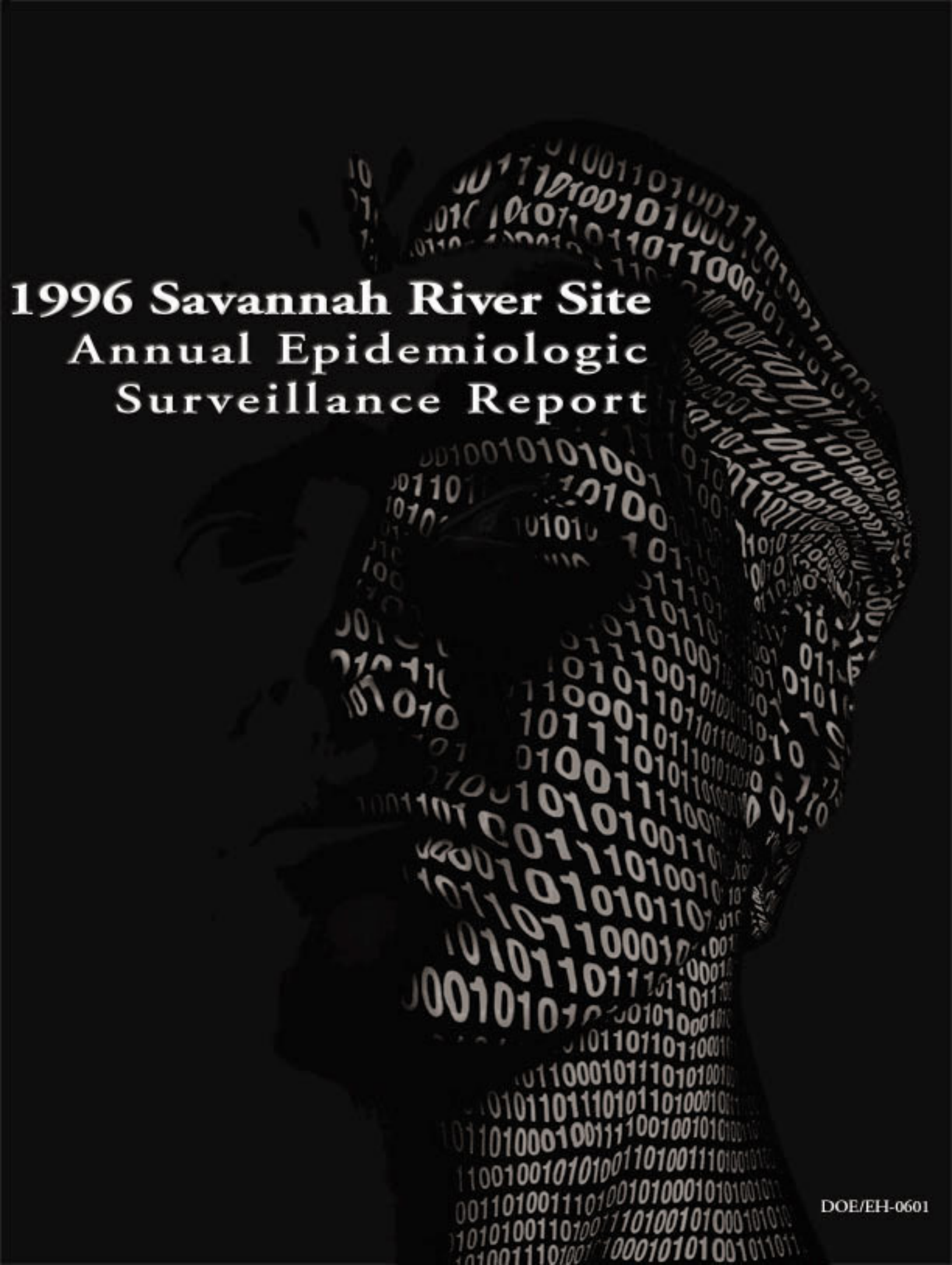
1996 Savannah River Site Annual Epidemiologic Surveillance Report



DOE/EH-0601

SAVANNAH RIVER SITE
1996 Epidemiologic Surveillance Report

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

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Savannah River Site 1996

AT A GLANCE

Eight percent of the workers reported at least one absence in 1996, unchanged from the 1995 percentage.

For any given age group, the absence rate among women was at least twice that of men.

The dramatic decline in the number of 5-day absences seen from 1994 to 1995 did not continue into 1996. The number of absences reported in 1996 were almost identical to the number reported in 1995.

The three leading diagnostic categories among women remained unchanged from 1995. Respiratory, genitourinary, and muscle and skeletal conditions accounted for 48 percent of all reported diagnoses among women.

Two of the three most frequently reported diagnoses were the same for men and women. Among men, 69 percent of all reported diagnoses were due to respiratory conditions, muscle and skeletal conditions, digestive conditions, injuries, and heart and circulatory conditions.

We observed no evidence of an excess of any particular type of cancer, nor any evidence that a particular occupational group had an excess of reported cancer.

The number of workers with at least one OSHA-recordable event in 1996 increased 54 percent compared with the number of workers in 1995. This doubling may to some degree reflect improved reporting of OSHA data in 1996; 1995 was the first year in which Savannah River Site submitted OSHA data to the Epidemiologic Surveillance Program.

The rate of OSHA-recordable events was about the same for women and men in 1996. The occurrence of OSHA-recordable injuries did not appear related to age.

Sprains and strains, as well as open wounds, were the most common types of OSHA-recordable injuries among both men and women.

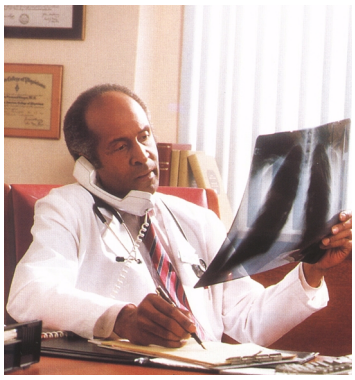
Crafts and Manual Labor workers had an overall occupational injury risk at least 7 times greater than the other occupational groups.

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 five or more consecutive workdays, occupational injuries and illnesses, and disabilities and deaths among current workers.

Epidemiologic Surveillance has been conducted at 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, 1996 through December 31, 1996. 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 Epidemiologic Studies.

The Epidemiologic Surveillance report for SRS has been redesigned for 1996. The information in this report provides highlights of the data analyses conducted. Surveillance reports and additional supporting tables are posted on the DOE Office of Epidemiologic Studies' Web Site **http://www.eh.doe.gov/epi/**, or are available by request. The main sections of the report include: work force characteristics; absences due to injury or illness lasting five or more consecutive workdays; 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 1996 report includes a new section on time trends that provides comparative information on the health of the work force from 1994 through 1996.



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 at the sites, thereby affecting the observed patterns of illness and injury.

Site Overview

SRS is a 320-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 the Westinghouse Savannah River Company. The facility 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 end of the Cold War, the mission for SRS changed from nuclear materials production to environmental restoration and waste management. All five 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

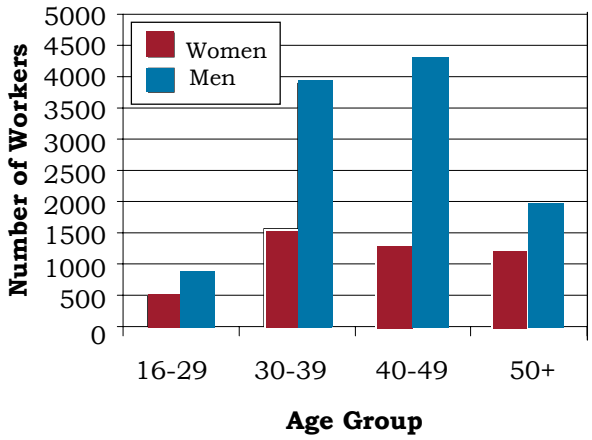
facilities is also being conducted, with more than 600 facilities presently being assessed.

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 - 1996

A total of 14,711 SRS employees were included in epidemiologic surveillance in 1996, 408 fewer workers than were present in 1995. The age and gender distribution of the 1996 work force is shown in Figure 1.

Figure 1. The Work Force by Gender and Age



There were 10,955 men and 3,756 women in the work force. The average age of male SRS workers was 41 years and 39 years for females. The majority of the SRS workers was White (77 percent). African Americans comprised about 20 percent of the work force; Hispanics, Asians, Native Americans, and others made up the remaining 3 percent.

For this report, individual job titles reported by SRS were grouped together into job categories. The grouping was done because there were either too few workers or not enough health events 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, as shown in Figure 2. Women were heavily represented in Office Management and Administration and in Technical Support positions. A larger percentage of men were engaged in Engineering, Scientific, and Health Care and Technical Support jobs. A more detailed distribution of the work force by gender, age, and job category is available in the supporting tables for this report at **http://www.eh.doe.gov/epi**.

Figure 2. The Work Force by Job Category and Gender

Job Category	Women	Men
Office Management & Administration	1,816 48%	1,829 16%
Engineering, Scientific & Health Care	333 9%	2,781 25%
Technical Support	1,299 34%	4,583 42%
Service	17 <1%	77 1%
Crafts & Manual Labor	160 4%	1,204 11%
Nuclear Specialties	122 3%	408 4%
Power Operator	9 <1%	73 1%

Number and Length of Absences

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

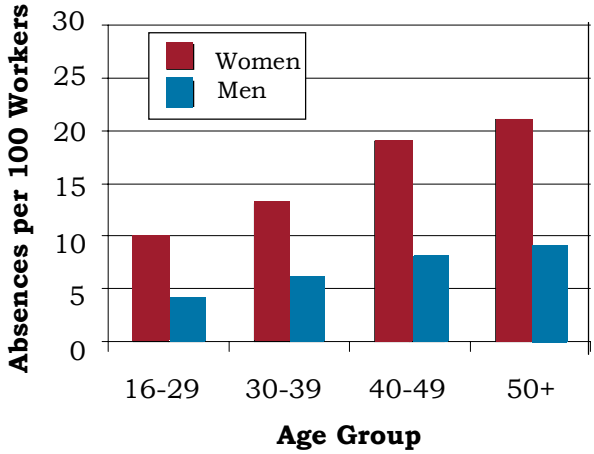
days or 40 consecutive work hours. If an absence overlaps a weekend, the weekend days are counted in the total duration of absence, but do not replace the 5 workday requirement. When an absence overlaps a weekend, the Friday and Monday surrounding that weekend are considered consecutive workdays. All work-related injuries and illnesses must be reported regardless of the length of absence. Non-occupational illnesses and injuries that involve absences of fewer than five days do not routinely require a medical clearance for return to work and are therefore excluded from these analyses.

One change from previous reports is the exclusion of certain absences that lasted at least five consecutive workdays but did not result from an illness or injury. These events included 107 women who reported 110 absences for maternity leave and 5 men and 6 women who reported 12 absences for elective surgical procedures not related to the treatment of an illness or injury.

Throughout this report, analyses take gender, age, and job category into account because the risk of illness and injury varies by these factors. This is done either by presenting the analyses in distinct age, gender, or job categories (stratification) or by statistical methods of adjustment.

Eight percent of the workers reported at least one absence in 1996, unchanged from the 1995 percentage. The 582 5-day absences among 3,756 women resulted in an absence rate of 15 per 100 workers; the rate among men was 7 per 100 workers (779/10,955, Figure 3). For both men and women, the absence rate increased with age. For any given age,

Figure 3. Absence Rate by Gender and Age



the absence rate among women was at least twice that of men. As shown in Figure 4, the average duration of absence was lowest for both men and women in the 16-29 age group. By comparison, the average duration of absence was higher among workers aged 30 and

older but varied little among these older age groups. In all age groups, the average duration of absence was slightly higher among women than among men.

The dramatic decline in the number of 5-day absences seen from 1994 to 1995 did not continue into 1996. Including absences related to maternity leave, the number of absences reported in 1996 (1,471) were comparable to the number reported in 1995 (1,477).

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	48	909	19
	30 - 39	198	5,285	27
	40 - 49	246	6,428	26
	50 +	90	2,496	28
	Total	582	15,118	26
Men	16 - 29	31	539	17
	30 - 39	230	4,775	21
	40 - 49	342	7,181	21
	50 +	176	4,168	24
	Total	779	16,663	21

The rate of 5-day absences varied by job category for men and women (Figure 5). Women had higher rates of absence than did men across similar job categories. At 11 absences per 100 workers, men in the Nuclear Specialties had the highest rate (43/408) among male workers, while those in the Service category had the lowest rate (3/77) of 5-day absences. Among women, Technical Support staff had the highest absence rate (269/1,299), followed by Nuclear Specialists (22/122).

As shown in Figure 6, there was no consistent pattern in average absence duration between men and women in various occupations. For the work force as a whole, the average duration of absence among women (26 days) was somewhat greater than that of men (21 days). Although Nuclear Specialties had the highest rate of 5-day absences among men, the average duration of their absences (about 18 days) was shorter than that of men in other job categories. Office Management and Administration workers had the longest average number of days absence (24 days) among men. Among women, Crafts and Manual Laborers had the shortest average absence (about 17 days). Service workers reported few absences but had the longest average duration of absence (80 days) among women. Additional details about the number and length of absences can be found in the supporting tables for this report.

Figure 5. Absence Rate by Job Category and Gender

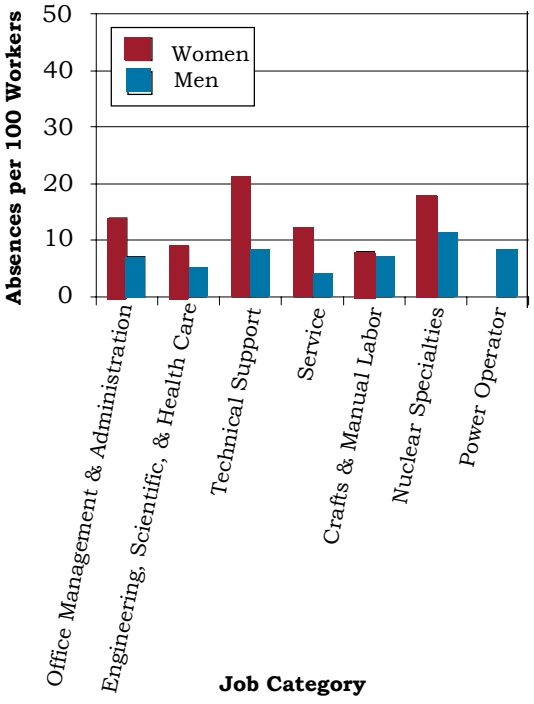
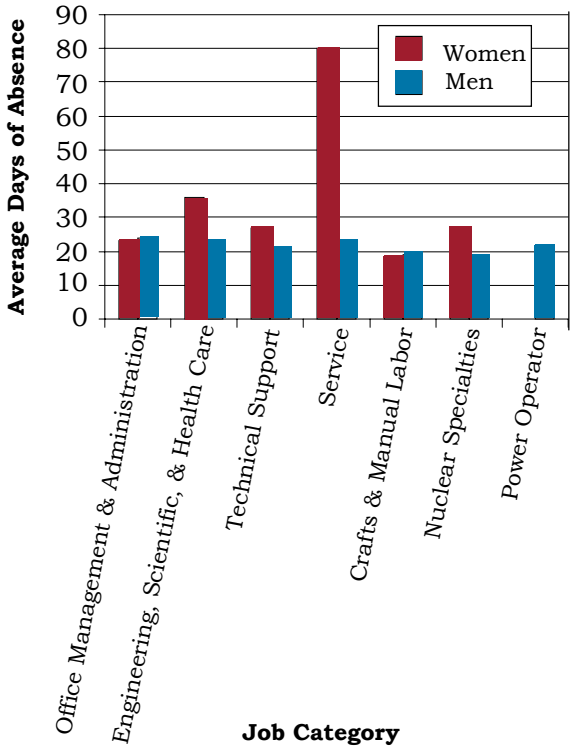


Figure 6. Average Duration of Absence by Job Category and Gender



Diagnostic Categories

Epidemiologic surveillance monitors *all* illnesses and injuries among active workers because it is not always possible to determine what health effects are due to occupational exposures and what are due to other causes. Workers who required return-to-work clearances reported illness and injury diagnoses to the occupational medicine clinic. An absence due to illness or injury may involve more than one 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 diagnoses for statistical purposes. You can find specific diagnoses in the Explanation of Diagnostic Categories.

The number of reported diagnoses categorized according to the ICD-9-CM and number of lost calendar days are presented in Figure 7. Women reported 877 diagnoses and accrued 15,118 days of absence related to them. Men reported 1,035 diagnoses and 16,663 days of absence. The three leading diagnostic categories among women remained unchanged from 1995. Respiratory (19 percent), genitourinary (15 percent), and muscle and skeletal conditions (14 percent) accounted for 48 percent of all reported diagnoses among women. The majority of respiratory conditions was due to acute upper respiratory infections (46 percent), chronic obstructive pulmonary disease (primarily bronchitis) (23 percent), and flu and pneumonia (23 percent). Over 80 percent of the genitourinary conditions were related to disorders of the reproductive organs. Back pain and disk injuries made up 51 percent of muscle and skeletal conditions, followed by rheumatism (24 percent) and arthritis (18 percent).

Two of the three most frequently reported diagnoses were the same for men and women. Among men, 69 percent of all reported diagnoses were due to respiratory conditions (20 percent),

muscle and skeletal conditions (16 percent), digestive conditions (11 percent), injuries (11 percent), and heart and circulatory conditions (11 percent). The respiratory diagnoses were primarily acute respiratory infections (38 percent) followed by pneumonia and flu (34 percent) and bronchitis (23 percent). A closer look at diagnoses affecting the muscles and skeleton showed that about 60 percent were back problems, and 36 percent involved arthritis or rheumatism. Forty-one percent of the digestive disorders were hernias. Sprains and strains comprised 25 percent of the injuries; fractures (25 percent) and dislocations (14 percent) were also common. We noted six allergic reactions and seven diagnoses related to complications of medical care reported among the 114 diagnoses categorized as injuries. Fifty-nine percent of the circulatory diagnoses were hypertension (high blood pressure) or ischemic heart disease (restricted blood flow to an artery in the heart).

The above diagnoses varied by age. The most frequently reported diagnoses were more consistent among the various age groups of women than men. Conditions affecting the respiratory system ranked among the top three categories for men and women of all ages. Heart and circulatory conditions were primarily confined to men aged 50 and older. Muscle and skeletal diagnoses were common in men aged 30 to 49 and among women aged 30 and older. Genitourinary diagnoses were frequently reported by women younger than age 50, but this diagnostic category was not common among men.

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	57	2,083	14	254
Blood	3	143	8	191
Cancer	22	1,435	19	544
Digestive	88	2,454	117	2,011
Endocrine / Metabolic	26	1,131	22	324
Existing Birth Condition	0	0	4	279
Genitourinary	128	4,527	49	741
Heart / Circulatory	34	1,106	114	3,699
Infections / Parasites	28	364	42	670
Injury	56	1,743	114	4,272
Respiratory	171	2,590	209	2,220
Psychological	30	778	28	714
Miscarriage	12	149	N/A	N/A
Muscles and Skeleton	119	3,791	169	5,146
Nervous System	34	1,061	42	753
Skin	7	79	17	269
Unspecified Symptoms	62	1,148	67	1,177

Note: Lost calendar days for each diagnosis are counted more than once if there are multiple diagnoses per absence.

Injuries were among the more commonly noted diagnoses among men younger than age 40, but among women injuries were reported frequently only in workers aged 50 or older.

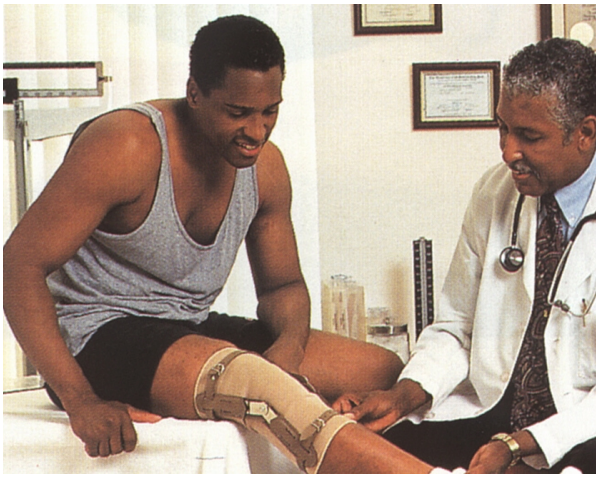
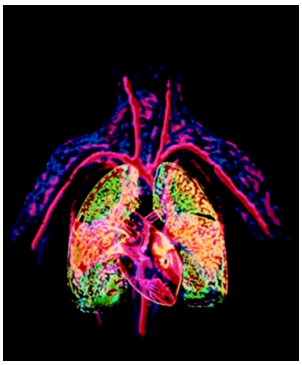


Figure 8 shows the frequency of reported diagnoses by job category for men and women. The types of diagnoses did not vary significantly by job category. Among men, muscle and skeletal conditions, injuries, and respiratory conditions appeared most often in nearly all job categories. Among women, conditions affecting the muscles and skeleton and respiratory diagnoses were common among most job categories. Among the Engineering, Scientific, and Health Care group, two women reported the nine cancer diagnoses. One woman had seven diagnoses in three absences and the other had two diagnoses in one absence. The Supporting Tables contain more detailed information about diagnoses and absences by gender, age, and job category.



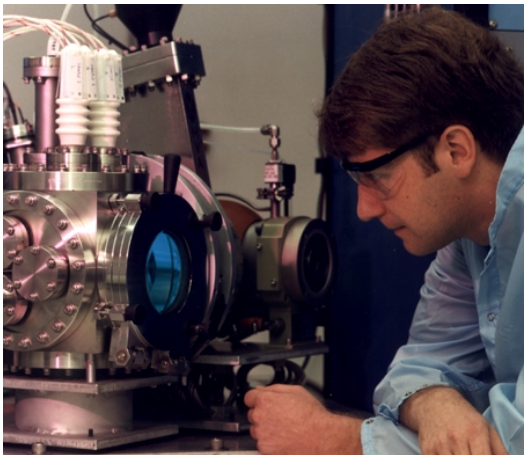


Figure 8. Most Frequently Reported Diagnoses by Job Category and Gender

Job Category	Men	Women
Office Management & Administration	**Muscles and Skeleton (31)** **Heart/ Circulatory (29)** **Injury (25)**	**Respiratory (76)** **Genitourinary (53)** **Muscles and Skeleton (49)**
Engineering, Scientific, & Health Care	**Muscles and Skeleton (33)** **Respiratory (32)** **Digestive (29)**	**Digestive (10)** **Cancer (9)** **Muscles and Skeleton (8)**
Technical Support	**Respiratory (110)** **Muscles and Skeleton (69)** **Injury (59)**	**Respiratory (80)** **Genitourinary (69)** **Muscles and Skeleton (54)**
Service	**Respiratory (3)** **Muscles and Skeleton (1)** **Unspecified Symptoms (1)**	**Heart/ Circulatory (2)** **Unspecified Symptoms (2)** **Genitourinary (1)**
Crafts & Manual Labor	**Muscles and Skeleton (28)** **Respiratory (15)** **Digestive (11)** **Injury (11)**	**Respiratory (4)** **Injury (2)** **Miscarriage (2)** **Muscles and Skeleton (2)** **Unspecified Symptoms (2)**
Nuclear Specialties	**Respiratory (24)** **Heart/ Circulatory (8)** **Injury (8)** **Muscles and Skeleton (6)**	**Respiratory (6)** **Muscles and Skeleton (6)** **Unspecified Symptoms (4)**
Power Operator	**Unspecified Symptoms (4)** **Respiratory (2)**	**None**

Note: Numbers in parentheses are number of diagnoses reported.

Rates of Disease Occurrence

A Word about Rates: The previous section considered the **number** of absences and diagnoses among various worker groups. For example, Figure 7 shows that men reported 169 and women reported 119 diagnoses involving muscle and skeletal conditions during 1996. Men therefore reported more muscle and skeleton diagnoses than women reported. As there were almost three times more men than women at Savannah River, it seems reasonable to expect more muscle and skeletal conditions among men than women. Does this mean that men were at greater risk of muscle and skeletal conditions compared with women in 1996? To correctly answer the question, the total number of men and women in the work force must be considered. A more accurate way to compare risk among men and women is to calculate the rate of muscle and skeletal conditions for each gender. Rates are calculated by dividing the number of muscle and skeletal 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:

169 muscle and skeletal conditions
÷ 10,955 men = .015 x 1,000
= 15 muscle and skeletal conditions per 1,000 men

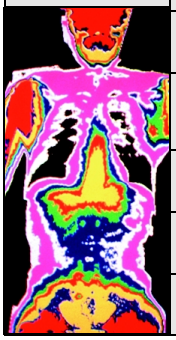
119 muscle and skeletal conditions
÷ 3,756 women = .032 x 1,000
= 32 muscle and skeletal conditions per 1,000 women

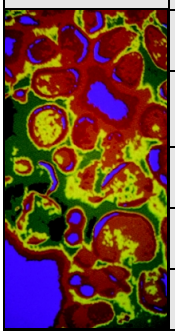
Comparing these rates now correctly suggests that reported absences due to muscle and skeletal conditions among women were twice the rates for men. They are called *crude rates* because they do not account for possible differences between men and women in factors such as age that might affect the individual's risk of having a muscle and skeletal disorder. Because age is so strongly related to the risk of disease and injury, epidemiologists almost always take age into account when comparing groups. This is done by using age-specific categories or by methods of statistical adjustment.

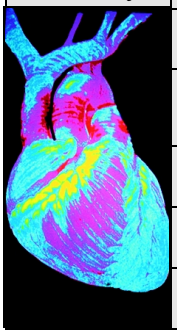
The diagnosis rate (also called the illness and injury rate) is the number of occurrences of a given disease or health condition observed over the course of a year per 1,000 workers at risk of getting that condition (see shaded box). One health condition, arthritis for example, may result in several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

In the following analyses the four age groups were collapsed into two: workers less than 50 years of age and those aged 50 or older (see Figure 9). In addition, the seven occupational groups were combined into five larger groups. These groups were collapsed to ensure that the number of diagnoses in each group was large enough to analyze. Five groups of diagnoses of particular interest to workers are presented: all illnesses and injuries combined, cancer, heart/ circulatory system, respiratory system, and injury. Additional information about other disease groups can be found in the Supporting Tables.

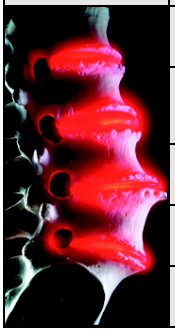
Figure 9. Illness and Injury Rates by Job Category, Gender, and Age

Diagnostic Category	Rate per 1,000			
All Illnesses & Injuries Combined	Job Category	Age	Men	Women
	Office Management & Administration	<50	91	186
		50+	120	271
	Engineering, Scientific, & Health Care	<50	56	99
		50+	105	552
	Technical Support	<50	100	317
		50+	145	365
	Service / Crafts & Manual Labor	<50	1,246	813
		50+	2,500	6,000
	Nuclear Specialties/ Power Operator	<50	173	267
		50+	218	667

Diagnostic Category	Rate per 1,000			
Cancer	Job Category	Age	Men	Women
	Office Management & Administration	<50	4	3
		50+	2	4
	Engineering, Scientific, & Health Care	<50	1	23
		50+	6	69
	Technical Support	<50	1	4
		50+	0	19
	Service / Crafts & Manual Labor	<50	0	0
		50+	83	0
	Nuclear Specialties/ Power Operator	<50	0	0
		50+	13	0

Diagnostic Category	Rate per 1,000			
Heart / Circulatory	Job Category	Age	Men	Women
	Office Management & Administration	<50	10	5
		50+	33	4
	Engineering, Scientific, & Health Care	<50	3	0
		50+	27	34
	Technical Support	<50	8	16
		50+	25	0
	Service / Crafts & Manual Labor	<50	46	0
		50+	417	2,000
	Nuclear Specialties/ Power Operator	<50	18	26
		50+	38	0

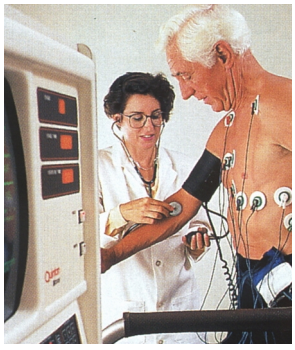
Diagnostic Category	Rate per 1,000			
Respiratory	Job Category	Age	Men	Women
	Office Management & Administration	<50	12	39
		50+	13	56
	Engineering, Scientific, & Health Care	<50	10	13
		50+	15	34
	Technical Support	<50	22	54
		50+	37	144
	Service / Crafts & Manual Labor	<50	185	250
		50+	500	0
	Nuclear Specialties/ Power Operator	<50	67	34
		50+	51	333

Diagnostic Category	Rate per 1,000			
Injury	Job Category	Age	Men	Women
	Office Management & Administration	<50	13	12
		50+	16	41
	Engineering, Scientific, & Health Care	<50	3	3
		50+	6	69
	Technical Support	<50	13	17
		50+	10	0
	Service / Crafts & Manual Labor	<50	138	63
		50+	167	1,000
	Nuclear Specialties/ Power Operator	<50	21	9
		50+	13	0

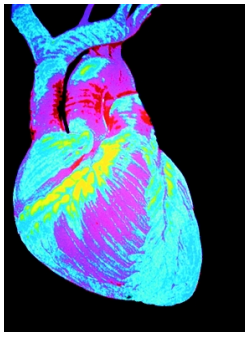
In general, the rate of all illnesses and injuries combined was greater among workers aged 50 and older (Figure 9). The highest rates were observed among workers classified as Service/ Crafts and Manual Labor. With one exception, the rates for female employees were higher than those of men within a particular job category.

Cancer rates in this report are based on reported 5-day absences during the year. A worker may experience several periods of absence from one cancer diagnosis due to medical complications or recurrent treatment. Each reported absence results in a report of a cancer diagnosis. However, it does not imply that this is necessarily 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. will develop cancer increases with age. Cancer rates at SRS were generally higher among workers aged 50 and over than among younger workers. Forty-one diagnoses related to cancer were reported, 19 diagnoses among 17 men and 22 diagnoses among 13 women. Three of the workers reporting cancer in 1996 had reported cancer previously, two in 1995 and one in 1994 and 1995. In each case, these three workers reported a different site of cancer in 1966 than they had reported in previous years. For two of these workers, the cancer appears to have spread from an adjacent organ. The third worker reported Hodgkin's disease in 1994, 1995, and 1996 plus cervical cancer in 1996. We observed no evidence of an excess of any particular type of cancer, nor any evidence that a particular occupational group had an excess of reported cancer.



Men aged 50 and older had the highest rates of heart and circulatory problems. Fifty-three of the 114 absences among men occurred in workers aged 50 and older, and about two-thirds (35/53) of these diagnoses involved ischemic heart disease (restricted blood flow through an artery). Among men, the Service/Crafts and Manual Laborers aged 50 and older had the highest rate of heart and circulatory diagnoses. Women reported 34 heart/ circulatory diagnoses, of which 4 were reported by women aged 50+. Thirteen of the 34 diagnoses involved hypertension and two ischemic heart diseases. The apparently startling rate of 2,000 events per 1,000 workers aged 50 and older noted in the Service/ Crafts and Manual Labor group actually reflected only one woman's absence for hypertension and acute cerebrovascular disease.



Women generally had higher rates of respiratory disease than men, and both male and female workers aged 50 and older had higher rates than younger workers. Service/Crafts and Manual Labor workers had the highest rates of respiratory diagnoses among men compared with other job categories. Technical Support and Nuclear Specialties /

Power Operator workers were also more likely to report a respiratory condition than were other workers.

The injuries in this analysis included both occupational and nonoccupational injuries. We found no consistent pattern of injury diagnoses with age, although Savannah River workers aged 50 and older appeared to be at slightly higher risk than those under 50. The occurrence of injuries was not related to gender in a consistent manner. Occupationally, Technical Support workers were 3 times and Crafts and Manual Labor workers 4 times more likely to report a back sprain or strain than were other groups. We compared the risk of illness and injury among workers classified in one job category with workers in the remaining job categories. Technical Support workers were at 30 percent greater risk compared with other groups, but in general we found no remarkable differences in risk for illness or injury based on job category.

Time Trends

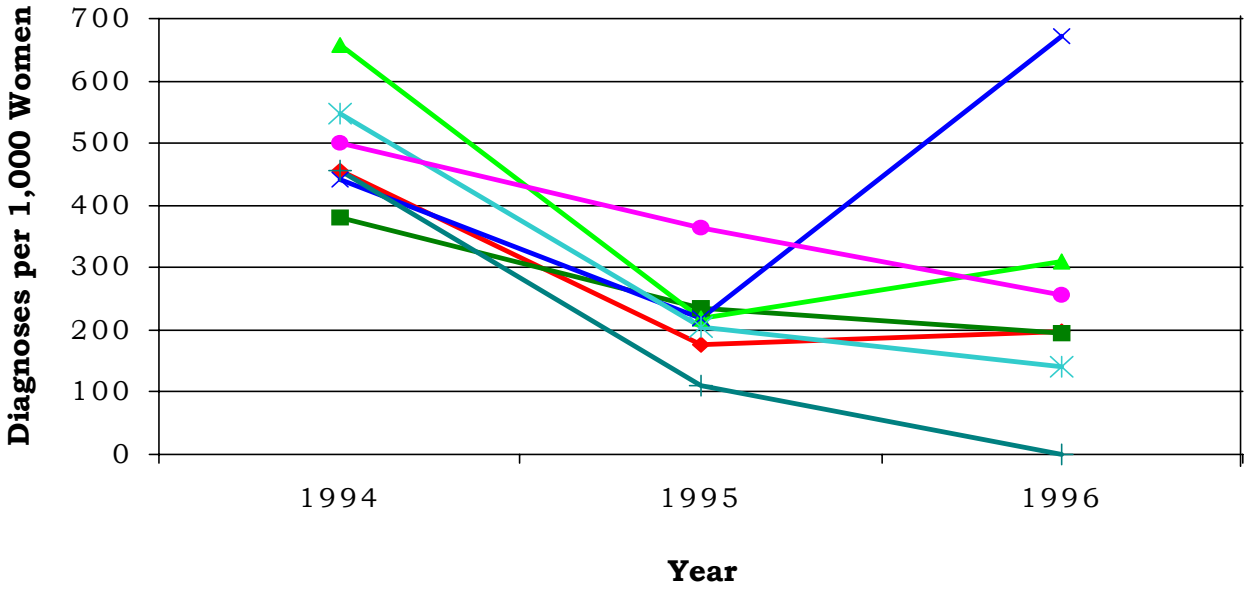
Why Are Rates Age-Adjusted?

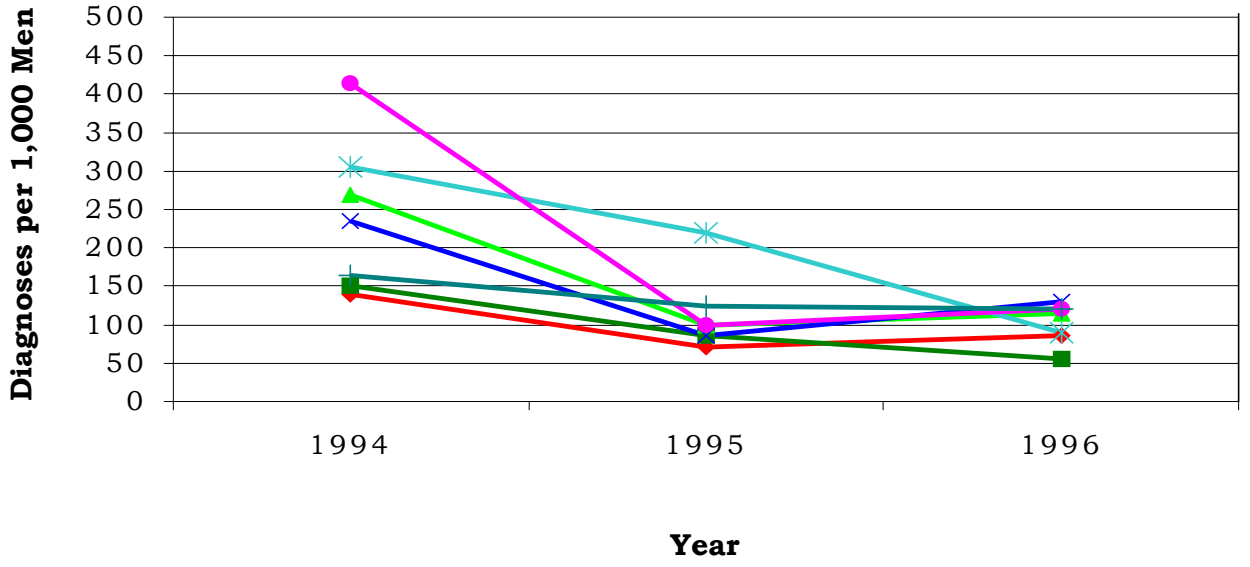
The injury and illness rates in this section of the report are **age-adjusted.** Differences in the age distribution of different groups of workers are taken into consideration in the analyses and one rate is calculated for an entire group. This allows us to make comparisons between groups with different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

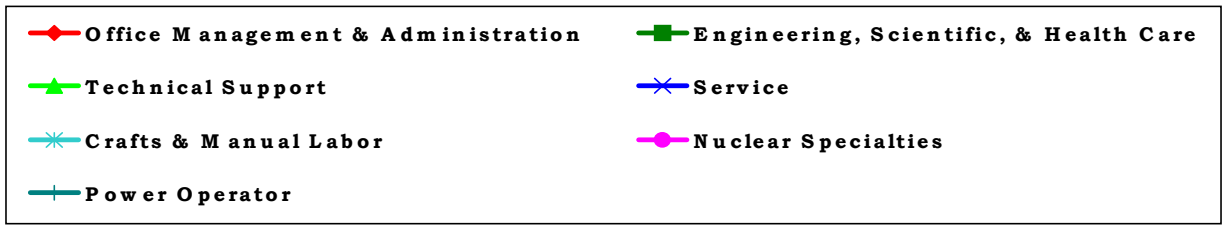
The availability of three years of epidemiologic surveillance data for Savannah River workers permitted us to analyze illness and injury trends over time in the work force. It is important to note that the age-adjusted rates for the years 1994 and 1995 presented in this report differ from the *1994* and *1995 Annual Epidemiologic Surveillance Reports* due to the exclusion of diagnoses resulting from maternity leave. Age-adjusted rates for all illness and injury categories combined are presented in Figure 10.

The age-adjusted rates for all illness and injury categories combined decreased among men and women in most job categories over the past three years. The only exception was a rebound to an overall diagnosis rate higher than that observed in 1994 among women Service workers. Most of this decline occurred between 1994 and 1995.

Figure 10. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men by Job Category from 1994 to 1996





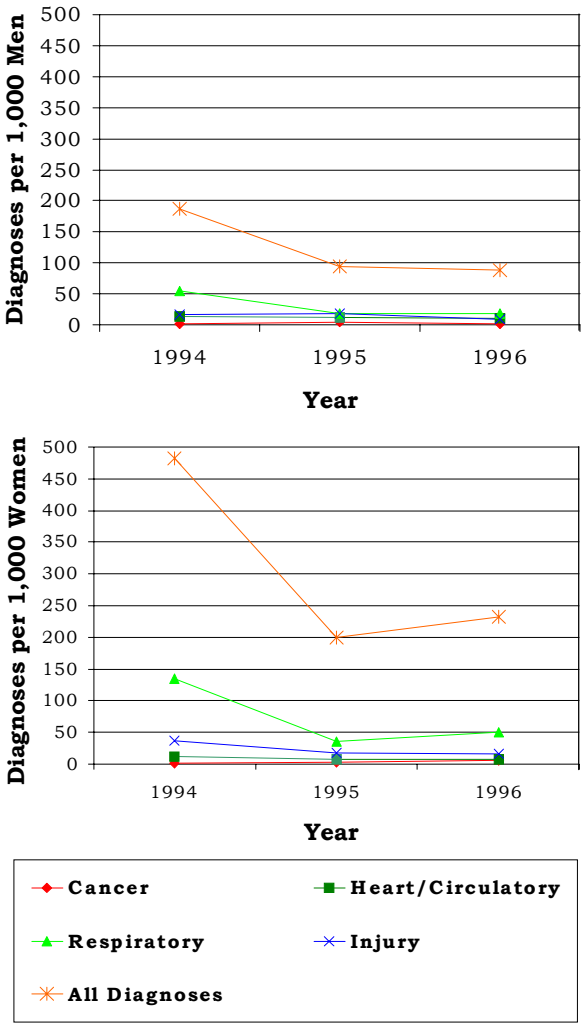


A number of policy changes implemented in 1994 may explain the decline. One change increased the number of days from two to five before a worker was required to seek medical attention for an absence. The other was the increased

use of alternate work schedules by SRS workers. Four-day, 10-hour shifts were introduced in November 1994 and nine-day, 80-hour schedules in April 1995. Workers still using the five-day, 40-hour work schedule are a distinct minority. Since the Worker Protection Order indicates that a return-to-work clearance for a nonoccupational absence is required after five consecutive workdays or 40 hours or more, the guidance is not clear about someone on an alternate work schedule. The requirement for reporting an absence may be a matter of interpretation, thus affecting the reporting of absences.

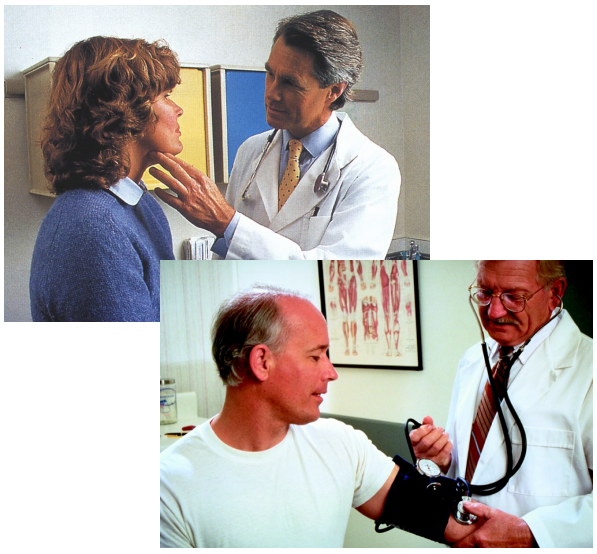
Age-Adjusted rates for selected illness and injury categories are presented in Figure 11. The decline in the diagnostic rate for all injuries and illnesses combined was more dramatic among women than men. We noted a decline in the respiratory diagnosis rate among women and a small decrease in injuries, while rates of heart and circulatory disease and cancer remained low. Among men, respiratory conditions declined slightly. Diagnoses rates for cancer, heart and circulatory conditions, and injuries remained low.

Figure 11. Age-Adjusted Rates for Selected Diagnostic Categories for Men and Women from 1994 to 1996



Sentinel Health Events for Occupations

A sentinel health event for occupation (SHEO) is a disease, injury, or death, which is likely to be occupationally related. Its occurrence may serve as a warning signal that materials substitution, engineering controls, personal protection, or medical care may be required to reduce the risk of illness or injury among the work force. Sixty-four



medical conditions associated with workplace exposures from studies of many different industries have been identified as occupational sentinel health events (see Supporting Tables).

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 two categories:

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

Possible Sentinel Health Events: Conditions such as lung cancer or carpal tunnel syndrome that 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 from cigarette smoking. Carpal tunnel syndrome may result from a job requiring typing or from a hobby such as playing the piano.

No definite sentinel health events were reported in 1996, and 20 of the 1,361 health events (1 percent) were identified as possible sentinel health events (Figure 12). Fifteen of these events involved carpal tunnel syndrome diagnosed among 15 workers (5 women and 10 men) and resulted in 339 days of absence, 67 percent of the total number of days absent from sentinel health events. Carpal tunnel syndrome cases were reported in all occupational groups except the Service and Power Operator groups. Thirteen (87 percent) of the workers reporting this diagnosis were aged 40 or older.

Figure 12. 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	**13**	**7**	**293**	**216**
Total	**13**	**7**	**293**	**216**

Disabilities Among Active Workers

Nine women and 26 men were placed on long-term disability during 1996. Over one-third of the disabilities involved muscle and skeletal disorders: 9 back, 2 joint, and 2 connective tissue. The reasons for the remaining disabilities included 4 cancers, 7 occurrences of heart disease, 4 nervous system disorders, 3 psychological disorders, 2 existing birth conditions, and 1 each for digestive and blood disorders.

Workers aged 40 to 49 made up 38 percent of the work force, but they accounted for 66 percent of the disabled workers. In 1995, workers in this age group (33 percent of the work force) accounted for 37 percent of the disabilities. SRS did not report disability data in 1994. The disabled workers were excluded from other analyses in this report because they were not actively working.

Deaths Among Active Workers

During 1996, 22 deaths occurred among active workers: 20 men and 2 women. Four deaths were due to cancer and 4 others were attributed to heart disease. Six deaths resulted from injuries: 1 motor vehicle accident, 1 case of third-degree burns, 3 gunshot wounds, and 1 carbon monoxide poisoning. Two deaths were caused by disorders of the respiratory system and the causes of 6 deaths were unknown. Eight of the deaths among men and 1 of the deaths among women occurred in workers less than 40 years of age. Half of the deaths were among Technical Support workers.

OSHA-Recordable Events

The Occupational Safety and Health Administration (OSHA) requires that employers maintain a record of occupational injuries and illnesses occurring among employees and to make that information available to OSHA upon request. Employers maintain the information from these OSHA-recordable events in the OSHA 200 Log. OSHA-recordable events differ from absences captured through return-to-work clearances in at least two 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.

Figure 13 shows the distribution of OSHA events by age and gender. The 171 workers with at least one OSHA event in 1996 represented a 54 percent increase compared with the number of workers in 1995. In 1995, men reported approximately two and a half times as many OSHA events as women; in 1996, men had three times more events than women.

Figure 13. OSHA-Recordable Events by Gender and Age

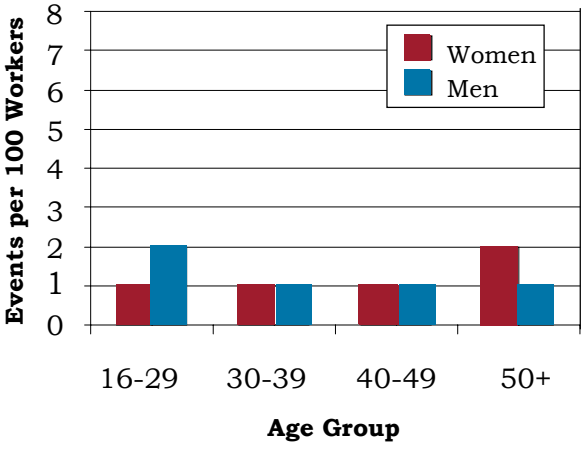
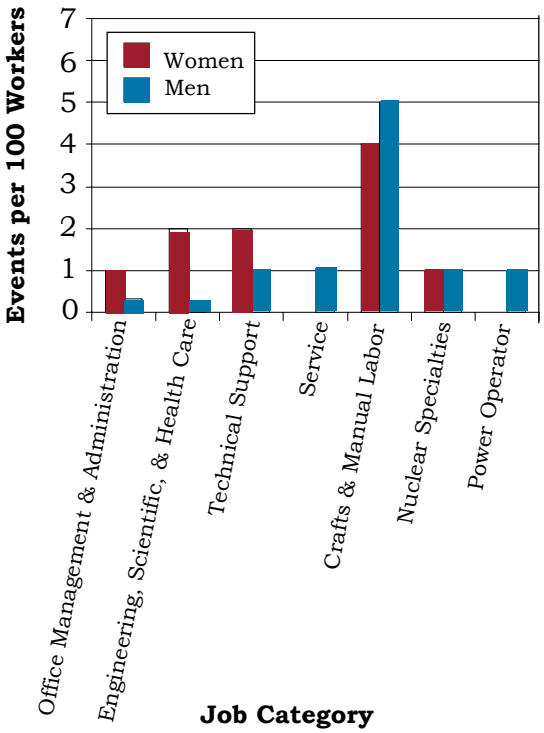


Figure 14. OSHA-Recordable Events by Job Category and Gender



The rate of OSHA-recordable events was about the same for women and men in 1996. The occurrence of OSHA-recordable injuries did not appear related to age.

The rates of OSHA-recordable events by job category and gender are shown in Figure 14. For both men and women, Crafts and Manual Labor workers had the highest OSHA-recordable event rates. This occupational group also had the highest percentage of men (5 percent) and women (3 percent) with at least one OSHA event. Technical Support workers had the highest average number of workdays lost or with restricted activity for OSHA events (11 days for men and women combined). We observed no consistent relationship between age and duration of absence among either women or men. No OSHA events were recorded among women in the Service and Power Operator groups.

Diagnostic and Accident Categories for OSHA-Recordable Events

There were 192 OSHA events recorded in the OSHA 200 Logs, comprised of 48 diagnoses among women and 144 diagnoses among men (Figure 15). Eighty-four percent of the diagnoses reported were for injuries. Sprains and strains, as well as open wounds, were the most common types of OSHA-recordable injuries among both men and women.

Figure 15. OSHA-Recordable Diagnoses by Diagnostic Category and Gender

Diagnostic Category	Gender	
	Women	Men
Respiratory	2	0
Muscles and Skeleton	4	10
Nervous System	1	5
Skin	3	2
Unspecified Symptoms	1	2
Injury	37	125
Fractures - Skull	0	1
Fractures - Upper Limb	1	4
Fractures - Lower Limb	2	2
Back Sprains and Strains	5	18
Other Sprains and Strains	4	23
Intracranial Injuries	0	2
Open Wounds - Head, Neck, Trunk	4	10
Open Wounds - Upper Limb	4	21
Open Wounds - Lower Limb	1	0
Superficial Injuries	4	9
Bruises	1	6
Foreign Bodies Entering Orifice	0	10
Burns	4	16
Unspecified Injuries	3	0
Adverse Reactions to Non-Medical Substances	2	1
Adverse Reactions to External Causes	2	2

About 12 percent of the injuries were burns, which occurred primarily among men in the Technical Support and Crafts and Manual Labor occupations. Men in these two occupational groups also sustained most of the open wounds reported. Sprains and strains accounted for 31 percent of all OSHA-recordable injuries in 1996 (35 percent in 1995); open wounds accounted for 25 percent. Conditions related to the muscles and skeleton (7 percent) also occurred frequently. Age and occupation did not appear related to the type of accident.

Among the 24 OSHA events not attributed to a particular accident, half of the diagnoses were related to the muscles and skeleton, 19 percent to disorders of the skin, and 15 percent to nervous system disorders. The type of accident was not reported for 129 of the 151 OSHA events that resulted from an accident. Among the 22 OSHA-recordable events that included a description of the accident, the types of accidents reported most often were "submersion/ suffocation/foreign bodies" (Figure 16). The injuries reported most often were "foreign body entering an orifice".

Figure 16. OSHA-Recordable Accidents by Type and Gender

Accident Category	Gender	
	Women	**Men**
	Number of Accidents	**Number of Accidents**
Poisoning-Non-medicinal	**1**	**1**
Natural / Environmental Factors	**0**	**3**
Submersion/ Suffocation/ Foreign Bodies	**1**	**0**
Other Accidents	**0**	**3**
Drug Reaction	**2**	**1**

Rates of OSHA-Recordable Events

The rates of all diagnoses combined for OSHA-recordable events by age category, gender, and job category are shown in Figures 17 and 18.

Both men and women aged 50 and older had higher rates than younger workers in the Office Management and Administration group. This age difference was also true for women in the Engineering, Scientific, and Health Care category, and for men in the Nuclear Specialties group. The most striking age difference was observed among women classified as Engineering, Scientific, and Health Care workers, in which workers ages 50 and older had a rate 10 times that of younger women.

Figure 17. OSHA-Recordable Rates by Age and Job Categories, All Diagnoses Combined Among Women

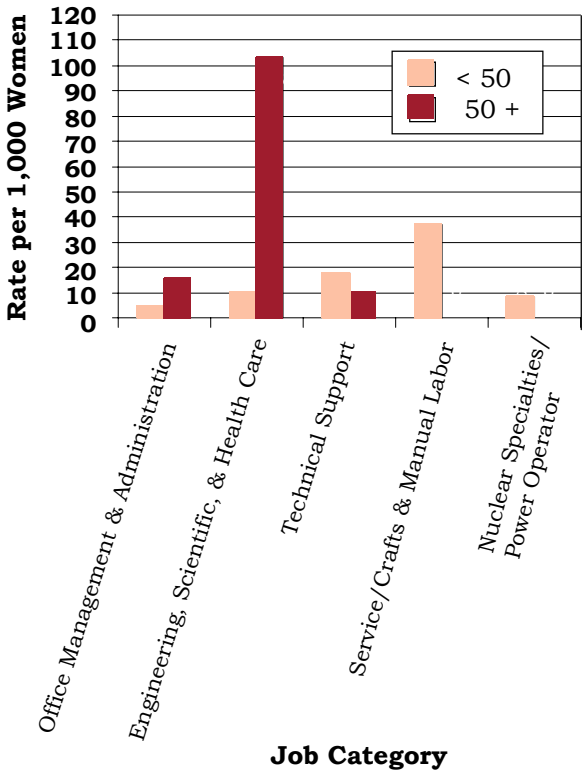
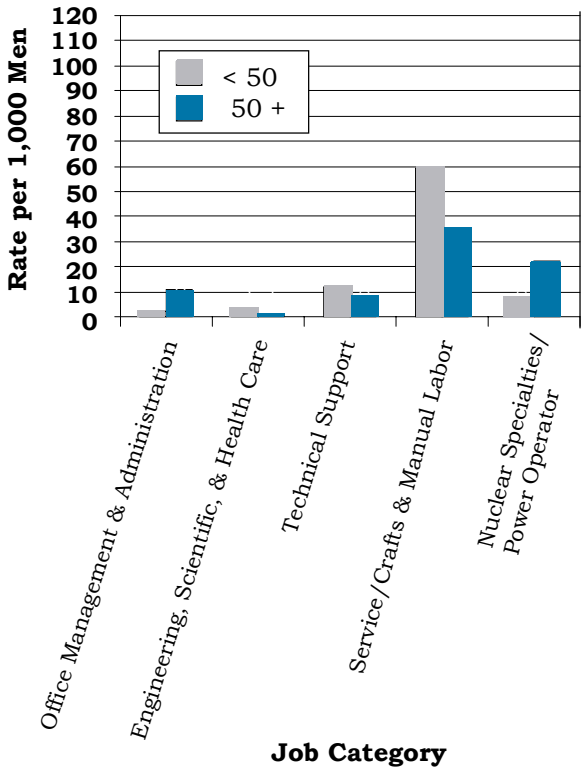


Figure 18. OSHA-Recordable Rates by Age and Job Categories Among Men, All Diagnoses Combined



Some of this variation in injury rates for older versus younger workers may reflect the need to combine several occupational groups for analysis due to small numbers of OSHA events in a given occupational category. It is also possible that within a given occupational group men and women may be performing duties with different injury risks. There does not appear to be a consistent relationship between the age of the worker and the risk of occupational injury at Savannah River.

Not all workers were at equal risk for occupational injury. Crafts and Manual Labor workers had an overall occupational injury risk at least 7 times greater than the other occupational groups.

Compared with other workers, Crafts and Manual Labor workers were about 7 times more likely to suffer back sprains and strains; open wounds of the upper limb, head, neck, and trunk; burns; or more likely to report a superficial injury. They were also over 4 times more likely to report sprains and strains not affecting the back. The 69 OSHA events among these workers resulted in 442 days of restricted activity and 41 lost workdays, a substantial loss of productivity. Nuclear Specialties workers were almost 6 times more likely than other workers to report conditions affecting the muscles and skeleton.

Time Trends for OSHA-Recordable Events

Data on OSHA-recordable events were not available for epidemiologic surveillance analysis prior to 1995. The assessment of time trends requires a minimum of 3 years of data. Time trend analyses for OSHA data will therefore appear in the 1997 Annual Epidemiologic Surveillance Report.

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 two 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 one person followed for one year. For example, 5 persons followed for one year contribute five 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 categories in numeric order according to ICD-9-CM.

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
Infectious / 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 nonarthropod 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, 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 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 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 disc ("slipped disc"), 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 disc; 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