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Savannah River Site Annual Epidemiologic Surveillance Report

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Questions or comments about this report or the Epidemiologic Surveillance Program may be directed to:

Dr. Cliff Strader at **cliff.strader@eh.doe.gov**
or Dr. Bonnie Richter at **bonnie.richter@eh.doe.gov**
United States Department of Energy
Office of Occupational Health
270CC/EH-53/Germantown Building
1000 Independence Avenue, SW
Washington, DC 20585-1290

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

Savannah River Site 2001

At A Glance

Illness and Injury

The absence rate due to injury or illness increased with age among both men and women. The average length of absence was 21 days for women and 18 days for men. Women in the Crafts and Manual Labor group had the highest average number of days absent. As in 2000, Service workers had the longest average absence duration among men.

Women had at least one and a half times the rate of absence experienced by men across similar job categories, a relationship also noted in 1999 and 2000 in all job categories except Power Operators.

The number of respiratory diagnoses reported in 2001 has increased more than 4-fold for women and men since 1997. This type of change was not seen for any other diagnostic category. Conditions affecting the respiratory system were among the most frequently reported in all age groups among women and men.

Sentinel Health Events

Fifty-seven of 4,125 (1 percent) diagnoses were identified as *possible* sentinel health events, i.e., possibly occupational. Forty-two of the 57 diagnoses were carpal tunnel syndrome, reported by 35 workers and resulting in 685 lost calendar days. Seventeen of the workers reporting carpal tunnel syndrome worked in the Technical Support group, and 14 other workers were in the Office Management and Administration group.

OSHA

Despite numerous fluctuations in rates, no indication of a systematic trend in OSHA-recordable rates in any of the job categories was seen over the 7-year period. There have been no significant changes in injury rates since 1995.

The rate of OSHA-recordable events was the same for women and men (1 per 100) and did not differ significantly by age group.

Overall, the Service and Crafts and Manual Labor groups had the highest rates of events (3 per 100 workers) among workers reporting an OSHA event. Women tended to have OSHA event rates as high or higher than men in the same job category.

Service/Crafts and Manual Labor workers accounted for 9 percent of the work force but 23 percent of the OSHA-recordable events.

While minor fluctuations in rates were numerous during 1995-2001, the overall rates for OSHA-recordable events among men did not change greatly for the majority of job categories. Following the rate increase shown by Crafts and Manual Labor workers in 1999, rates have declined for both men and women.

No OSHA events were reported by Power Operators or by women in the Engineering, Science, and Health Care group.

Overall, the average number of workdays lost or with restricted activity was the same for men and women (5 days). There was no relationship between age and the number of days lost/restricted for men or women. Male Service workers reported the highest average number of lost/restricted workdays (17 days). Among women, the Technical Support group had the highest average lost/restricted workdays (7 days).

Fifty-eight percent of the diagnoses among women involved injuries, of which sprains and strains and open wounds were the most common type. Injuries accounted for 70 percent of the diagnoses reported by men, primarily due to open wounds and bruises.

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 workdays, occupational injuries and illnesses, and disabilities and deaths among current workers.

Epidemiologic Surveillance has been conducted at the Savannah River Site (SRS) since 1994, and as a pilot project from 1992. This report provides a summary of epidemiologic surveillance data collected from SRS from January 1, 2001 through December 31, 2001. The data were collected by a coordinator at SRS and submitted to the 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.

This report provides highlights of the data analyses conducted on the 2001 data collected from SRS. Surveillance reports and additional supporting tables are posted on the Office of Occupational Health's 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; workplace illnesses, injuries, and deaths that were reportable to the Occupational Safety and Health Administration ("OSHA-recordable" events); and disabilities and deaths among current workers. The 2001 report includes time trends that provide comparative information on the health of the work force from 1994 through 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. Comparisons of SRS with other DOE sites should be made with caution. In addition, many factors can affect the completeness and accuracy of health information reported from the sites, thereby affecting the observed patterns of illness and injury.

Site Overview

Savannah River Site (SRS) is a 310-square-mile facility located on the Savannah River near Aiken, South Carolina and Augusta, Georgia. It is owned by the U.S. Department of Energy and operated by a team of companies led by the Westinghouse Savannah River Company. In 2001, the contract to manage and operate SRS by these companies was extended through September 30, 2006.

The site was constructed during the 1950s and produced nuclear weapons materials (tritium and plutonium-239) for the United States' defense program from that time through the 1980s. The years of weapons materials production resulted in unusable byproducts such as intensely radioactive waste, low-level liquid and solid radioactive wastes, transuranic waste, hazardous waste, and mixed wastes.

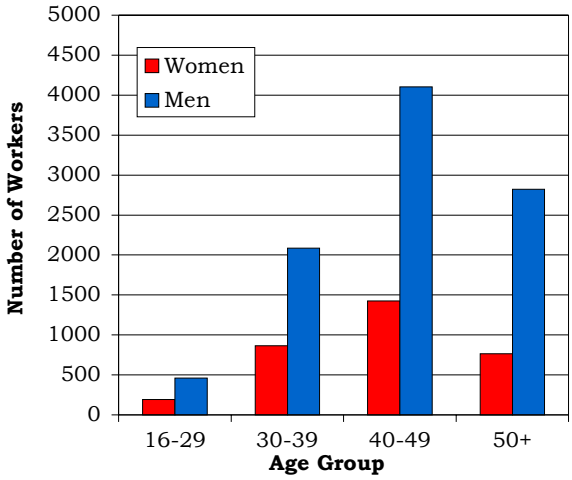
After the Cold War ended, the mission for SRS changed from nuclear materials production to environmental restoration and waste management. All 5 of the original production reactors are permanently shut down. There are over 400 inactive waste and groundwater units in the site's environmental restoration program. This work is expected to take decades to complete. Decontamination and decommissioning of surplus facilities is also being conducted, with more than 600 facilities presently being assessed.

Part of the site's mission is to recycle and reload tritium to keep the nation's supply of nuclear weapons ready. SRS is the nation's only source for recycling tritium from reservoirs of nuclear weapons no longer in service. This process allows the United States to stretch its tritium supplies. The site is also focusing on national security work, economic development and technology transfer initiatives, and environmental and waste management activities.

The Savannah River Site Work Force – 2001

A total of 12,721 Savannah River Site (SRS) employees were included in epidemiologic surveillance in 2001, 67 fewer workers than were present in 2000. The age and gender distribution of the 2001 work force is shown in Figure 1. There were 3,252 (26 percent) women and 9,469 (74 percent) men in the work force. The average age of women in the work force was 43 years and 45 years for men. The majority of the workers were White (76 percent). African Americans comprised about 20 percent of the work force; the remaining 4 percent were Hispanics, Asians, Native Americans, and others.

Figure 1. The Work Force by Gender and Age



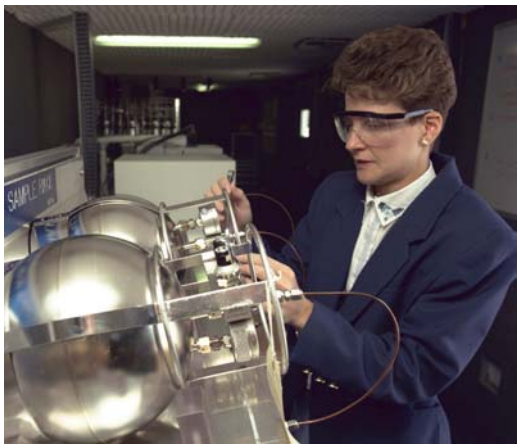
The distribution of workers by gender and job category is shown in Figure 2. Individual job titles reported by SRS were grouped together into 7 job categories. This was done because there were either too few workers or too few absences among workers with a particular job title, which limited the types of analyses that could be conducted. Men and women were not distributed equally among the various job categories. Almost half of the female workers (43 percent) were in the Office Management and Administration category and an additional 38 percent were employed as Technical Support workers. Technical Support workers were the largest portion of the male work force (47 percent), followed by Engineering, Scientific, and Health Care (21 percent) and Office Management and Administration (16 percent) workers.

Figure 2. The Work Force by Job Category and Gender

Job Category	Women	Men
Office Management & Administration	1,419 43%	1,537 16%
Engineering, Scientific, & Health Care	317 10%	2,041 21%
Technical Support	1,231 38%	4,451 47%
Service	30 1%	65 1%
Crafts & Manual Labor	129 4%	948 10%
Nuclear Specialties	119 3%	368 4%
Power Operator	7 <1%	59 1%

Number and Length of Absences

Epidemiologic surveillance at SRS examines all absences. DOE Order 440.1 requires contractor management to notify Occupational Medicine when a worker has been absent for 5 or more

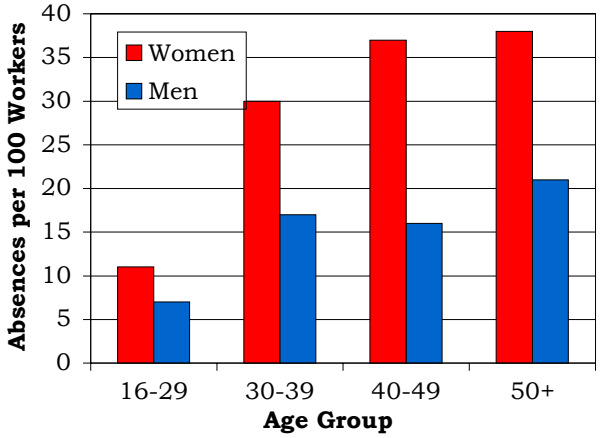


consecutive workdays. If an absence on a Friday continues through the next Tuesday, the length of that absence includes the weekend. The policy at the Savannah River Site, however, is that any worker absent for more than 24 work hours must return to work through Occupational Medicine in order for the absence to be counted as sick leave. The site reports all of these absences to the Epidemiologic Surveillance Program. All injuries and illnesses due to a work-related incident must be reported regardless of the length of absence. One change from surveillance reports issued prior to 1996 is the exclusion of some types of health events resulting in an absence. In 2001, 48 reported absences due to maternity leave among 47 women and 12 absences among 12 women and 5 absences among 5 men that were not related to the treatment of an illness or injury were excluded. Throughout this report, analyses take gender, age, and occupation into account because the risk of illness and injury varies by these factors.

From 1997 through 2001, absences reported by Savannah River Site workers more than doubled (103 percent increase) despite an 8 percent decrease in the size of the work force. A change in the sick leave policy at the site contributed to the dramatic increase in the number of absences reported over this time period, as well as the decrease in the average length of absence. With the reporting of more absences involving fewer than 5 days, the average duration of absence decreased from 27 days in 1997 to 19 days in 2001.

The absence rate due to injury or illness increased with age among both men and women as shown in Figure 3. There were 1,094 absences among 769 women, resulting in an absence rate of 34 per 100 workers (1,094/3,252). Among the 9,469 men, there were 1,624 absences, resulting in an absence rate of 17 per 100 workers (1,624/9,469). Seven percent of women (226/3,252) and 3 percent of men (253/9,469) reported more than 1 absence in 2001.

Figure 3. Absence Rate by Gender and Age



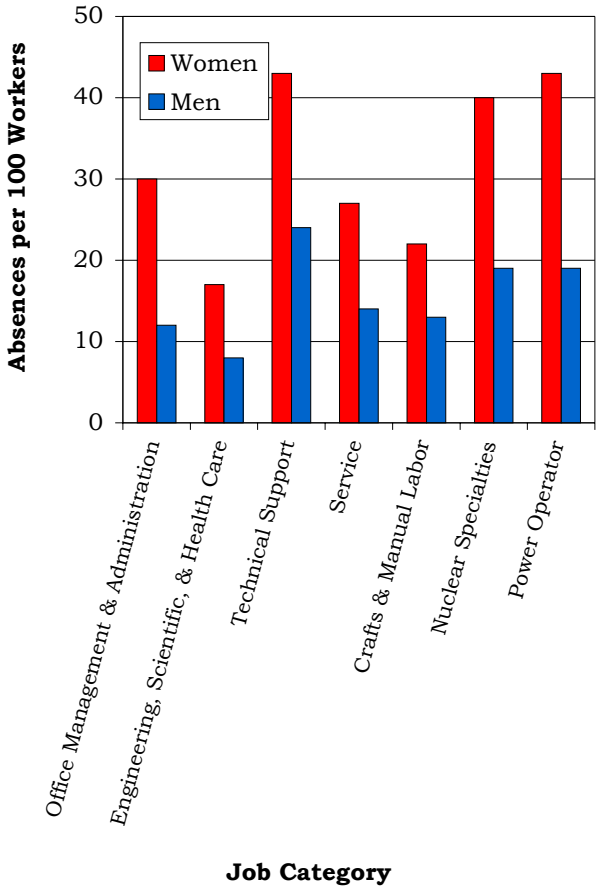
Overall, the average length of absence was 21 days for women and 18 days for men (Figure 4). Among women, the average duration of absence increased with age, but age was not a factor among men. The average length of absence among women was longer than that of men in all age groups except the youngest.

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	21	337	16
	30-39	258	5,261	20
	40-49	522	11,042	21
	50+	293	6,330	22
	Total	1,094	22,970	21
Men	16-29	34	645	19
	30-39	346	5,126	15
	40-49	653	11,327	17
	50+	591	11,807	20
	Total	1,624	28,905	18

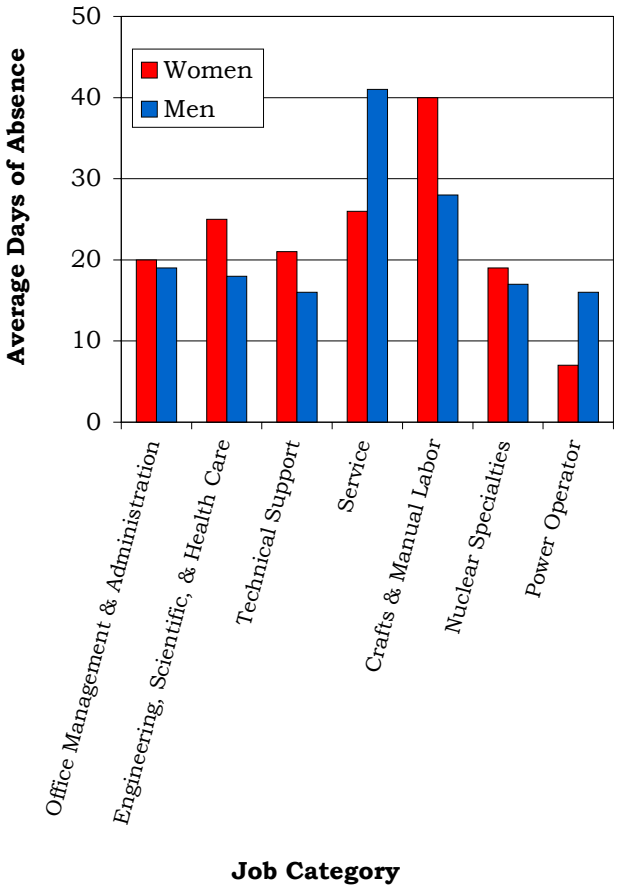
The absence rates due to illness or injury varied by job category for women and men as shown in Figure 5. As in 1999 and 2000, Technical Support workers had the highest rate among male workers. Among men and women, Engineering, Scientific, and Health Care workers had the lowest rate in 2001. This occupational group also had the lowest absence rate for women in 2000. Among women, Technical Support workers and Power Operators had the highest rates of absence. Women had at least one and a half times the rate of absence experienced by men across similar job categories, a relationship also noted in 1999 and 2000 in all job categories except Power Operators.

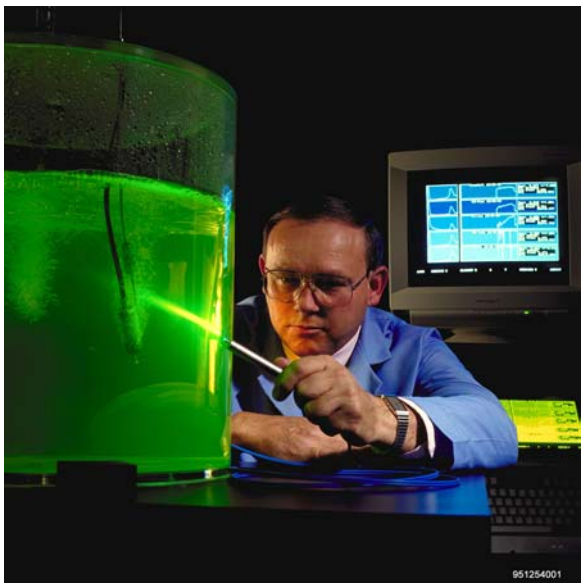
Figure 5. Absence Rate by Job Category and Gender



The average duration of absence by job category and gender is shown in Figure 6. We found no relationship between duration of absence and gender by job category. Women in the Crafts and Manual Labor group had the highest average number of days absent. As in 2000, Service workers had the longest average absence duration among men.

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 in the back of this report.

The number of reported diagnoses categorized according to the ICD-9-CM and number of lost calendar days are presented in Figure 7. Please note that the number of days absent is counted more than once when an absence involves multiple diagnoses. Women reported 1,755 diagnoses and men reported 2,370 diagnoses in 2001. The more frequently reported diagnoses were similar for women and men. The number of respiratory diagnoses reported in 2001 has increased more than 4-fold for women and men since 1997. This type of change was not seen for any other diagnostic category. Over the 5-year period, the percentage of acute respiratory diagnoses increased from 19 percent to 42 percent among women and from 14 to 39 percent among men. By contrast, chronic respiratory conditions decreased from 25 percent to 15 percent among women and 24 percent to 14 percent

among men. At least a portion of this change might reflect a change in coding to treat bronchitis, when not specifically designated as chronic, as an acute diagnosis.

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	49	1,825	26	357
Blood	23	848	9	210
Cancer	23	889	36	933
Digestive	148	2,951	230	4,014
Endocrine/ Metabolic	41	1,116	63	1,445
Existing Birth Condition	3	62	2	198
Genitourinary	148	3,759	113	1,595
Heart/ Circulatory	62	1,672	188	4,498
Infections/ Parasites	83	1,264	101	1,759
Injury	139	3,651	265	4,700
Miscarriage	3	39	NA	NA
Muscles & Skeleton	190	4,678	279	7,051
Nervous System	114	2,102	89	1,220
Psychological	19	517	26	583
Respiratory	508	4,784	667	6,204
Skin	12	215	20	590
Unspecified Symptoms	190	2,583	256	2,763

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 in the work force lost 22,970 calendar days due to injury and illness. Respiratory conditions (29 percent), muscles and skeleton conditions (11 percent), unspecified symptoms (11 percent), digestive disorders (8 percent), and genitourinary conditions (8 percent) accounted for 67 percent of all reported diagnoses. Forty-two percent of the respiratory conditions were reported as acute respiratory infections, 23 percent as other upper respiratory conditions (primarily sinusitis), 19 percent as pneumonia and flu, and 15 percent as chronic conditions (primarily bronchitis not specified as acute or chronic). Back pain and disk disorders made up 52 percent of muscles and skeleton conditions, followed by joint disorders (22 percent) and rheumatism (21 percent). Unspecified symptoms included digestive symptoms (23 percent), headache (13 percent), symptoms involving the abdomen and pelvis (11 percent), fever (10 percent), respiratory symptoms (9 percent), and dizziness and giddiness (7 percent). Almost two-thirds of digestive diagnoses involved intestinal disorders (32 percent) or disorders of the gallbladder, liver, and pancreas (32 percent). Disorders of the female reproductive organs were responsible for 76 percent of the genitourinary diagnoses among women.

Men lost 28,905 calendar days due to injury and illness. Fifty-one percent of their reported diagnoses involved respiratory conditions (28 percent), muscles and skeleton conditions (12 percent), and injuries (11 percent). Acute respiratory infections accounted for 39 percent of the respiratory conditions, followed by pneumonia and influenza (25 percent), other upper respiratory infections (primarily chronic sinusitis) (21 percent), and bronchitis (not specified as acute or chronic) and asthma (14 percent). Sixty percent of the muscles and skeleton diagnoses were back problems, 21 percent were joint disorders, and 16 percent were rheumatism. Sprains and strains accounted for 33 percent of injuries, followed by fractures (20 percent) and dislocations (16 percent). Twenty-one of the injury diagnoses (8 percent) were for complications of medical care.

Conditions affecting the respiratory system were among the most frequently reported in all age groups among women and men. Muscles and skeleton disorders were frequent in workers 40 years old and

above. Among men aged 50 years and older, heart/circulatory conditions were among the most frequently reported diagnoses. In this age group, 86 men reported 108 diagnoses. Seventy-six of these diagnoses (70 percent) were for high blood pressure or ischemic heart disease (restricted blood flow to an artery). Women younger than age 50 frequently reported unspecified symptoms.

Figure 8 shows the frequency of reported diagnoses by job category for women and men. The types of diagnoses reported did not appear related to job category. Among women, respiratory diagnoses, muscles and skeleton disorders, and unspecified symptoms were common in most job categories. Few diagnoses were reported among the 37 women in the Service and Power Operator groups. Among men, conditions affecting the muscles and skeleton and respiratory diseases appeared frequently in most job categories. Men in the Office Management and Administration; Engineering, Scientific, and Health Care; Nuclear Specialties; and Power Operator job categories also frequently reported digestive diagnoses.

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

Job Category	Men	Women
Office Management & Administration	Respiratory (69) Digestive (36) Muscles & Skeleton (32)	Respiratory (178) Muscles & Skeleton (81) Unspecified Symptoms (67)
Engineering, Scientific, & Health Care	Respiratory (49) Digestive (30) Unspecified Symptoms (27)	Respiratory (24) Muscles & Skeleton (12) Digestive (11) Injury (11)
Technical Support	Respiratory (495) Muscles & Skeleton (177) Unspecified Symptoms (165)	Respiratory (267) Unspecified Symptoms (98) Muscles & Skeleton (89)
Service	Muscles & Skeleton (5) Injury (3) Genitourinary (2) Heart/Circulatory (2)	Respiratory (5) Unspecified Symptoms (3) Injury (2)
Crafts & Manual Labor	Injury (34) Muscles & Skeleton (33) Respiratory (27)	Genitourinary (6) Respiratory (6) Muscles & Skeleton (5)
Nuclear Specialties	Respiratory (26) Digestive (16) Unspecified Symptoms (14)	Respiratory (26) Nervous System (8) Unspecified Symptoms (8)
Power Operator	Heart/Circulatory (3) Muscles & Skeleton (3) Digestive (2) Infections/Parasites (2)	Respiratory (2) Muscles & Skeleton (1) Nervous System (1) Unspecified Symptoms (1)

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 265 and women reported 139 diagnoses involving injuries in 2001. Men, therefore, reported almost twice as many injuries as women. As there were almost 3 times as many men as there were women at the Savannah River Site, it seems reasonable to expect more injuries among men than women. Does this mean that men were at greater risk of injuries compared with women in 2001? To correctly answer the 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 injury 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:

265 injury diagnoses ÷ 9,469 men = .028 x 1,000 = 28 injury diagnoses per 1,000 men

139 injury diagnoses ÷ 3,252 women = .043 x 1,000 = 43 injury diagnoses per 1,000 women

Comparing these rates shows that, despite the larger number of injuries among men, the *rate* of reported injuries for women was over 50 percent higher than the rate for men. These rates are called **crude rates** because they do not account for possible differences between men and women in factors such as age that might affect the individual's risk of having 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 is the number of reported 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 absences over a year. Conversely, 1 absence may be associated with multiple diagnoses (e.g., the flu and a sprained wrist).

In the following set of analyses, the 4 age groups used previously were collapsed into 2 groups, workers less than 50 years of age and those 50 or older. These groups were collapsed to ensure that the number of diagnoses in each group would be large enough to analyze. In addition, the 7 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 20 other disease categories was analyzed and can be found in the Supporting Tables.

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

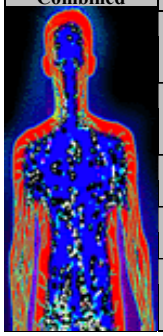
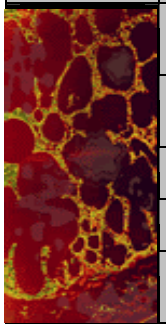
Diagnostic Category	Rate per 1,000			
All Illnesses & Injuries Combined	Job Category	Age	Men	Women
	Office Management & Administration	<50	161	412
		50+	220	586
	Engineering, Scientific, & Health Care	<50	86	242
		50+	169	611
	Technical Support	<50	316	714
		50+	441	703
	Service/Crafts & Manual Labor	<50	163	285
		50+	296	483
	Nuclear Specialties/Power Operator	<50	236	579
		50+	299	710

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
	Office Management & Administration	<50	3	0
		50+	5	32
	Engineering, Scientific, & Health Care	<50	0	4
		50+	9	0
	Technical Support	<50	2	7
		50+	11	0
	Service/Crafts & Manual Labor	<50	3	0
		50+	0	0
	Nuclear Specialties/Power Operator	<50	0	0
		50+	14	32

Diagnostic Category	Rate per 1,000			
Injury	Job Category	Age	Men	Women
	Office Management & Administration	<50	19	19
		50+	19	41
	Engineering, Scientific, & Health Care	<50	12	28
		50+	14	83
	Technical Support	<50	35	60
		50+	43	121
	Service/Crafts & Manual Labor	<50	37	0
		50+	35	103
	Nuclear Specialties/Power Operator	<50	25	0
		50+	14	0

Diagnostic Category	Rate per 1,000			
Heart/ Circulatory	Job Category	Age	Men	Women
	Office Management & Administration	<50	9	13
		50+	34	30
	Engineering, Scientific, & Health Care	<50	7	7
		50+	21	0
	Technical Support	<50	16	15
		50+	48	47
	Service/Crafts & Manual Labor	<50	9	23
		50+	51	0
	Nuclear Specialties/Power Operator	<50	14	32
		50+	41	65

Diagnostic Category	Rate per 1,000			
Respiratory	Job Category	Age	Men	Women
	Office Management & Administration	<50	44	123
		50+	47	130
	Engineering, Scientific, & Health Care	<50	19	57
		50+	33	222
	Technical Support	<50	109	225
		50+	118	181
	Service/Crafts & Manual Labor	<50	24	31
		50+	35	241
	Nuclear Specialties/Power Operator	<50	50	168
		50+	88	387

Both men and women aged 50 years and older generally had higher rates of all illnesses and injuries combined than did younger workers. Rates were higher for women than for men in the same job category, regardless of age.

Cancer rates presented in this report are based on reported absences due to cancer. A worker may experience several periods of absence from 1 cancer diagnosis due to medical complications or treatment. Each absence results in the reporting 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 with which you may be familiar. Incident cancer rates are based on the number of *new* cancer cases diagnosed within a given time, usually 1 year.

The likelihood that an individual in the United States will develop cancer increases with age. Our data reflect this observation, with the exception of women in the Engineering, Scientific, and Health Care and Technical Support job categories and men in the Service/Crafts and Manual

Labor category. Forty-nine absences related to cancer were reported, involving 36 diagnoses among 22 men and 23 diagnoses among 15 women. Ten workers (6 women and 4 men) who reported cancer in 2001 also reported

diagnoses for cancer in previous years. Of this group, 8 workers reported the same cancer as was reported prior to 2001: 1 bladder; 2 lymphomas; 2 cancer *in situ* of breast (cancer that has not spread to any surrounding tissue); 1 thyroid cancer; 1 worker with bladder and prostate cancer and cancer at secondary sites; and 1 worker with skin cancer and cancer at a secondary site. One employee who reported cancer of the parotid gland (one of the salivary glands) in 1996 reported a diagnosis of secondary lung cancer in 2001. Kidney and secondary skin cancers were reported by an employee who previously reported prostate cancer. We noted no apparent relationship between any specific type of cancer and occupational category.

Older men had higher heart/circulatory disease rates than did younger men. Older women also tended to have higher rates than younger women. Nuclear Specialties/Power Operator workers had the highest rate among women. Technical Support workers had the highest rate among men, followed closely by Nuclear Specialties/Power Operator workers. Fifty-six percent of the diagnoses reported by women and 60 percent of those reported by men involved high blood pressure or ischemic heart disease (restricted blood flow through an artery). Technical Support workers were 60 percent more likely to report a heart/circulatory condition compared with workers in other job categories.

Women had higher rates of respiratory disease than did men in all job categories and age groups. Older men and women tended to have higher rates than did younger ones. The highest respiratory diagnosis rates were among women in the Nuclear Specialties/Power Operator job category and both men and women in the Technical Support group. Compared with workers in other job categories, Technical Support workers were more than twice as likely to report a respiratory condition.

No consistent relationship between injuries (including non-occupational injuries) and age was seen among men; among women in the job categories reporting injuries, workers aged 50 and older had higher rates. The highest injury rates were among men in the Service/Crafts and Manual Labor group and both men and women Technical Support workers. Women in the Nuclear Specialties/Power Operator occupational group reported no injuries in 2001. Compared with workers in other job categories, Technical Support workers were 70 percent more likely to report an injury. These workers had a 40 percent increased risk of injury in 2000.

The risk of illness and injury among workers classified in a specific job category was compared with that of workers in the remaining 6 job categories. Compared with other workers, Technical Support workers were 80 percent more likely to report any diagnosis. Technical support workers were at a 40 percent increased risk of digestive conditions and 4 times more likely to report a psychological disorder. In addition, they were twice as likely as other workers to report infections; benign neoplasms (non-cancerous tumors); conditions of the nervous, circulatory, and respiratory systems; muscles and skeleton disorders; and unspecified symptoms. They were also at increased risk for certain types of injuries; dislocations were over twice as likely, bruises were 4 times more likely, and open wounds of the head, neck, and trunk were 10 times more likely than among workers in other job categories.

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 diagnoses combined and selected diagnostic categories are presented in Figures 11 and 12. It is important to note that the age-adjusted rates for the year 1994 presented in this report differ from those reported in the *1994 Annual Epidemiologic Surveillance Report* due to the exclusion of absences resulting from maternity leave.

The age-adjusted rates for all diagnostic categories combined declined substantially from 1994 to 1995 among both women and men, and the overall rates changed little from 1995 through 1997 as shown in Figure 11. The rates increased significantly among women and men from 1997 to 2001, but the rate among men remained substantially lower than that of women over the 8 years. The increase from 1997 to 2001 was not due to an increase of any particular type of disease, but to an increase in all types of conditions (Figure 11). An increase in the rates of digestive and muscles and skeleton diagnoses among women and injuries among both women and men were not the result of any particular condition (Figure 12).

In all job categories, the overall rate declined substantially between 1994 and 1995, as shown in Figure 13. The rates in 2001 did not decline from the 2000 rates among men in any job category. The same was true among women, with the exception of Crafts and Manual Laborers and Power Operators; their rates decreased in 2001. For the job categories in which rates increased, the

increases did not result from an increase in any particular diagnostic category.

Figure 11. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men from 1994 to 2001

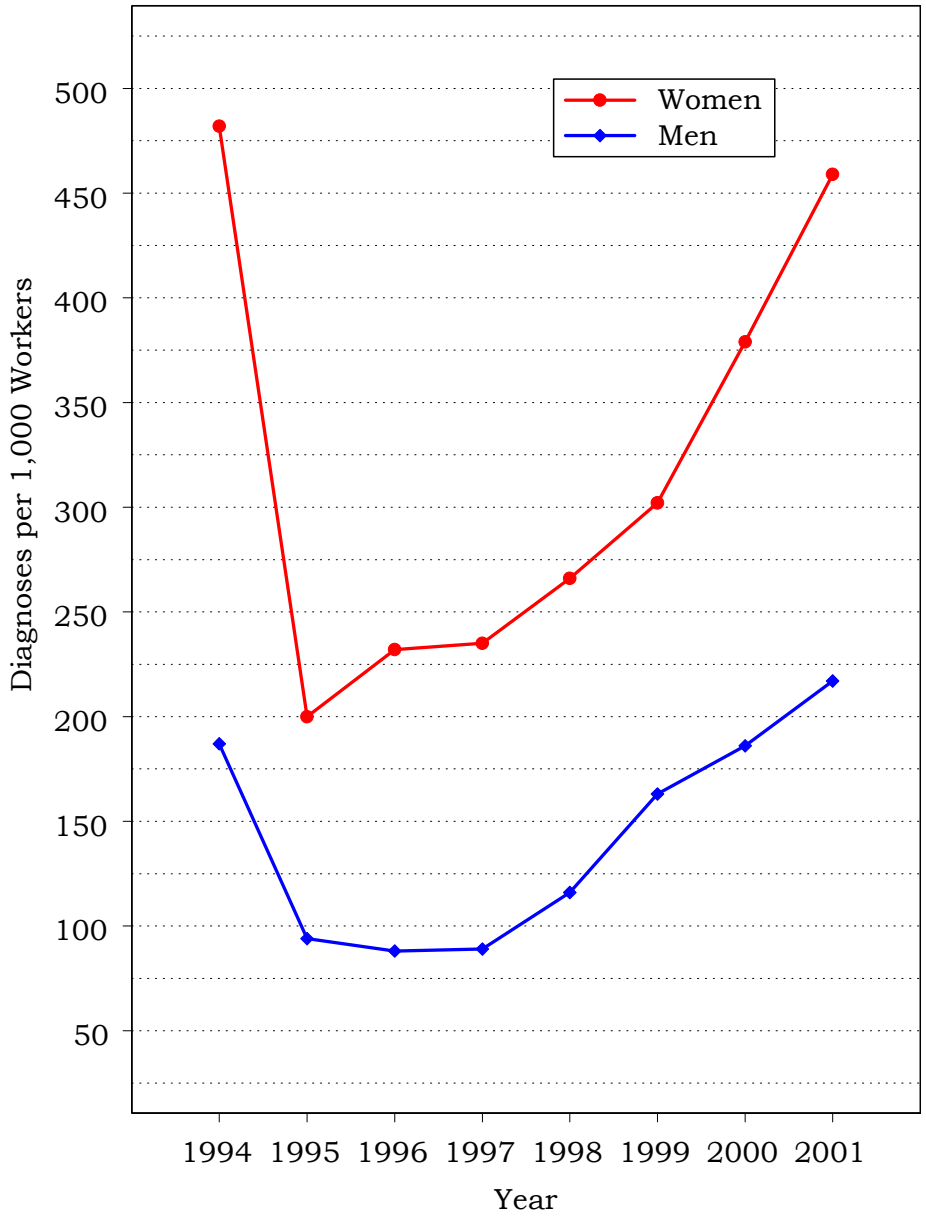


Figure 12. Age-Adjusted Rates for Selected Diagnostic Categories Among Women and Men from 1994 to 2001

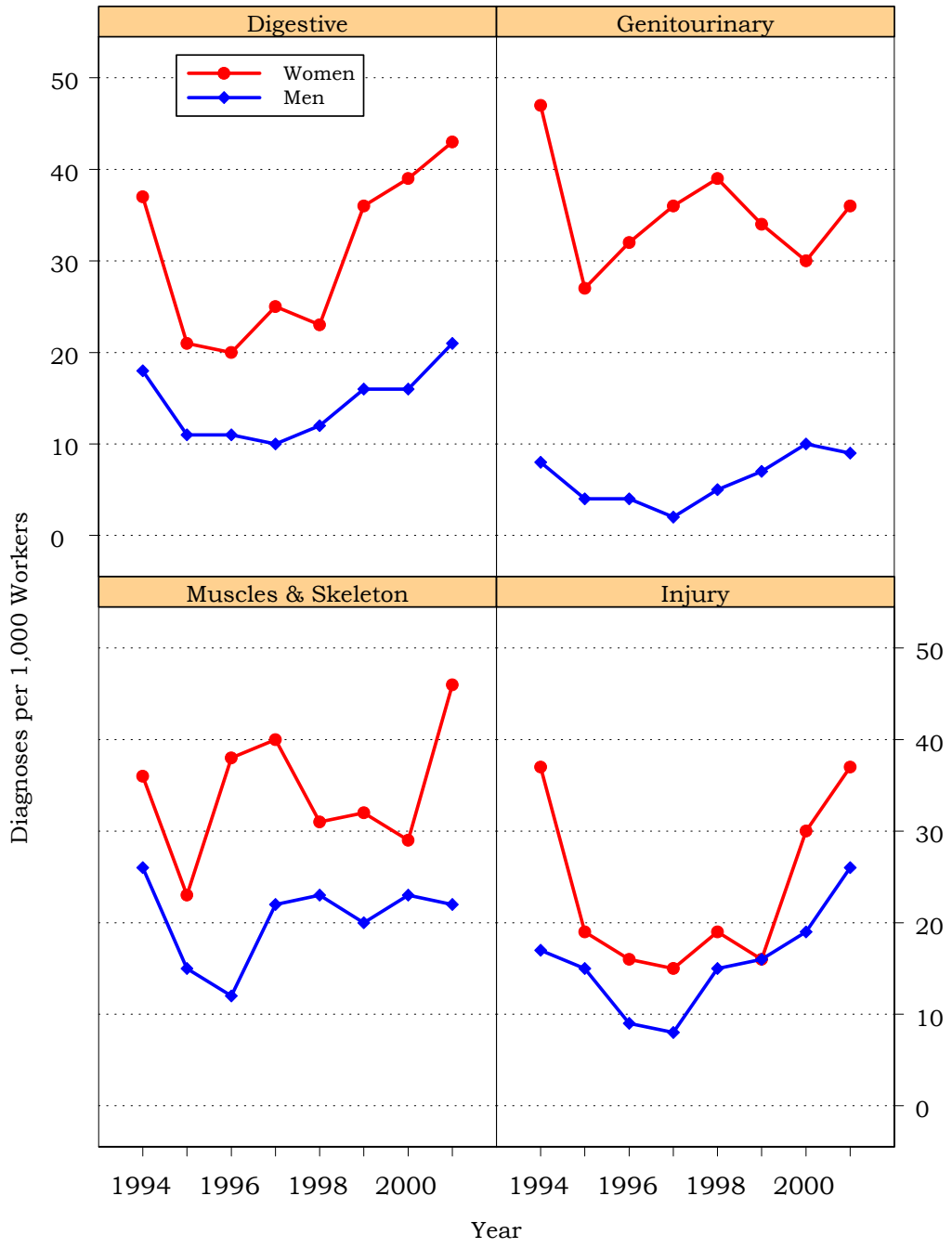
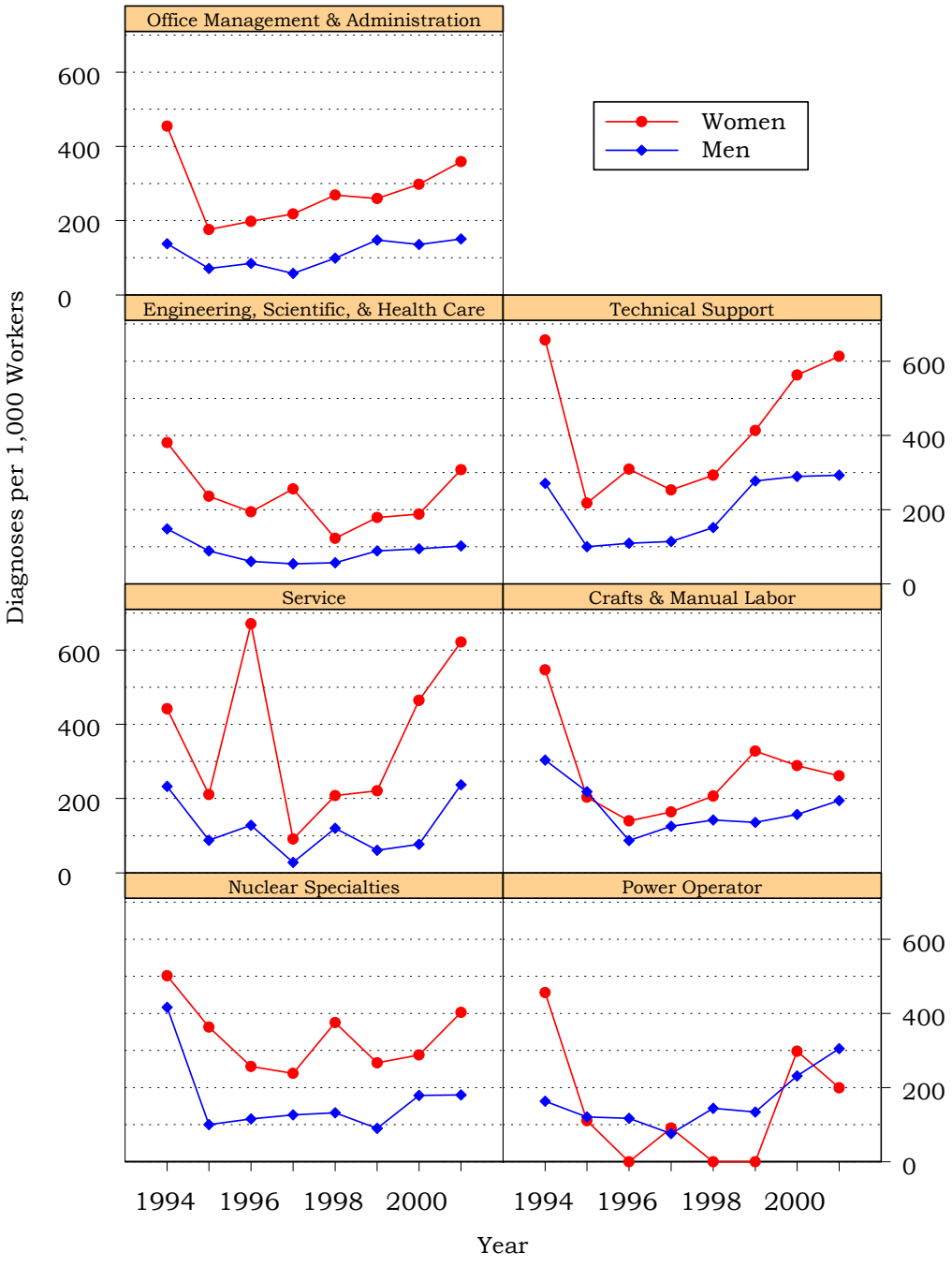


Figure 13. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men by Job Category from 1994 to 2001



Sentinel Health Events for Occupations

A sentinel health event for occupations (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 result from non-occupational exposures. Due to this uncertainty, sentinel health events are assessed in 2 categories:

Definite Sentinel Health Events: Diseases 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.

Four men and 1 woman reported 5 *definite* sentinel health events in 2001 (Figure 14). Diagnoses included 3 fractures (vertebra in neck and lower back; multiple ribs), 1 knee sprain, 2 back disorders, 1 burn (hand), and 1 brain hemorrhage. The causes of these events included falls, overexertion and strenuous movements, and a motor vehicle accident. Fifty-seven of 4,125 (1 percent) diagnoses were identified as *possible* sentinel health events. Forty-two of the 57 diagnoses were carpal tunnel syndrome, reported by 35 workers and resulting in 685 lost calendar days. Seventeen of the workers reporting carpal tunnel syndrome worked in the Technical Support group, and 14 other workers were in the Office Management and Administration group. Women aged 40 to 49 reported the largest number of carpal tunnel diagnoses (17). Among men, the largest number of carpal tunnel diagnoses were reported by workers 50 or older.

Figure 14. Characteristics of SHEOs by Gender

	Total Number of SHEO Diagnoses		Total Number of Days Absent	
	Men	Women	Men	Women
Definite	11	2	136	6
Possible	24	33	701	691
Total	35	35	837	697

Disabilities Among Active Workers

Less than 1 percent of the work force has been on long-term disability since the site began reporting disability data in 1995. Only 0.3 percent (44/12,721) of the work force was on long-term disability in 2001. The percentage on disability was about the same for women and men. Conditions responsible for these disabilities included 13 endocrine/metabolic disorders; 6 psychological disorders; 6 nervous conditions; 4 heart/circulatory disorders; 4 cancers (pancreas, lung, and 2 colon); 3 benign tumors (ovary, bone, and pancreas); 2 back disorders; 2 injuries from a motor vehicle accident; 1 each for disorders of the skin, joints, and connective tissue; and 1 tumor of the brain of unspecified behavior. Forty-eight percent (21/44) of the disabilities occurred among Technical Support workers. Twenty-five (57 percent) of the 44 disabled workers were aged 50 or older, and 3 workers were younger than 40 years of age.

The disabled workers were excluded from other analyses in this report because they were not actively working. Three workers who went on disability in 2001 died before the end of the year (2 cancers and 1 heart attack).

Deaths Among Active Workers

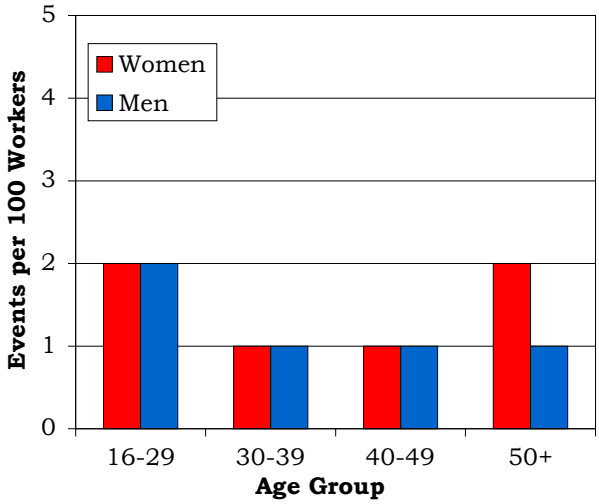
Twelve deaths occurred among SRS workers in 2001. The causes of death included 4 endocrine and metabolic disorders (diabetes, obesity); 3 cancers (prostate, lung, and lymphoma); 3 heart/circulatory disorders; and 1 bleeding in the brain. The cause of 1 death was not known. Five of the deaths occurred among Engineering, Scientific, and Health Care workers; 5 others were among Technical Support workers; and the remaining 2 deaths were among Power Operators.

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.

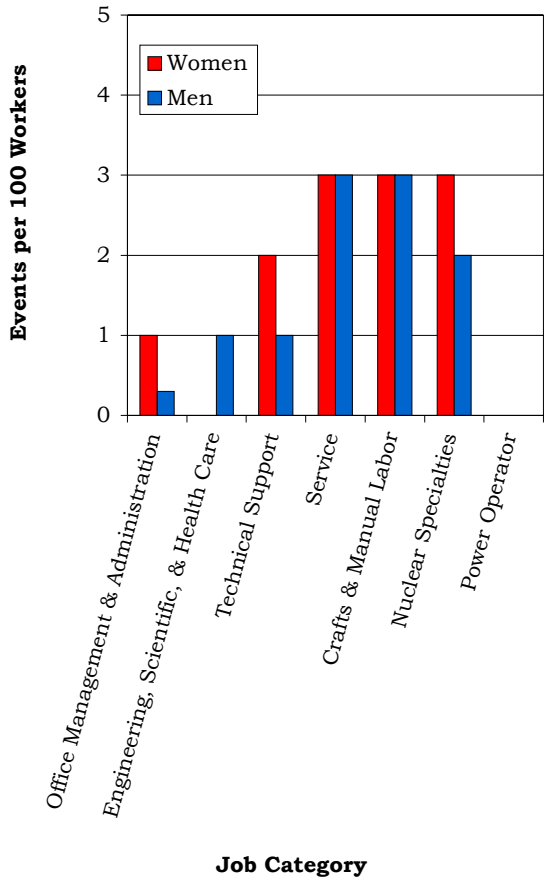
The distribution of OSHA events by age and gender is shown in Figure 15. Forty-five women and 85 men had at least 1 OSHA-recordable event. The overall rate of OSHA-recordable events was the same for women and men (1 per 100) and did not differ significantly by age group. These numbers are very similar to the number of events reported in 2000.

Figure 15. OSHA-Recordable Events by Gender and Age



The rates of OSHA-recordable events by job category and gender are shown in Figure 16. Overall, the Service and Crafts and Manual Labor groups had the highest rate of events (3 per 100 workers) among workers reporting an OSHA event. Women tended to have a rate of OSHA events at least as high or higher than men in the same job category. Service, Crafts and Manual Labor, and Nuclear Specialties workers had the highest rate of OSHA events among women (3 events per 100 workers). Among men, the highest rate of OSHA events occurred among Crafts and Manual Labor and Service workers (3 events per 100 workers). No OSHA events were reported by Power Operators or by women in the Engineering, Science, and Health Care group.

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



A total of 240 lost/restricted workdays were reported for women, very similar to the 211 workdays reported in 2000. The 77 percent decrease in the lost/restricted workdays observed among women from 1999 to 2000 has stabilized at the 2000 level in 2001. Men experienced 427 lost/restricted workdays, continuing the decline seen from 1999 to 2000. Thirty-eight percent fewer lost/ restricted workdays were reported in 2001 than the 688 days reported in 2000. The 688 days reported in 2000 represented a 21 percent decrease from the number of workdays reported in 1999.

Overall, the average number of workdays lost or with restricted activity due to an OSHA event was the same for men and women (5 days). There was no relationship between age and the number of days lost/restricted for men or women. Among men, Service workers reported the highest average number of lost/restricted workdays due to an OSHA event (17 days). Among women, workers in the Technical Support group had the highest average lost/restricted workdays (7 days).

Diagnostic and Accident Categories for OSHA-Recordable Events

One hundred thirty-five OSHA events were recorded on the OSHA 200 Logs, involving 64 diagnoses among women and 122 diagnoses among men (Figure 17). Fifty-eight percent of the diagnoses among women involved injuries, of which sprains and strains and open wounds were the most common type (30 percent each). Among men, injuries accounted for 70 percent of the diagnoses reported, primarily due to open wounds (31 percent) and bruises (19 percent). Three women and 5 men reported carpal tunnel syndrome, resulting in a total of 6 restricted workdays. Five of the workers were in the Technical Support group.

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

Diagnostic Category	Gender	
	Women	Men
Digestive	0	1
Muscles & Skeleton	12	10
Nervous System	3	11
Respiratory	5	4
Skin	0	3
Unspecified Symptoms	7	7
Injury	37	86
Fractures – Neck, Trunk	0	2
Fractures – Upper Limb	0	2
Fractures – Lower Limb	0	3
Back Sprains & Strains	5	5
Other Sprains & Strains	6	7
Intracranial Injuries	0	1
Open Wounds – Head, Neck, Trunk	4	10
Open Wounds – Upper Limb	7	16
Open Wounds – Lower Limb	0	1
Superficial Injuries	2	4
Bruises	6	16
Crushing Injuries	0	1
Foreign Bodies Entering Orifice	1	8
Burns	1	3
Adverse Reactions to Non-Medical Substances	2	4
Adverse Reactions to External Causes	3	2
Complications of Surgical/Medical Care	0	1

Only 16 percent (22) of the 135 OSHA events were described as an accident in the OSHA logs (Figure 18). Nine of the 22 accidents were described as "submersion/suffocation/foreign bodies," which included 8 foreign body in the eye and 1 choking.

Figure 18. OSHA-Recordable Accidents by Type and Gender

Accident Category	Gender	
	Women	Men
	Number of Accidents	Number of Accidents
Poisoning – Non-Medicinal	2	4
Natural/Environmental Factors	1	1
Submersion/Suffocation/Foreign Bodies	1	8
Other Accidents	1	4
Hot, Corrosive, or Caustic Material/Steam	1	2
Visible/UV Light	0	2
Total	5	17

Rates of OSHA-Recordable Events

The rates of all diagnoses combined for OSHA-recordable events by age and job categories and gender are shown in Figures 19 and 20. Among women, younger workers generally had higher rates, while among men, older workers' rates tended to be higher. The OSHA-recordable rates among women and men were highest among Service/Crafts and Manual Labor workers. Most of the OSHA diagnoses involved injuries. When the rate for OSHA-recordable injuries was considered separately, the same job categories had the highest rates for both women and men. Service/Crafts and Manual Labor workers accounted for 9 percent of the work force but 23 percent of the OSHA-recordable events.

Crafts and Manual Laborers were at 4 times higher risk of open wounds to the arm and bruises than were other workers. They were also 4 times more likely to report muscles and skeleton conditions. Service workers showed a higher risk for sprains and strains other than those affecting the back (14 times) and bruises (8 times). In addition, Service workers were over 12 times more likely than were other workers to report unspecified symptoms. The risk of sprains and strains was 6 times higher

among Nuclear Specialties workers than other occupational groups.

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

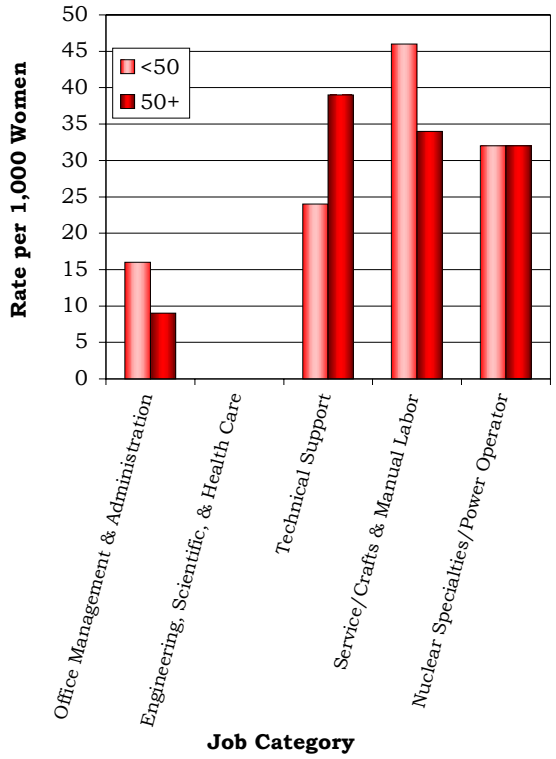
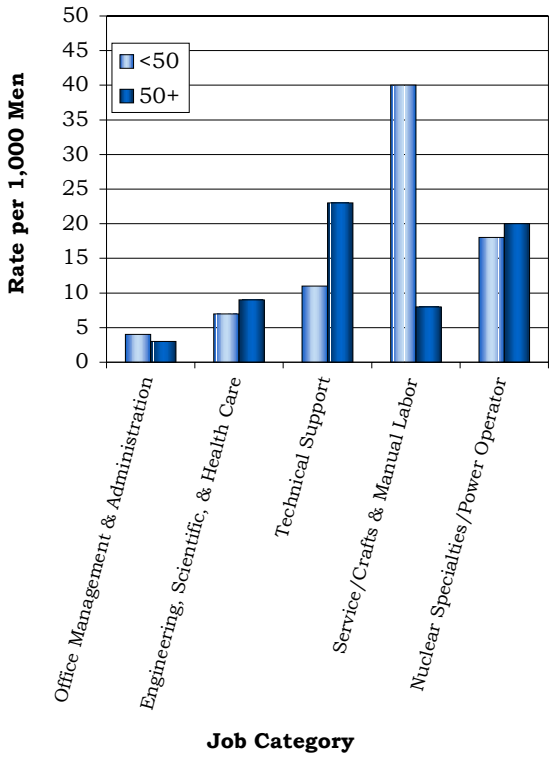


Figure 20. OSHA-Recordable Rates by Age and Job Categories Among Men, All Diagnoses Combined

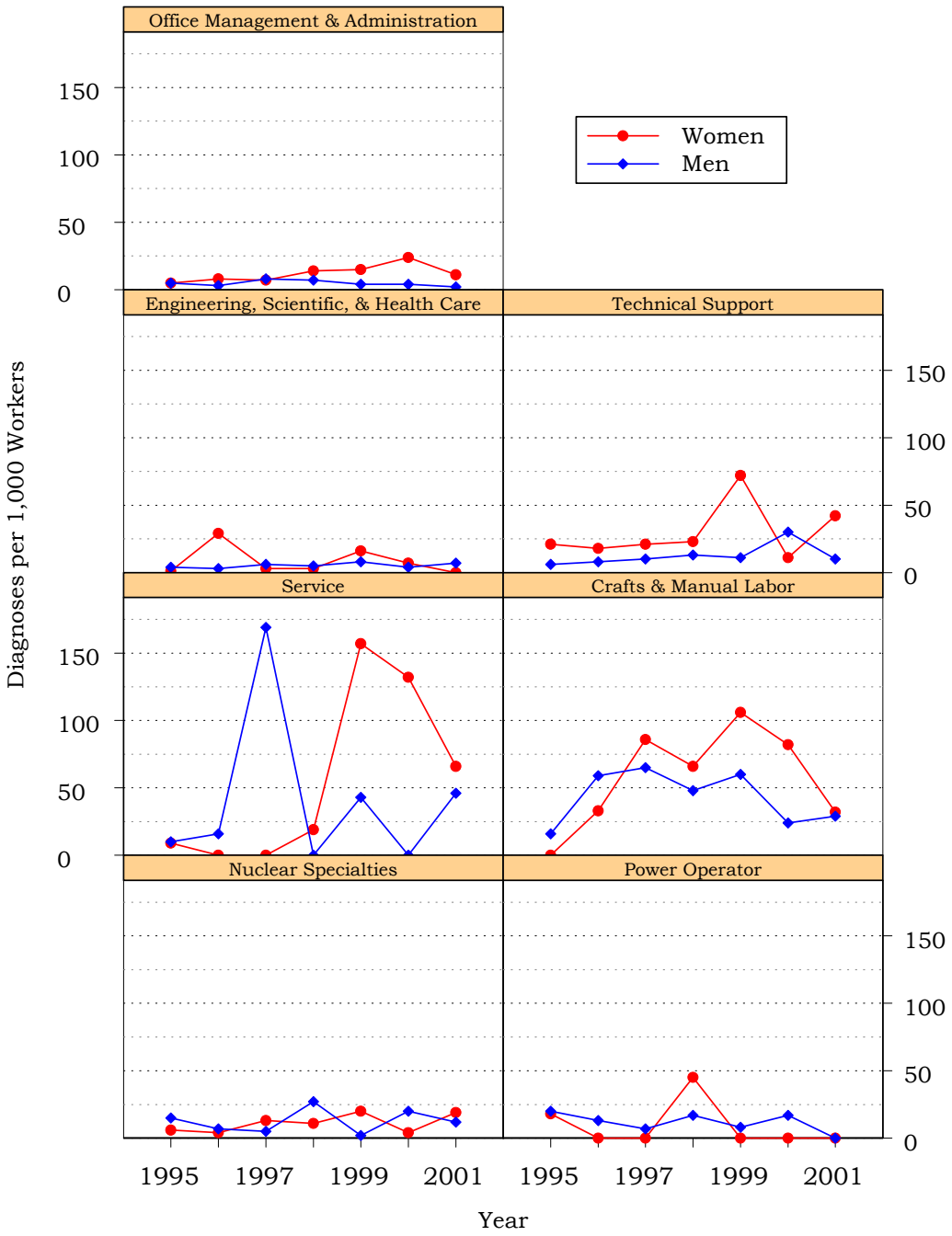


Time Trends for OSHA-Recordable Events

Savannah River Site's OSHA-recordable data were made available for Epidemiologic Surveillance analysis beginning in 1995. The age-adjusted rates for all diagnoses combined from 1995 to 2001 by job category and gender are shown in Figure 21. While minor fluctuations in rates were numerous during the 7-year period, the overall rates for OSHA-recordable events among men did not change greatly for the majority of job categories. Following the rate increase shown by Crafts and Manual Labor workers in 1999, rates have declined for both men and women. The rate decline for men in this group in 2000 was significant. The rate decrease continued for women in 2001, while the rate for men

remained somewhat stable. A significant increase in rates due to an increase in all types of diagnoses was noted among male Technical Support workers in 2000, followed by a return to the 1999 level in 2001. Women Technical Support workers had a significant rate increase in 1999 and again in 2001. An increase in open wounds was noted in 2001 for this group. The dramatic increase in the OSHA-recordable rate among male Service workers observed from 1996 to 1997 has not continued. Service workers are a relatively small group (there has been an average of 75 men in this category between 1998 and 2001), and small changes in the number of events can produce substantial changes in rates from year to year in a small group. Despite numerous fluctuations in rates, no indication of a systematic trend in OSHA-recordable rates in any of the job categories was seen over the 7-year period. There have also not been any significant changes in the rates of injuries since 1995.

Figure 21. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Women and Men by Job Category from 1995 to 2001



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 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