2000 (26 per 100 women and 17 per 100 men). The rate of 5-day absences among both men and women increased with age (Figure 3). The youngest workers reported no absences in 2001. The average length of absence was 45 days for men and 47 days for women (Figure 4). The average length of absence increased with age among men. Among women, duration of absence was not related to age. Contrary to the youngest workers having the longest absences in 2000, this age group did not report any absences in 2001.

Figure 3. Absence Rate by Gender and Age

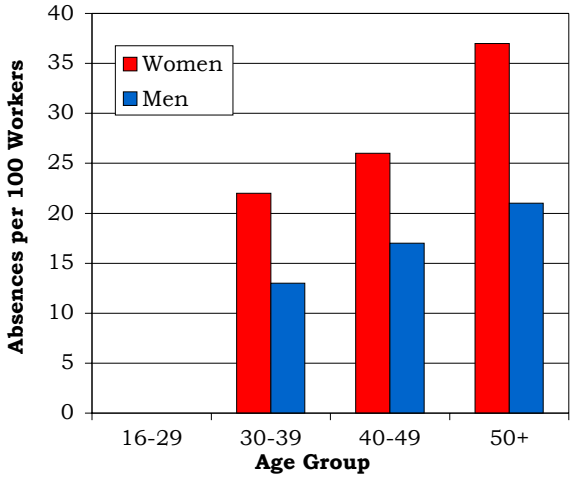
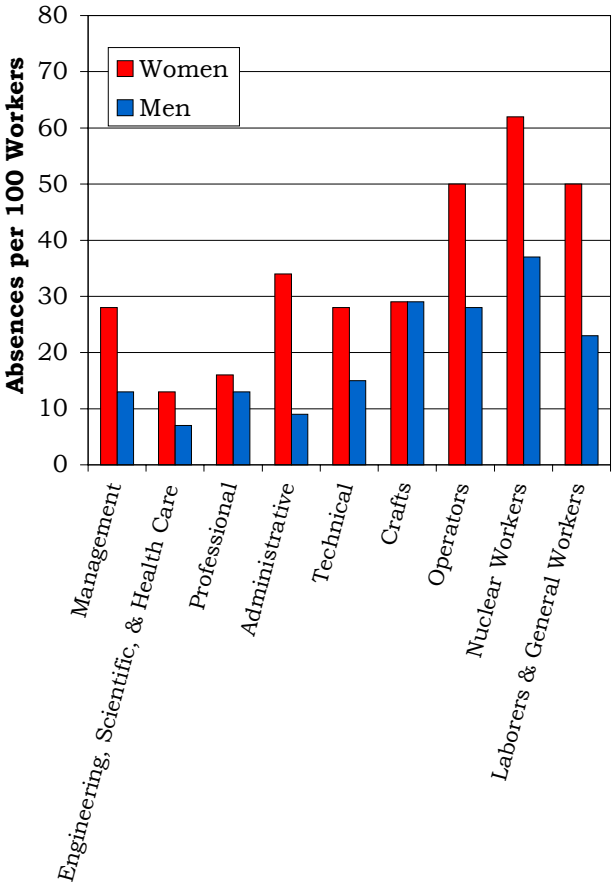


Figure 4. Number of Days Absent by Gender and Age

Gender	Age	Number of Absences	Number of Days Absent	Average Number of Days Absent
Women	16-29	0	0	0
	30-39	51	2,670	52
	40-49	141	5,796	41
	50+	145	7,296	50
	Total	337	15,762	47
Men	16-29	0	0	0
	30-39	46	1,545	34
	40-49	206	8,066	39
	50+	347	17,079	49
	Total	599	26,690	45

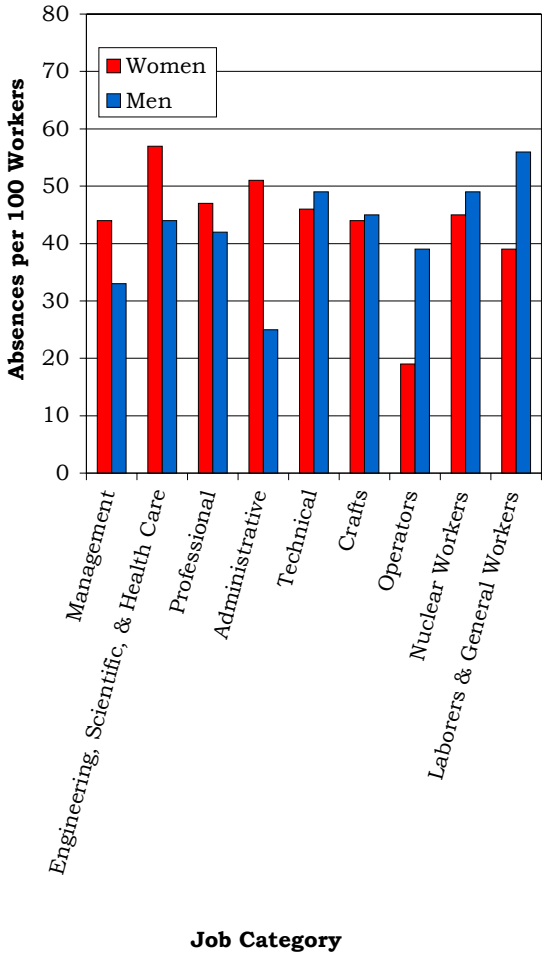
The rate of 5-day absences due to illness or injury varied by job category for both men and women (Figure 5). Women had a higher rate of absence than did men within the same job category, except for Crafts workers. Men and women in the Crafts group had the same absence rate. Nuclear Workers had the highest absence rate and Engineering, Scientific, and Health Care workers had the lowest rate for both men and women.

Figure 5. Absence Rate by Job Category and Gender



Within those job categories that were administrative and professional, women had longer absences than men. The opposite is true for job categories that were related to maintenance and production (Figure 6). The Engineering, Scientific, and Health Care group, which had the lowest absence rate among women, had the longest average duration of absence, 57 days. Female Operators had the shortest average absence duration, 19 days. Among men, Administrative workers had the shortest average duration of absence, 25 days. Laborers and General Workers averaged the longest absences, 56 days.

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



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 section of this report.

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 407 diagnoses and men reported 705 diagnoses in 2001. The most frequently reported diagnoses varied little by gender. Among both men and women, the most common diagnoses were the same as in 2000: disorders of the muscles and skeleton and respiratory conditions.

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	10	258	6	159
Blood	2	58	2	221
Cancer	13	1,427	15	788
Digestive	32	1,760	78	2,153
Endocrine/ Metabolic	9	595	14	616
Existing Birth Condition	0	0	3	492
Genitourinary	33	1,402	23	387
Heart/ Circulatory	25	1,593	63	3,493
Infections/ Parasites	7	247	10	199
Injury	32	1,648	96	4,838
Miscarriage	1	63	NA	NA
Muscles & Skeleton	92	5,416	160	9,829
Nervous System	27	882	34	1,364
Psychological	21	1,395	19	1,275
Respiratory	70	1,061	135	1,996
Skin	8	126	6	81
Unspecified Symptoms	25	628	41	1,252

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

Women lost 15,762 calendar days due to injury and illness. This represents a 9 percent increase in the number of lost calendar days compared with 2000, despite almost no change in the number of absences reported from 2000 (343) to 2001 (337). Muscles and skeleton conditions (23 percent), respiratory diseases (17 percent), genitourinary disorders (8 percent), digestive conditions (8 percent), and injuries (8 percent) accounted for 64 percent of all reported diagnoses among women. Thirty percent of the muscles and skeleton conditions were disk and back problems, followed by rheumatism (28 percent) and joint disorders (26 percent). Upper respiratory type infections accounted for 76 percent of the respiratory diagnoses. Seventy-three percent of the genitourinary conditions were related to female reproductive disorders; 41 percent of digestive disorders were other digestive disorders, primarily related to the gallbladder; and 41 percent of injuries were sprains and strains.

Men lost 26,690 calendar days due to injury and illness. The 6 percent decrease in the number of days lost is similar to the 5 percent decrease in the number of absences reported from 2000 to 2001. Fifty-six percent of all reported diagnoses among men were due to muscles and skeleton conditions (23 percent), respiratory diseases (19 percent), and injuries (14 percent). Upper respiratory-type infections accounted for 76 percent of the respiratory conditions. Thirty-seven percent of muscles and skeleton conditions were back problems and disk disorders, 31 percent affected the joints (primarily knee derangement and other joint disorders), and 24 percent were rheumatism. Frequently reported injuries included sprains and strains (52 percent) and fractures (20 percent).

The previously mentioned diagnoses did not vary by age. Conditions affecting the respiratory system, diagnoses of the muscles and skeleton, and injuries were the most frequently reported categories

for men aged 30 or older. No diagnoses were reported among men under 30 years old.

Among women, the most frequently reported diagnoses were also consistent among the various age groups. Respiratory diseases, muscles and skeleton disorders, and genitourinary disorders were the most frequently reported diagnoses by women 30 years of age or older. There was only 1 exception, women aged 50 or older. Among these women, heart/circulatory diagnoses were more frequently reported than genitourinary disorders. Eleven women reported 14 diagnoses in 13 absences. Sixty-four percent of the diagnoses were related to hypertension (high blood pressure) or ischemic heart disease (restricted blood flow to an artery). As with men, women younger than 30 years old did not report any diagnoses.

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

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

Job Category	Men	Women
Management	Digestive (19) Muscles & Skeleton (16) Respiratory (13)	Muscles & Skeleton (8) Respiratory (5) Injury (4)
Engineering, Scientific, & Health Care	Respiratory (20) Digestive (11) Muscles & Skeleton (10)	Muscles & Skeleton (9) Digestive (6) Genitourinary (6)
Professional	Muscles & Skeleton (12) Injury (9) Digestive (7)	Digestive (7) Respiratory (7) Benign Growths (6) Muscles & Skeleton (6)
Administrative	Heart/Circulatory (1) Muscles & Skeleton (1)	Muscles & Skeleton (29) Respiratory (24) Injury (15)
Technical	Muscles & Skeleton (10) Digestive (6) Injury (6)	Muscles & Skeleton (13) Unspecified Symptoms (6) Heart/Circulatory (5) Nervous System (5)
Crafts	Respiratory (56) Muscles & Skeleton (54) Injury (52)	Psychological (3) Respiratory (3) Heart/Circulatory (2) Muscles & Skeleton (2)
Operators	Muscles & Skeleton (12) Respiratory (7) Heart/Circulatory (5)	Respiratory (2) Unspecified Symptoms (2) Injury (1)
Nuclear Workers	Muscles & Skeleton (24) Respiratory (18) Injury (11)	Muscles & Skeleton (18) Respiratory (10) Heart/Circulatory (4)
Laborers & General Workers	Muscles & Skeleton (21) Respiratory (12) Injury (7)	Respiratory (13) Muscles & Skeleton (7) Injury (6) Psychological (6)

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 96 and women reported 32 diagnoses involving injuries during 2001. Men, therefore, reported 3 times as many injuries as did women. As there were almost 3 times as many men than women at Y-12, it seems reasonable to expect more injuries among men than women. Does this mean that men were at greater risk of injuries than were 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 injury rate for each gender. Rates are calculated by dividing the number of 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:

96 injury diagnoses ÷ 3,306 men = .029 x 1,000 = 29 injury diagnoses per 1,000 men

32 injury diagnoses ÷ 1,186 women = .027 x 1,000 = 27 injury diagnoses per 1,000 women

Comparing these rates now correctly suggests that the rates of reported injuries among women and men are about the same. 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 an injury. 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 4 larger groups. The rates for all illnesses and injuries combined are shown 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 14 other disease groups is also analyzed and can be found in the Supplemental Tables.

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

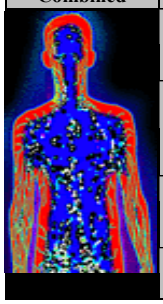
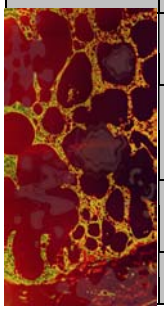
Diagnostic Category	Rate per 1,000			
All Illnesses & Injuries Combined	Job Category	Age	Men	Women
	Management/ Professional/ Administrative	<50	127	302
		50+	177	358
	Engineering, Scientific, & Health Care/ Technical	<50	94	202
		50+	101	415
	Crafts/Operators/ Laborers & General Workers	<50	270	432
		50+	371	607
	Nuclear Workers	<50	480	600
		50+	299	839

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



Diagnostic Category	Rate per 1,000			
Cancer	Job Category	Age	Men	Women
	Management/ Professional/ Administrative	<50	5	2
		50+	6	34
	Engineering, Scientific, & Health Care/ Technical	<50	0	8
		50+	2	15
	Crafts/Operators/ Laborers & General Workers	<50	4	0
		50+	10	16
	Nuclear Workers	<50	0	0
		50+	0	0

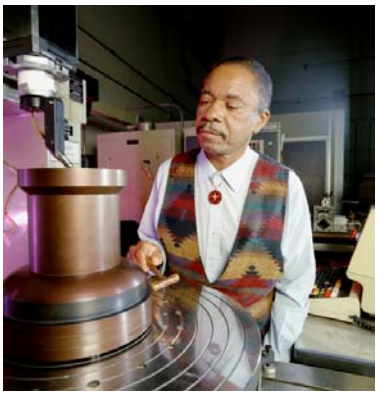
Diagnostic Category	Rate per 1,000			
Injury	Job Category	Age	Men	Women
	Management/ Professional/ Administrative	<50	17	23
		50+	21	43
	Engineering, Scientific, & Health Care/ Technical	<50	8	4
		50+	5	0
	Crafts/Operators/ Laborers & General Workers	<50	50	95
		50+	50	16
	Nuclear Workers	<50	71	33
		50+	46	65

Diagnostic Category	Rate per 1,000			
Heart/ Circulatory	Job Category	Age	Men	Women
	Management/ Professional/ Administrative	<50	10	11
		50+	19	22
	Engineering, Scientific, & Health Care/ Technical	<50	5	12
		50+	9	46
	Crafts/Operators/ Laborers & General Workers	<50	11	14
		50+	49	66
	Nuclear Workers	<50	20	67
		50+	23	65

Diagnostic Category	Rate per 1,000			
Respiratory	Job Category	Age	Men	Women
	Management/ Professional/ Administrative	<50	20	43
		50+	21	73
	Engineering, Scientific, & Health Care/ Technical	<50	23	8
		50+	24	62
	Crafts/Operators/ Laborers & General Workers	<50	48	108
		50+	72	164
	Nuclear Workers	<50	153	100
		50+	34	226

Age was related to the rates for all illnesses and injuries combined across the various job categories for women, with workers aged 50 years and older having the higher rates. This was also true for men, with the exception of Nuclear Workers. Both men and women classified as Nuclear Workers had the highest rates, followed by workers in the Crafts/Operators/Laborers and General Workers categories. By contrast, workers in the Management/ Professional/Administrative and Engineering, Scientific, and Health Care/Technical occupations tended to have substantially lower rates. These variations in rates have been seen consistently since 1999. This difference in rates may, in part, reflect more complete reporting of absences by workers in bargaining unit occupations than is typical among white-collar occupations. The same contrast has been noted at other sites participating in epidemiologic surveillance.

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 *incidence rates* frequently published in many articles on cancer with which you may be familiar. 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 reflect this observation for both men and women. In all job categories in which cancer was reported, cancer rates were higher among older workers. Thirteen men reported 15 5-day absences due to cancer. The diagnoses were 4 lymphomas, 3 kidney cancers, 3 skin cancers, 1 leukemia, and 1 cancer each of the tongue, larynx, bone, and rectum. Ten women reported cancer in 2001: 4 breast cancers and 1 cancer each of the colon, skin, ovary, kidney, adrenal gland, and an unspecified site. None of these men or women had reported cancer previously. Of the 23 workers who reported cancer, 17 were 50 years of age or older. The reporting of a diagnosis for cancer was not associated with any particular job category.

Older workers had the highest rates of heart/circulatory problems among men and women with 1 exception. The exception was younger women in the Nuclear Workers category, who had the highest rate of all workers. However, the rate was based on only 1 worker who reported 2 absences for hemorrhoids. Sixteen of 25 diagnoses for heart/circulatory problems reported among women were for hypertension (high blood pressure) or ischemic heart disease (restricted blood flow through an artery).

Thirty-nine of the 63 heart/circulatory diagnoses among men involved hypertension or ischemic heart disease. Forty-eight of the 63 diagnoses were reported by workers aged 50 or older. Compared with other workers, Crafts workers had over 2 times the risk of reporting heart/circulatory conditions.

Women had higher rates of respiratory disease than did men in all job categories except the Engineering, Scientific, and Health Care/Technical group. Older workers generally had higher rates than did workers younger than 50 years old. Among women and men, the Nuclear Workers group had the highest rate of respiratory disease. Workers in the Crafts and Nuclear Workers categories were 2 to 3 times as likely to report these conditions compared with other workers.

The rate of injuries was not related to age for men or women. The highest rates of injury (59 diagnoses per 100 workers) were among women in the Crafts/Operators/ Laborers and General Workers group and men in the Nuclear Workers group. Workers in both the Crafts and Nuclear Workers job categories were at least twice as likely to report an injury as other workers. Compared with other workers, the Crafts group was at over 5 times higher risk of reporting a fractured lower limb and at 4 times higher risk of reporting a dislocation or back sprain or strain. Nuclear Workers were over 4 times as likely to report a dislocation.

The risk of illness and injury among workers classified in each job category was compared with other workers in the remaining job categories. Workers in the Crafts, Operators, Nuclear Workers, and Laborers and General Workers groups were at 40 percent to 90 percent increased risk of all injuries and illnesses compared with workers in other groups. Laborers and General Workers were at 4 times the risk of a skin condition, almost 3 times the risk of a psychological disorder, and almost 2 times the risk of a muscles and skeleton disorder compared with other workers. Muscles and skeleton conditions occurred over 3 times more often among Nuclear Workers. Among Operators, the risk of a worker reporting unspecified symptoms was over 4 times and muscles and skeleton disorders was over 2 times more likely compared with workers in other job categories. Crafts workers were at almost 3 times greater risk of nervous system disorders.

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 between 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 with different age distributions. Age-adjusted rates are calculated using the age distribution of the 1970 United States population as a reference.

Age-adjusted rates for all illness and injury diagnoses combined tended to increase over the 4-year period among men. Among women, the rate increased steadily (Figure 11).

Age-adjusted rates for selected illness and injury categories are presented in Figure 12. Among women, the rate of psychological conditions increased over the period. The rate of muscles and skeleton disorders has increased for men and women. An increase in the number of diagnoses for back problems and acquired deformities of the toes contributed to the increase in this rate for women. The same diagnoses, plus pathologic fractures, were increased among men.

Among men, the age-adjusted rates for all illness and injury categories combined rose from 1998 to 1999 and then declined through 2001 in most job categories (Figure 13). There was no consistent trend in the rates over the 4-year period among women. The only exception was a steady increase in the overall diagnosis rate among women in the Engineering, Scientific, and Health Care group. No particular diagnosis was responsible for the increase in this rate. The large changes in women's rates from one year to the next are partially due to the small number of women in many of the job categories. When the number of workers in any category is small, modest changes in the number of diagnoses reported from year to year can result in large fluctuations in rates.

Figure 11. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men from 1998 to 2001

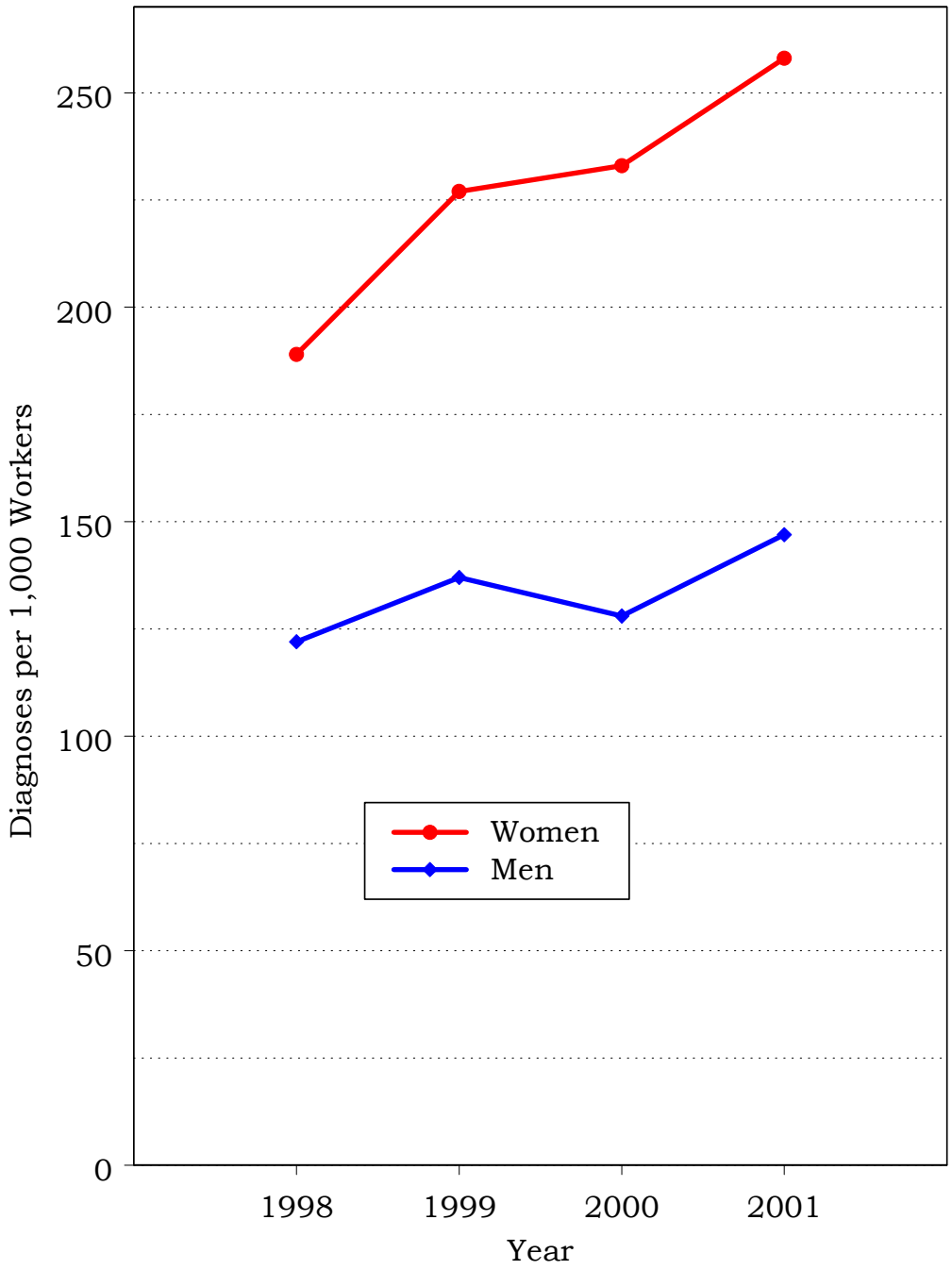


Figure 12. Age-Adjusted Rates for Selected Diagnostic Categories Among Women and Men from 1998 to 2001

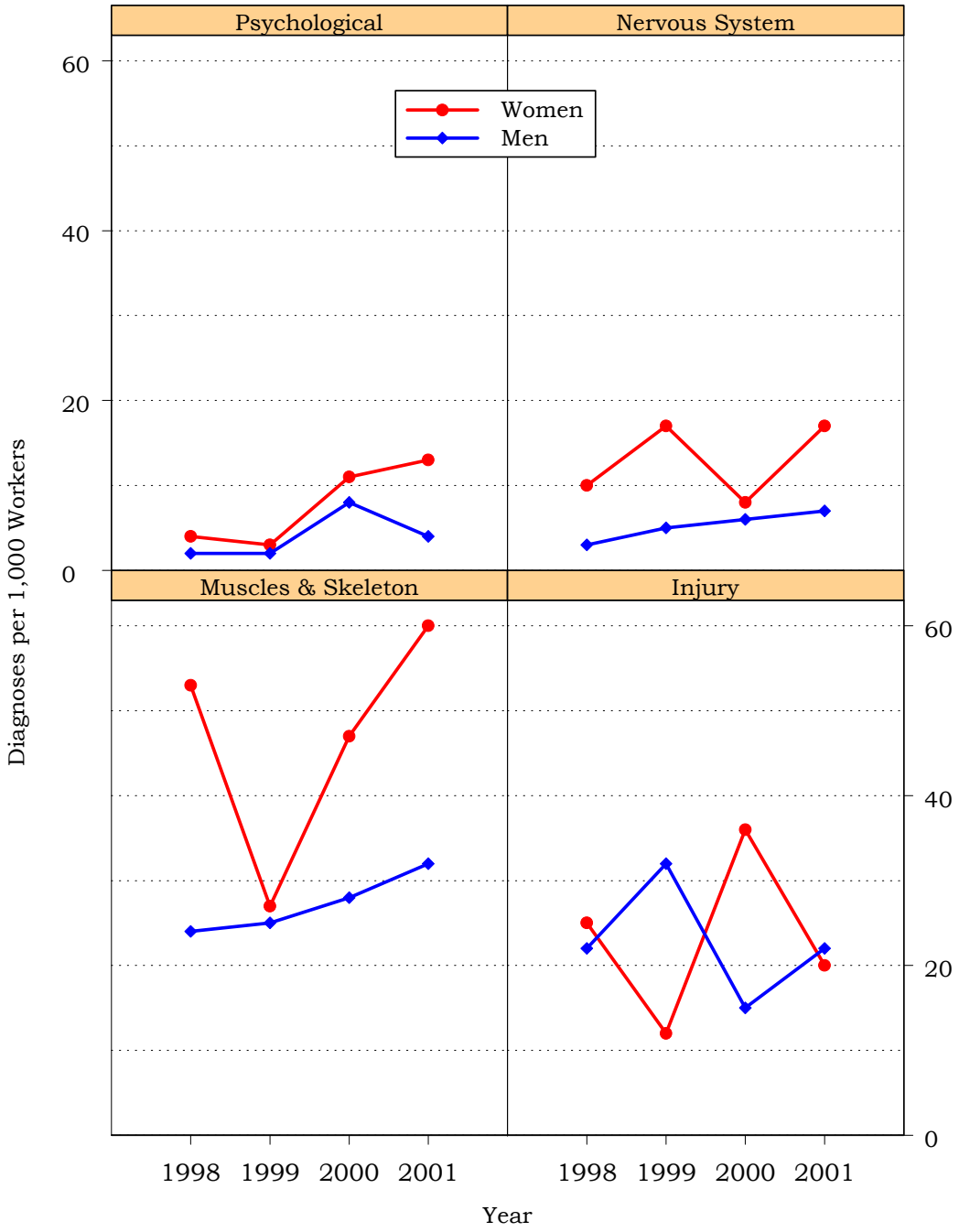
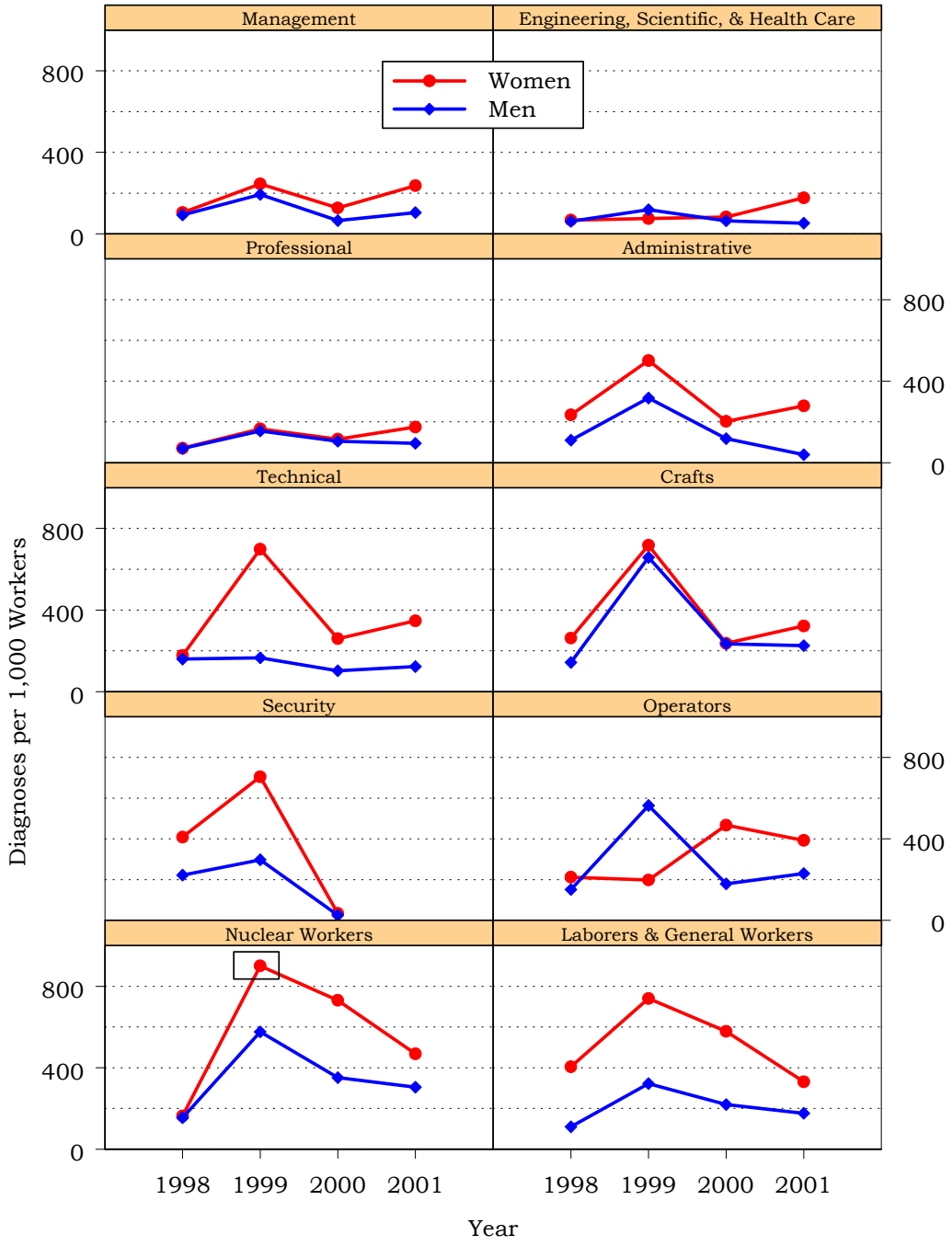


Figure 13. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men by Job Category from 1998 to 2001



Note: The Unknown job category does not appear in this figure; there were no Unknown workers in 2000 and 2001, and no events were reported by Unknown workers in 1998 and 1999. The Security job category had no workers in 2001 for both men and women. The 1999 Nuclear Workers rate for women was truncated to 900 (□) for graphical presentation. The actual rate was 1,196.

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 also may 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.

There were no definite sentinel health events identified in 2001. Ten of 1,112 diagnoses (1 percent) were identified as possible sentinel health events (Figure 14). Four of the 10 possible sentinel health events were identified as carpal tunnel syndrome, reported by 3 men and 1 woman, and resulted in a total of 124 lost calendar days. The woman was 40-49 years old and in the Technical group. Among the men, 1 was a Laborer and General Worker and the other 2 were Crafts workers. The Crafts workers lost the most time from work, 43 and 47 days. Two men were aged 50 or older; the other was in the 40-49 age group.

The other 6 possible sentinel health events were reported by 4 men and 2 women and included 4 cancers (3 kidney and 1 larynx), 1 chronic renal failure, and 1 varicose veins. Collectively, these 6 events were responsible for 779 days of absence.

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	7	3	325	578
Total	7	3	325	578

Disabilities Among Active Workers

Disability data for the 2001 Y-12 work force were not available.

Deaths Among Active Workers

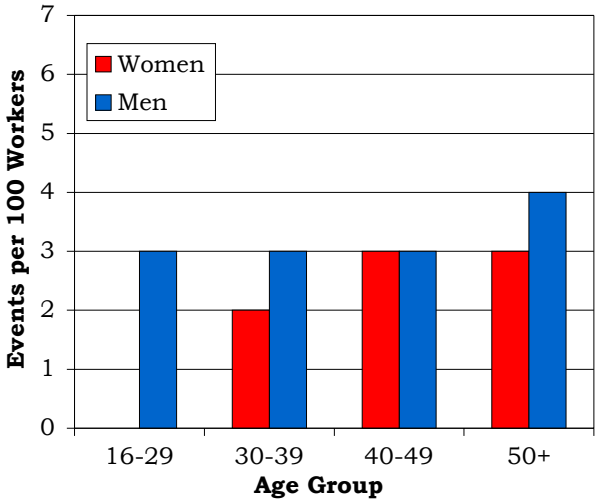
Seven deaths occurred among Y-12 workers during 2001. Six of the 7 deaths occurred in workers aged 50 or older. Five were men. The causes of death were 3 cancers, 2 heart conditions, 1 respiratory failure, and 1 unknown.

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 usually are accompanied by a specific determination that they are work-related.

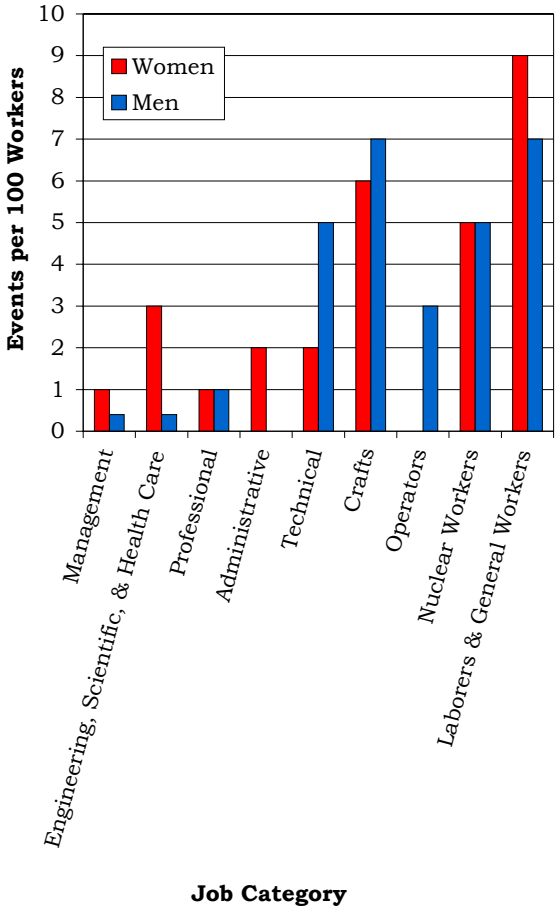
Figure 15 shows the distribution of OSHA events by gender and age. There were 33 OSHA-recordable events among women and 111 OSHA-recordable events among men. The overall rate of OSHA-recordable events in 2001 was the same as in 2000 for men and women (3 per 100 workers).

Figure 15. OSHA-Recordable Events by Gender and Age



The distribution of OSHA-recordable events by job category and gender is shown in Figure 16. The Crafts and Laborers and General Workers groups had the highest rate of OSHA events (7 per 100 workers) among men. Laborers and General Workers had the highest rate of OSHA events among women (9 per 100 workers). Women had higher rates of OSHA-recordable events than did men in 4 job categories: Management; Engineering, Scientific, and Health Care; Administrative; and Laborers and General Workers. Men in the Administrative job category and women in the Operators job category did not report any OSHA events.

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



The average number of workdays lost or with restricted activity due to an OSHA event was longer for men (14 days) than for women (10 days). Women in the Crafts group averaged the highest number of lost or restricted workdays (126 days), although only 2 events were reported among these workers in 2001. One of these women was a carpenter who experienced a neck sprain, resulting in 174 days lost from work and 64 days of restricted activity. Laborers and General Workers had the highest average number of lost or restricted workdays (18 days) among men.

Diagnostic and Accident Categories for OSHA-Recordable Events

The 144 OSHA events recorded on the OSHA 200 Logs contained 46 diagnoses among women and 143 diagnoses among men (Figure 17). Among women, injuries accounted for 59 percent of the diagnoses reported. The most common (37 percent) type of OSHA-recordable injury was sprains and strains. Nineteen percent of the reported injuries among women were due to bruises, and 15 percent were superficial injuries. Among men, injuries accounted for 75 percent of the diagnoses reported, again primarily due to sprains and strains (34 percent) and open wounds (24 percent). After injuries, the most common OSHA-recordable diagnoses among both men and women were conditions involving the muscles and skeleton. Thirteen of the OSHA diagnoses involved the nervous system; 11 (85 percent) of these were carpal tunnel syndrome.

The number of restricted/lost workdays among men increased from 456 days in 2000 to 1,531 in 2001, while the number among women decreased from 579 to 340 days. Among men, 4 of the events accounted for 508 of the 1,531 days. All 4 of these were due to overexertion and strenuous movements.

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

Diagnostic Category	Gender	
	Women	Men
Muscles & Skeleton	12	14
Nervous System	4	9
Respiratory	0	4
Skin	3	5
Unspecified Symptoms	0	4
Injury	27	107
Fractures – Upper Limb	0	3
Fractures – Lower Limb	1	4
Dislocations	0	1
Back Sprains & Strains	7	13
Other Sprains & Strains	3	23
Open Wounds – Head, Neck, Trunk	2	10
Open Wounds – Upper Limb	1	15
Open Wounds – Lower Limb	0	1
Superficial Injuries	4	7
Bruises	5	10
Crushing Injuries	0	1
Foreign Bodies Entering Orifice	1	7
Burns	0	5
Unspecified Injuries	1	0
Adverse Reactions to Non-Medical Substances	0	4
Adverse Reactions to External Causes	2	3

Over 90 percent (132) of the 144 OSHA events were described as an "accident" in the OSHA logs (Figure 18). Sixty-nine percent (20/29) among women and 75 percent (77/103) among men were described as "other accidents" and resulted in 303 restricted/lost workdays for women and 1,389 restricted/lost workdays for men. Accidents from overexertion and strenuous movements made up at least 50 percent of the "other accidents" for both men and women. Among men, 52 percent of the other accidents occurred among Crafts workers; among women, 50 percent occurred among the Administrative and Laborers and General Workers groups combined.

Figure 18. OSHA-Recordable Accidents by Type and Gender

Accident Category	Gender	
	Women	Men
	Number of Accidents	Number of Accidents
Motor Vehicle Traffic	1	0
Motor Vehicle Non-Traffic	0	1
Poisoning – Non-Medicinal	0	2
Falls	6	14
Natural/Environmental Factors	1	3
Submersion/Suffocation/ Foreign Bodies	1	6
Other Accidents	20	77
Struck by an Object	3	10
Caught Between Objects	0	4
Machinery	0	1
Cutting/Piercing Instrument/Object	1	10
Hot, Corrosive, or Caustic Material/Steam	0	4
Overexertion/Strenuous Movements	12	39
Repetitive Trauma	4	9
Total	29	103

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. Women had higher rates than did men in all job categories with 1 exception. The OSHA-recordable rates for men and women were highest among the Crafts/Operators/Laborers and General Workers group. Most of the OSHA health conditions involved injuries. When the rate for OSHA-recordable injuries was considered separately, the Crafts/Operators/ Laborers and General Workers group had the highest rates for both men and women. Workers in this group comprised 30 percent of the work force and reported 63 percent of the OSHA events.

Compared with occupational injury rates in other groups, injuries were more likely among the Laborers and General Workers (2 times), Crafts (3 times), and Nuclear Workers (2 times) groups. The Crafts and Laborers and General Workers groups were at 4 to 5 times greater risk of a back sprain or strain than were workers in other job categories. The Nuclear Workers and Laborers and General Workers were also at least 3 times more likely to report sprains and strains to areas other than the back. Crafts workers were at 8 times greater risk of an open wound of the head, neck, trunk, or upper limb and 7 times more likely than other workers to receive a bruise. Laborers and General Workers were 4 times more likely to experience disorders of the muscles and skeleton than were workers in other job categories. Overall, Crafts, Laborers and General Workers, and in some cases Nuclear Workers were at increased risk for a variety of occupational injuries and conditions compared with other workers.

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

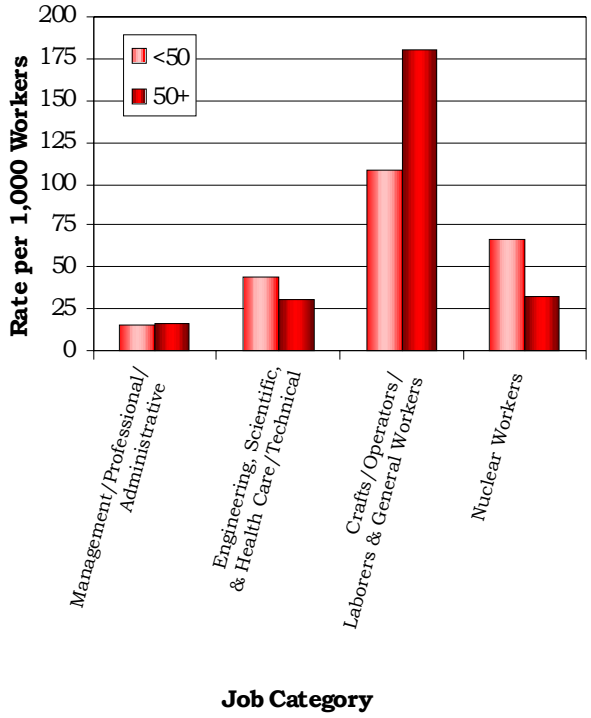
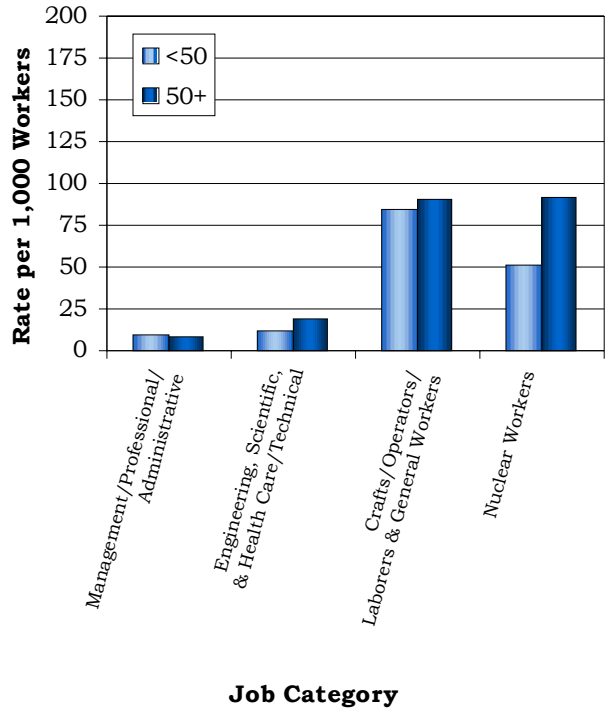


Figure 20. OSHA-Recordable Rates by Age and Job Categories Among Men, All Diagnoses Combined

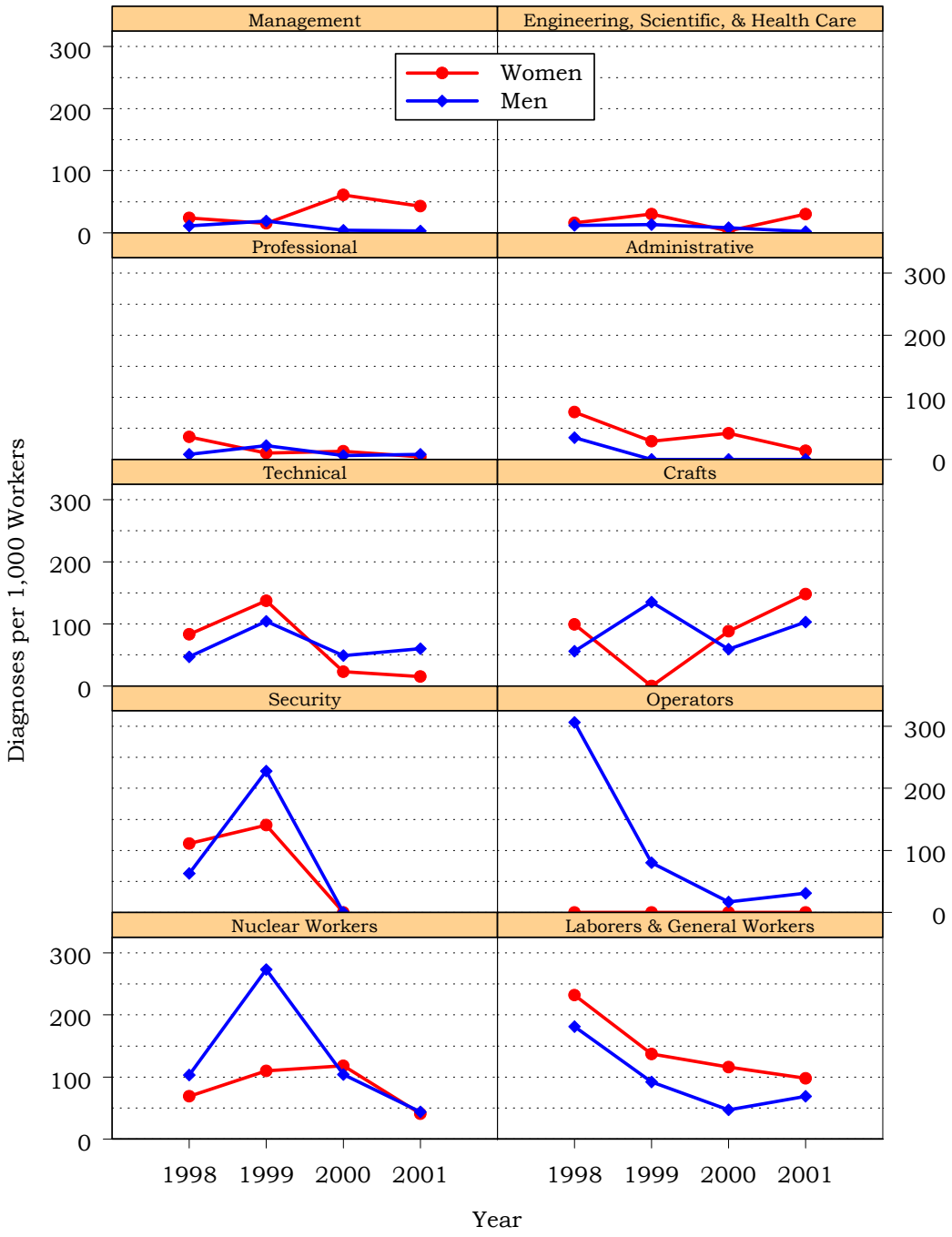


Time Trends for OSHA-Recordable Events

The age-adjusted OSHA-recordable rates from 1998 to 2001 are shown in Figure 21. We found no consistent trends in rates for women in most job categories over the 4-year period. The exception was the rate for the Laborers and General Workers group, which decreased steadily from 1998 to 2001. No OSHA-recordable events were reported among women Operators over the 4-year period, but the number of women in this group has never exceeded 12.

Among men, the rate of OSHA-recordable events for the Operators and Laborers and General Workers groups, which declined over the 1998 to 2000 period, showed little change in 2001. Rates have been low over the entire 4-year period for Management; Engineering, Scientific, and Health Care; Professional; and Administrative job categories. No OSHA-recordable events have been reported for men in the Administrative job category since 1999.

Figure 21. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Women and Men by Job Category from 1998 to 2001



Note: The Unknown job category does not appear in this figure; there were no Unknown workers in 2000 and 2001, and no events were reported by Unknown workers in 1998 and 1999. The Security job category had no workers in 2001 for both men and women.

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 one group compared to 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

• 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
Supplementary classifications related to personal or family history of disease	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
Supplementary classifications related to health care for reproduction and child development	V20-V28	Problems related to pregnancy, postpartum care, contraception, outcome of delivery, and physical development of child
Contact with health services for reasons other than illness or injury	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