

1998 Brookhaven  
National Laboratory  
Annual Epidemiologic  
Surveillance Report

## **BROOKHAVEN NATIONAL LABORATORY 1998 Epidemiologic Surveillance Report**

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**<http://www.eh.doe.gov/epi/surv>**

# **BROOKHAVEN NATIONAL LABORATORY 1998**

## **At a Glance**

The striking decrease in the number of health events involving return-to-work clearances noted in 1997 did not continue in 1998. Brookhaven reported 224 absences in 1997, 229 in 1998.

The average duration of absence for women and men was similar across age groups. We saw no indication of increasing average duration of absence with age among women or men.

Absence rates related to cancer and diseases of the heart and circulatory system were essentially unchanged from 1993 to 1998. The respiratory disease absence rate among men declined about two thirds from 1995 to 1998, but was unchanged among women.

The diagnoses reported most frequently through return to work clearances were the same as the most common diagnoses reported since 1995.

Overall, patterns of occupational injury and illness were quite similar to those observed in 1997. Among both women and men, rates were higher among Bargaining Units Workers and those in the Technical job category.

We found no consistent difference in rates of OSHA recordable events between women and men across job categories.

The average number of workdays lost or with restricted activity was quite low, and was similar for women (5 days) and men (4 days). We saw no apparent relationship between age or gender and the average number of lost or restricted workdays.

The most common type of OSHA-recordable injury among women was sprains and strains. Among men, the most common injuries were open wounds and sprains and strains. Overexertion and strenuous movements were involved in 35 percent of the accidents among BNL workers in 1998.

The increase in the OSHA-recordable rate noted among women in the Bargaining Units from 1995 to 1997 declined substantially in 1998.

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## Introduction

The U.S. Department of Energy's (DOE) commitment to assuring the health and safety of its workers includes the conduct of epidemiologic surveillance activities that provide an early warning system to detect health problems among workers. The Epidemiologic Surveillance



Program monitors illnesses and health conditions that result in an absence of 5 or more consecutive workdays, occupational injuries and illnesses, and disabilities and deaths among current workers.

This report provides a summary of epidemiologic surveillance data collected from Brookhaven National Laboratory (BNL) from January 1, 1998 through December 31, 1998. The data were collected by a coordinator at Brookhaven 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. Epidemiologic surveillance has been ongoing at Brookhaven since 1993.

The information presented in this report provides highlights of the data analyses conducted. Earlier surveillance reports and additional supporting tables are posted on the Office of Epidemiologic Studies' Web Site (<http://www.eh.doe.gov/epi/surv>), or are available by request. The main sec-

tions of the report include: work force characteristics; absences due to injury or illness of 5 or more consecutive workdays; workplace injuries, illnesses, and deaths that were reportable to the Occupational Safety and Health Administration ("OSHA-recordable" events); and disabilities and deaths among current workers. The report also includes a section on time trends that provides comparative information on the health of the work force from 1994 to 1998.



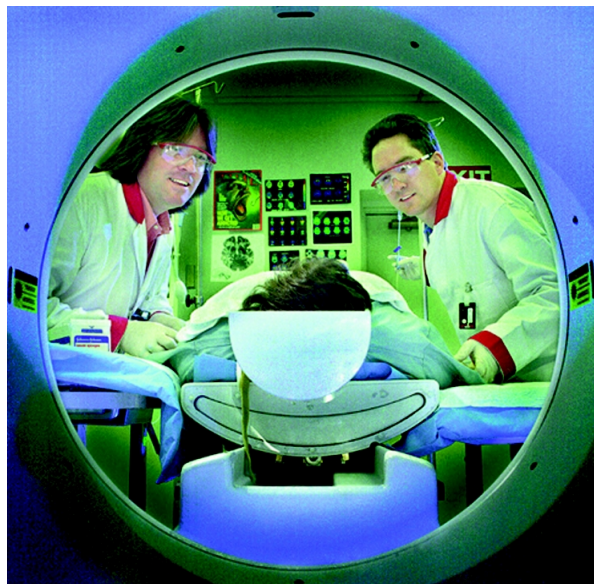
**Note: In the figures and calculations that follow, percentages have been rounded to the nearest whole number.**

DOE sites vary by mission, function, job classification, and worker exposures. Comparisons of Brookhaven National Laboratory 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

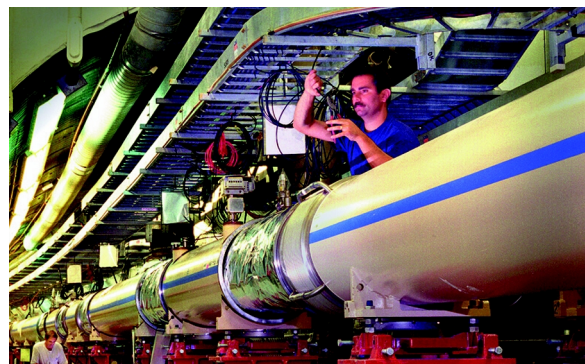
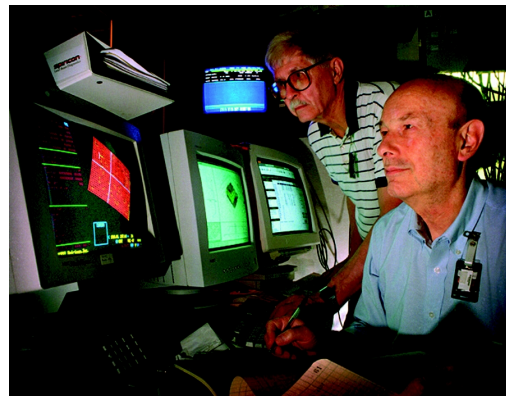
BNL is a DOE multidisciplinary research laboratory located 60 miles east of New York City in Suffolk County, Long Island, New York. Associated Universities, Inc. (AUI), a non-profit research management organization originally sponsored by nine northeastern universities, founded the laboratory in 1947 under contract to the Atomic Energy Agency. The laboratory was designed to provide non-defense basic and applied research in a multitude of disciplines, from physics, chemistry, and materials science to biology and medicine.



BNL is dedicated to basic and applied investigation in a broad range of scientific disciplines. Experimental and theoretical physics, medicine, chemistry, biology, environmental research, engineering, and many other fields are represented by the nearly 1,000 BNL scientists and over 4,000 national and international visitors who come to BNL every year to use the facilities. With

areas of the campus contaminated from past practices, the site was added to the Federal Superfund National Priorities List in 1989; remediation is proceeding.

In 1997, DOE announced the termination of the management contract with AUI and the expectation that a new contractor would be named within six months through a competitive process. In 1998, Brookhaven Science Associates began operating BNL.

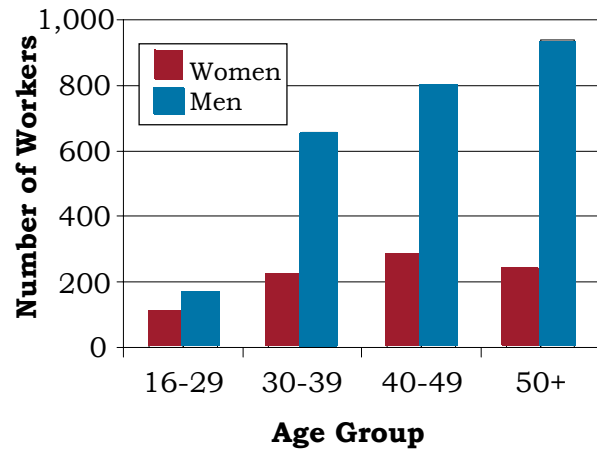


## The Brookhaven Work Force - 1998

A total of 3,416 Brookhaven employees were included in epidemiologic surveillance in 1998, 97 fewer workers than were present in 1997. The age and gender distribution of the 1998 work force is shown in Figure 1.



Figure 1. The Work Force by Gender and Age



There were 851 (25 percent) women and 2,565 (75 percent) men in the work force. The average age of women in the work force was 42 years and 45 years for men. The majority of the workers was white (81 percent). African Americans made up 8 percent and Asians about 7 percent of the work force; the remaining 4 percent were Hispanics and Native Americans.

The distribution of workers by job category and gender is shown in Figure 2.

Individual job titles reported by Brookhaven were grouped together into job categories. This is because there were either too few workers or too few absences among workers with a particular job title, thereby limiting the types of analyses that could be conducted. Men and women were not distributed equally among the various job categories. We noted the largest gender differences in the Scientific workers, who were primarily men, and among Administrative (Exempt and Non-Exempt) workers, who were predominantly women.

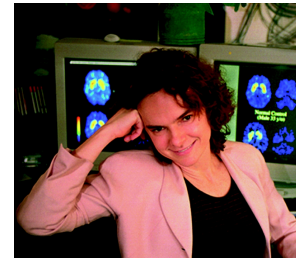


Figure 2. The Work Force by Job Category and Gender

Job Category	Women	Men
Management	27 3%	92 4%
Scientific	53 6%	534 21%
Professional	120 14%	549 21%
Administrative (E)	184 22%	90 4%
Tech Support/Supv (E)	9 1%	363 14%
Administrative (NE)	202 24%	7 <1%
Tech Support/Supv (NE)	17 2%	303 12%
Clerical & Support Wage	53 6%	7 <1%
Technical	10 1%	85 3%
Bargaining Units	103 12%	484 19%
Miscellaneous	73 9%	51 2%
Total	851 100%	2,565 100%



## Number and Length of Absences

Epidemiologic surveillance examines illness and injury absences of 5 or more consecutive workdays (also referred to as “five-day absences”). This criterion is based on DOE Order 440.1, which requires contractor management to notify Occupational Medicine when a



worker has been absent for 5 or more consecutive workdays. If an absence of 5 or more consecutive workdays also spans a weekend, the total duration of absence used in our analyses will count the weekend days as well. All injuries and illnesses due to a work-related incident must be reported. Non-occupational illnesses and injuries that involve absences of fewer than 5 workdays do not routinely require a medical clearance for return to work and are excluded from these analyses.

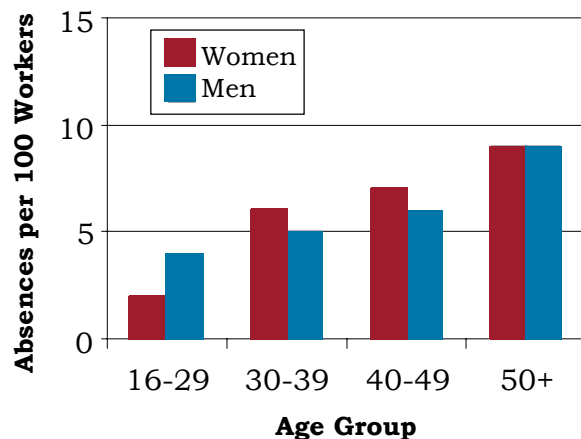
One change from surveillance reports issued prior to 1996 is the exclusion of some types of health events resulting in an absence of 5 or more consecutive workdays. In 1998, excluded absences included one woman with a reported absence due to maternity leave and one woman with a reported absence due to observation/evaluation 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.

Brookhaven reported 229 absences in 1998 compared with 224 absences in 1997. The rate of five-day absences due to injury or illness varied by gender and age as shown in Figure 3. There were 58 five-day absences among 51 women resulting in an absence rate of 7 (58/851) per 100 workers. Among the 2,565 men, there were 171 absences resulting in an absence rate of 7 (171/2,565) per 100 workers. Among both women and men, the rate of five-day absences increased with age. One percent of women (6/851) and men (16/2,565) reported two or more five-day absences in 1998.

**Figure 3. Absence Rate by Gender and Age**



The rate of 5-day absences due to injury or illness varied by gender and age as shown in Figure 3. There were 44 5-day absences among 40 women resulting in an absence rate of 5 (44/881) per 100 workers. Among the 2,632 men, there were 180 absences resulting in an absence rate of 7 (180/2,632) per 100 workers. The rate of 5-day absences tended to increase with age. Less than 1 percent (4/881) of women and 1 percent (26/2,632) of men reported 2 or more 5-day absences in 1997.

**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	2	24	12
	30 - 39	14	389	28
	40 - 49	21	405	19
	50 +	21	566	27
	Total	58	1,384	24
Men	16 - 29	6	77	13
	30 - 39	34	981	29
	40 - 49	48	928	19
	50 +	83	2,088	25
	Total	171	4,074	24

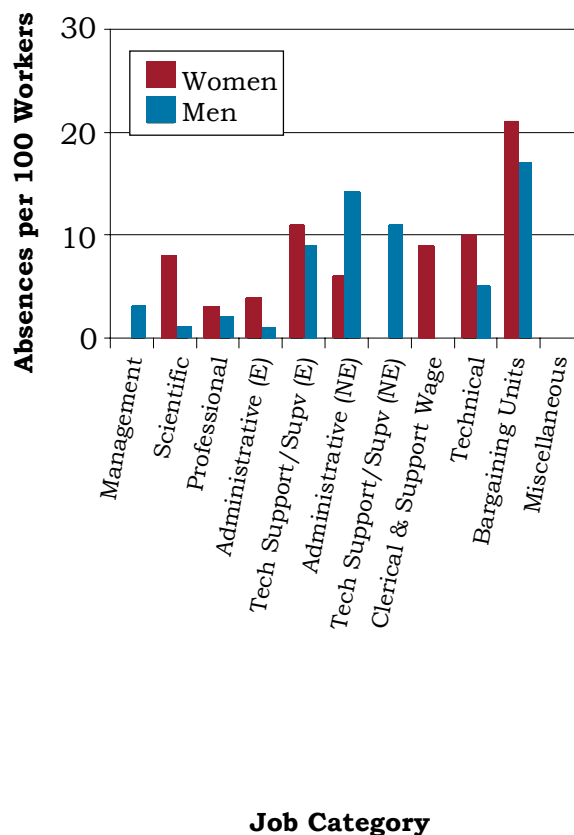
The average length of absence was the same for women and men, 24 days (Figure 4). The average duration of absence for women and men was similar across age groups. We saw no indication of increasing average duration of absence with age among women or men. Workers in the 30-39 age group had the longest average length of absence.

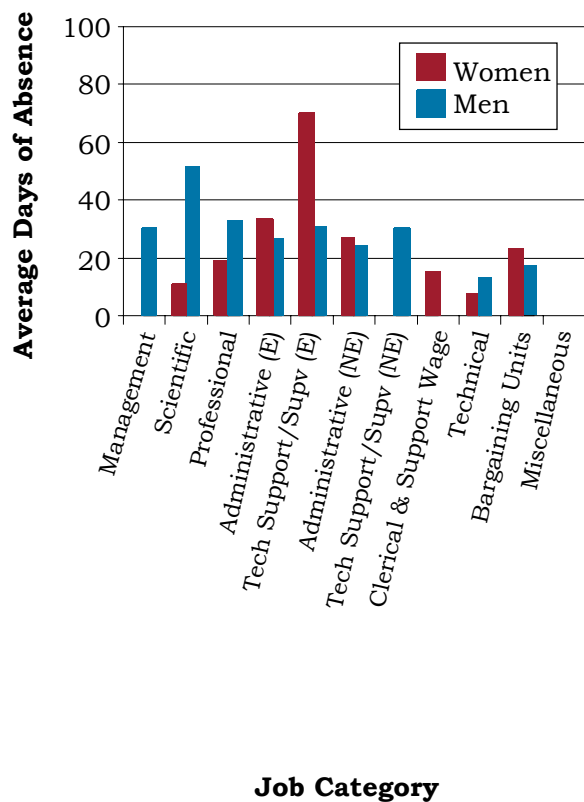
The rate of five-day absences due to illness or injury varied by job category for women and men as shown in Figure 5. Bargaining Units workers had the highest absence rate, 21 per 100 among women and 17 per 100 among men. Clerical and Support Wage, and Miscellaneous groups among men and Management, Technical Support/Supervisory (NE), and Miscellaneous groups among women reported no five-day absences during 1998. Several of the same job groups reported no absences in 1997; specifically, men in the Clerical and Support Wage and the Miscellaneous groups and women in the Miscellaneous group. The higher rates observed in the Bargaining Units may in part reflect more complete reporting of

absences among these workers than among workers in other job categories.

The average duration of absence by job category and gender is shown in Figure 6. There was no consistent difference between women and men in average duration of absence. Bargaining Units workers reported the highest rate of five-day absences in the work force, but the average duration of their absences was among the shortest for men (17 days) and similar to the average duration for women (23 days). The longest average duration of absence among women was observed in the Technical Support/Supervisory (E) group (based on a single absence of 71 days). Among men, the longest average duration was in the Scientific group.

**Figure 5. Absence Rate by Job Category and Gender**

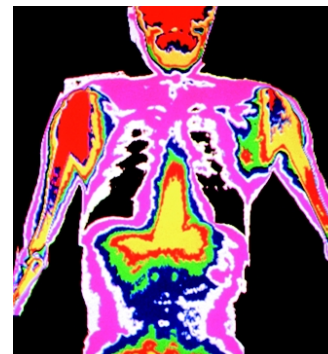


**Figure 6. Average Duration of Absence by Job Category and Gender**

## Diagnostic Categories

Epidemiologic surveillance monitors *all* illnesses and injuries among active workers because it is not always possible to determine 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 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 Disease, 9<sup>th</sup> 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 at the back of this report. The number of reported diagnoses categorized according to the ICD-9-CM and the number of lost calendar days are presented in Figure 7. There were 69 diagnoses reported by women and 219 diagnoses reported by men in 1998. The most frequently reported diagnoses varied little by gender and were the same as the most common diagnoses reported since 1995.



Women lost 1,384 calendar days due to injury and illness. Muscle and skeleton conditions (28 percent), injuries (22 percent), and respiratory conditions (19 percent) accounted for 69 percent of their diagnoses. Back pain and disk injuries made up 37 percent of the muscle and skeletal conditions, followed by arthritis (32 percent). Sixty-seven percent of the injuries were reported as sprains and strains. Fractures accounted for 7 percent of the injury diagnoses, a sharp decrease from the percentage of fractures among injuries reported in 1996 (12 percent) and 1997 (33 percent). The respiratory conditions were primarily chronic obstructive pulmonary disease (bronchitis and asthma, 31 percent), acute upper respiratory infections (31 percent), and flu and pneumonia (31 percent).

**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	1	32	3	73
Blood	0	0	1	101
Cancer	0	0	4	143
Digestive	4	84	21	398
Endocrine / Metabolic	0	0	6	123
Existing Birth Condition	0	0	0	0
Genitourinary	4	78	6	46
Heart / Circulatory	4	152	24	1,100
Infections / Parasites	1	8	6	79
Injury	15	364	42	1,365
Miscarriage	2	35	N/A	N/A
Muscles and Skeleton	19	488	36	1,115
Nervous System	2	154	5	82
Psychological	2	98	9	160
Respiratory	13	229	42	422
Skin	1	11	2	19
Unspecified Symptoms	1	11	12	172

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

Men lost 4,074 calendar days due to injury and illness. Fifty-four percent of their reported diagnoses were due to injuries (19 percent), respiratory conditions (19 percent), and muscle and skeleton conditions (16 percent). A closer look at the injury diagnoses showed that 38 percent were sprains and strains and 24 percent were fractures. There was one diagnosis related to complications of medical care reported among the 42 diagnoses categorized as injuries. Reported injury diagnoses declined 24% from 1997 (55) to 1998 (42). Back problems (64 percent) and rheumatism (22 percent) were frequently reported muscle and skeleton conditions. Acute respiratory infections accounted for 55 percent of the respiratory conditions, followed by pneumonia and flu (19 percent), and bronchitis (19 percent).

For both women and men, these diagnoses did not vary much by age. Respiratory diagnoses were reported frequently in all age groups, and muscle and skeleton conditions were common among all but the youngest workers.

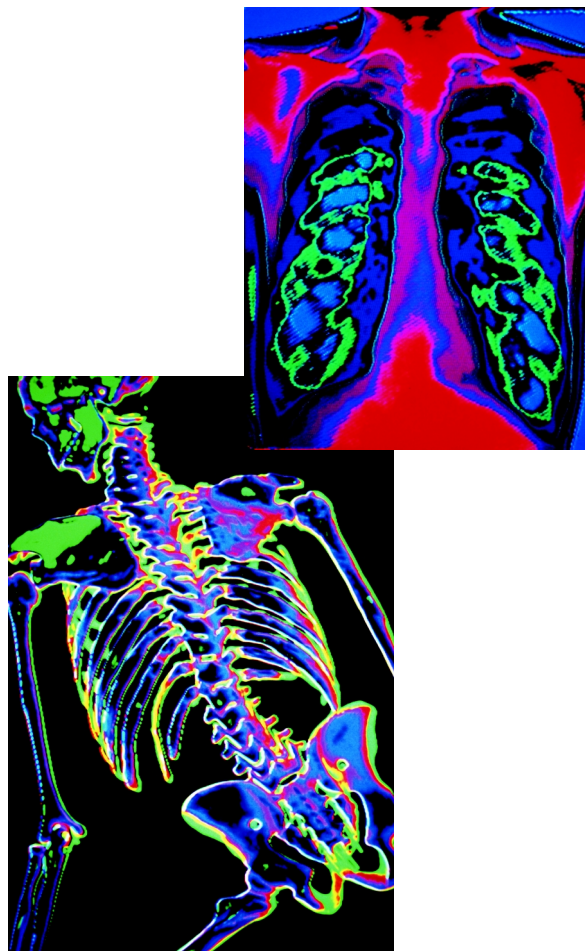
Among men, muscle and skeleton diagnoses and respiratory conditions were among the more frequently reported diagnoses in all except the youngest age group. Injuries were common in all except the oldest age group. For men aged 50 and older, diagnoses of the heart/circulatory system outnumbered injuries. Twelve men in this age group reported 15 diagnoses involving the heart/circulatory system, 12 of which were for ischemic heart disease (restricted blood flow around the heart).

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

Job Category	Men	Women
Management	Heart/ Circulatory (1) Injury (1) Unspecified Symptoms (1)	None
Scientific	Injury (4) Heart/ Circulatory (2) Muscles and Skeleton (1) Unspecified Symptoms (1)	Muscles and Skeleton (3) Injury (2) Psychological (1)
Professional	Endocrine/ Metabolic (2) Heart/ Circulatory (2)	Genitourinary (1) Injury (1) Muscles and Skeleton (1)
Administrative (E)	Nervous System (1)	Respiratory (2) Muscles and Skeleton (2)
Tech Support/Supv (E)	Heart/ Circulatory (8) Respiratory (7) Muscles and Skeleton (6)	Heart/ Circulatory (1)
Administrative (NE)	Digestive (1)	Respiratory (5) Injury (4) Digestive (2)
Tech Support/Supv (NE)	Injury (11) Respiratory (9) Muscles and Skeleton (9) Digestive (5)	None
Clerical & Support Wage	None	Respiratory (2) Benign Growth (1) Digestive (1) Infections/ Parasites (1) Injury (1)
Technical	Injury (3) Muscles and Skeleton (1)	Muscles and Skeleton (1)
Bargaining Units	Respiratory (26) Muscles and Skeleton (19) Injury (18)	Muscles and Skeleton (11) Injury (6) Respiratory (4)
Miscellaneous	None	None

Note: Numbers in parentheses are number of diagnoses reported.

Figure 8 shows the frequency of reported diagnoses by job category for women and men. With 11 job categories defined and the small number of diagnoses reported among Brookhaven workers, most job categories had few diagnoses reported. Among women, three of the job categories reported no diagnoses in 1998. Among the other 8 groups, injuries, conditions affecting the muscles and skeleton, and respiratory diagnoses were common. Among men, no diagnoses were reported for two job categories. Muscle and skeleton conditions, injuries, and respiratory conditions appeared frequently. No specific diagnosis appeared linked to a particular job category.



## Rates of Disease Occurrence

**A Word about Rates:** The previous section considered the number of absences and health conditions among various job categories. For example, Figure 7 shows that men reported 36 and women reported 19 diagnoses involving muscle and skeleton conditions during 1998. Men therefore reported almost twice as many muscle and skeleton diagnoses as women. As there are more than 3 times as many men as women at Brookhaven, it seems reasonable to expect more muscle and skeleton conditions among men than among women. Does this mean that men were at greater risk of muscle and skeleton conditions than were women in 1998? 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 rate of muscle and skeleton conditions for each gender. Rates are calculated by dividing the number of muscle and skeleton conditions 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:

36 muscle and skeleton diagnoses ÷  
2,565 men = .014 x 1,000 =  
14 muscle and skeleton diagnoses  
per 1,000 men

19 muscle and skeleton diagnoses ÷  
851 women = .022 x 1,000 =  
22 muscle and skeleton diagnoses  
per 1,000 women

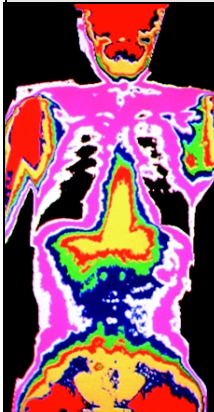
Comparing these rates now correctly suggests that the rate of reported absences due to muscle and skeleton diagnoses among women is 60 percent higher than the rate for men. They are called **crude rates** because they do not account for possible differences between men and women such as age and other factors that might affect the individual's risk of having a condition affecting the muscles or skeleton. Because age is so strongly related to the risk of disease and injury, epidemiologists almost always take age into account when comparing groups. This is done by using age-specific categories or by statistical methods of adjustment.

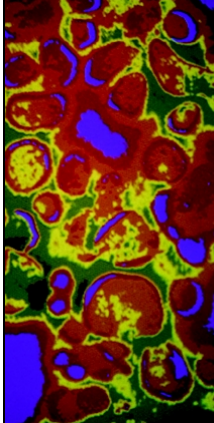
The diagnosis rate, also called the illness and injury rate, is the number of occurrences of a given disease or health condition observed over the course of a year per 1,000 workers at risk of getting that condition (See shaded box). One diagnosis, arthritis for example, may result in several five-day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

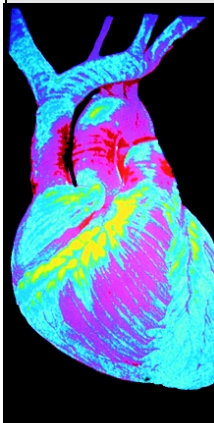
In the following set of analyses, the four age groups were collapsed into two, workers less than 50 years of age and those 50 or older. These groups were collapsed to ensure that the number of diagnoses in each group was large enough to analyze. Five groups of diagnoses of particular interest to workers are presented in Figure 9: all diagnoses combined, cancer, heart/circulatory system, respiratory system, and injury.




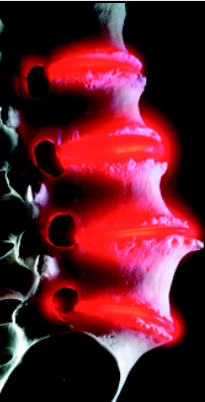
**Figure 9. Illness and Injury Rates by Job Category, Gender, and Age**

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Management, Administrative & Clerical	<50	0	62
		50+	46	81
	Scientific	<50	21	122
		50+	8	83
	Professional	<50	11	23
		50+	28	30
	Technical	<50	83	37
		50+	181	111
	Bargaining Units	<50	176	226
		50+	331	368
	Miscellaneous	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Management, Administrative & Clerical	<50	0	0
		50+	0	0
	Scientific	<50	0	0
		50+	0	0
	Professional	<50	0	0
		50+	0	0
	Technical	<50	6	0
		50+	0	0
	Bargaining Units	<50	0	0
		50+	6	0
	Miscellaneous	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Management, Administrative & Clerical	<50	0	0
		50+	9	6
	Scientific	<50	0	0
		50+	8	0
	Professional	<50	3	0
		50+	6	0
	Technical	<50	2	0
		50+	32	111
	Bargaining Units	<50	22	24
		50+	19	0
	Miscellaneous	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Management, Administrative & Clerical	<50	0	16
		50+	0	25
	Scientific	<50	0	0
		50+	0	0
	Professional	<50	0	0
		50+	0	0
	Technical	<50	10	0
		50+	44	0
	Bargaining Units	<50	43	48
		50+	75	0
	Miscellaneous	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Management, Administrative & Clerical	<50	0	13
		50+	9	13
	Scientific	<50	14	49
		50+	0	0
	Professional	<50	3	11
		50+	0	0
	Technical	<50	24	0
		50+	24	0
	Bargaining Units	<50	43	48
		50+	25	105
	Miscellaneous	<50	0	0
		50+	0	0

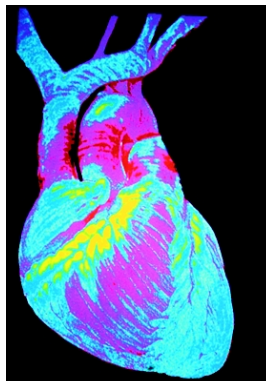
The rates for all illness and injuries combined were higher for male and female Brookhaven workers ages 50 and older except for workers in the Scientific group. As in 1997, the highest illness and injury rates for all employees were among workers classified as Bargaining Units. With the exception of Technical workers, women had higher rates for all illnesses and injuries combined than did men, regardless of age or job category.

Cancer rates presented in this report are based on reported five-day absences due to cancer. A worker may experience several periods of absence from one cancer diagnosis due to medical complications or treatment.

Each absence results in the report of a cancer diagnosis; however, it does not imply that this is a new cancer. The cancer rates in this report are *not* comparable to the *incidence* rates frequently published in many articles on cancer with which you may be familiar. Incident cancer rates are based on the number of new cancer cases diagnosed with a given time, usually a year.

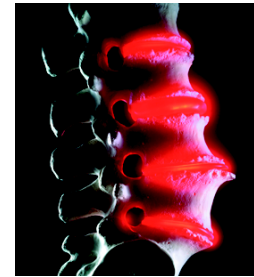
The likelihood that an individual in the U.S. develops cancer increases with age. Our data do not reflect this trend. Four five-day absences related to cancer were reported involving four diagnoses among three men, two of whom were under age 50. As in 1997, women reported no cancer diagnoses. None of the workers reporting cancer in 1998 reported cancer between 1994 and 1997. One man had two diagnoses for lung cancer, one had skin cancer, and the other had cancer of the pituitary gland. The 3 workers reporting cancer each worked in a different job category.

Women in three job categories reported heart and circulatory problems. Two of the four heart/circulatory diagnoses reported by women were reported by workers aged 50 or older. None of the four diagnoses involved high blood pressure or ischemic heart disease (restricted blood flow through an artery). The rate of 111 diagnoses per 1,000 women in the Technical group reflected only two absences reported by two women. Among men, workers aged 50 or older had the highest rates of heart and circulatory problems, with the highest rate observed among Technical workers. Seven of the nine diagnoses



among men less than 50 years old were in the Bargaining Units; four diagnoses for high blood pressure and ischemic heart disease and three for diseases of the veins (varicose veins, phlebitis, and hemorrhoids). Twelve of the 21 absences among men occurred in workers aged 50 or older, and 80 percent (12/15) of the diagnoses among these older workers involved ischemic heart disease. Workers in the Technical Support/Supervisory (E) and Bargaining Units groups were over three times more likely to report a heart/circulatory diagnosis than were workers in other job categories.

Respiratory disease rates were highest among women and men in the Bargaining Units job category. Bargaining Units workers, who made up 17 percent of the work force, reported 55 percent (30/55) of the respiratory diagnoses. Workers in this group were over six times more likely to report a respiratory diagnosis than were other workers. The higher rate of reported respiratory diagnoses among Bargaining Units workers was also observed in 1997, when workers in this group were at 10 times greater risk than other workers of reporting a respiratory diagnosis.



In most job categories, workers aged less than 50 had a higher injury rate than older workers, regardless of gender. Bargaining Units workers had the highest rates among both women and men. They were four times more likely to report an injury, almost five times more likely to report a back sprain or strain, and over eight times more likely to report a sprain or strain to a site other than the



back compared with workers in other job categories. Fifty-four percent (14/26) of the reported sprains and strains were among Bargaining Units workers, who made up 17 percent of the work force.

The risk of illness and injury among workers classified in one job category was compared with workers in the remaining job categories. Technical Support/Supervisory (NE) workers were at twice the risk and Bargaining Units workers were at four times the risk of all injury and illness compared with all other groups. Bargaining Units workers were also at four times the risk of digestive and genitourinary diagnoses and five times the risk of muscle and skeleton diagnoses than were workers in other job categories. Among the Bargaining Units workers, three of the 10 digestive diagnoses were hernias, and 17 of the 30 diagnoses related to the muscles and skeleton were disk and back problems. Compared with other workers, Bargaining Units workers appear to be at higher risk for a variety of different illness and injury diagnoses. These apparently higher risks may reflect more complete reporting of illness and injury by Bargaining Units workers than is found among other workers, rather than a true increase in risk among Bargaining Units workers.

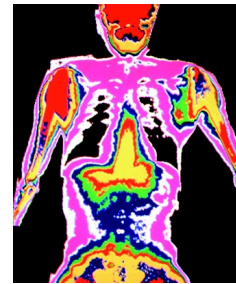
## Time Trends

### Why Are Rates Age-Adjusted?

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

Age-adjusted rates for selected illness and injury categories are presented in Figure 10. It is important to note that the age-adjusted rates for the years 1994 and 1995 presented in this report differ from those reported in the 1994 and 1995 *Annual Epidemiologic Surveillance Reports* due to the exclusion of diagnoses resulting from maternity leave.

The age-adjusted rates for all illness and injury categories combined tended to decrease among women and men in recent years. The decrease has been more noticeable in the past two to three years. At least part of this overall decrease reflects a decline in respiratory diagnoses among both men and women. Rates of reported heart and circulatory disease, cancer, and injuries have remained essentially unchanged throughout the six-year period.

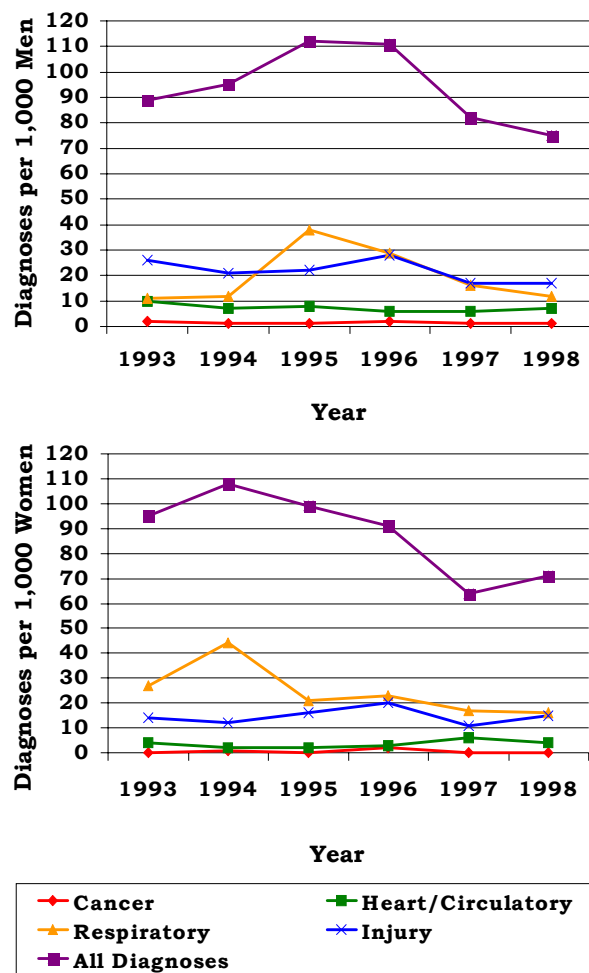


Age-adjusted rates for all illness and injuries combined are shown for the various job categories in Figure 11. We noted a dramatic decline between 1996 and 1997 among women in the Bargaining Units. The decrease was not related to any particular diagnostic category, but rather a general decrease in reported diagnoses across all diagnostic categories. Women in the Technical, Management/Administration/Clerical, and Professional job categories experienced smaller reductions. The only increase noted was among women in the Scientific group, whose rate increased from zero to 110 diagnoses per 1000 women between 1997 and 1998.

Men in the Bargaining Units experienced a substantial decline in their overall illness and injury rate from 1996 to 1997. The decline was similar to

that observed among women in this job category, and again, was not attributable to a reduction in any particular type of illness or injury. We noted no overall change among men in the Management/Administration/Clerical and Professional groups and a nominal increase among men in the Scientific group.categories had substantial changes in the combined illness and injury rate.

**Figure 10. Age-Adjusted Rates for Selected Diagnostic Categories for Men and Women from 1993 to 1998**



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 two 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.

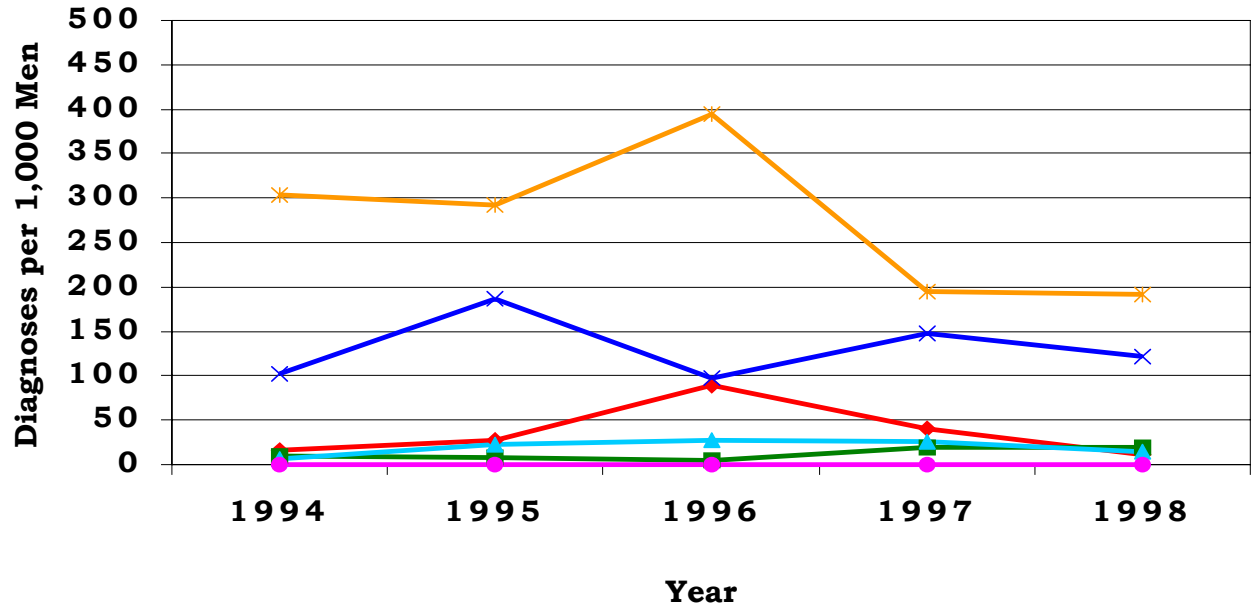
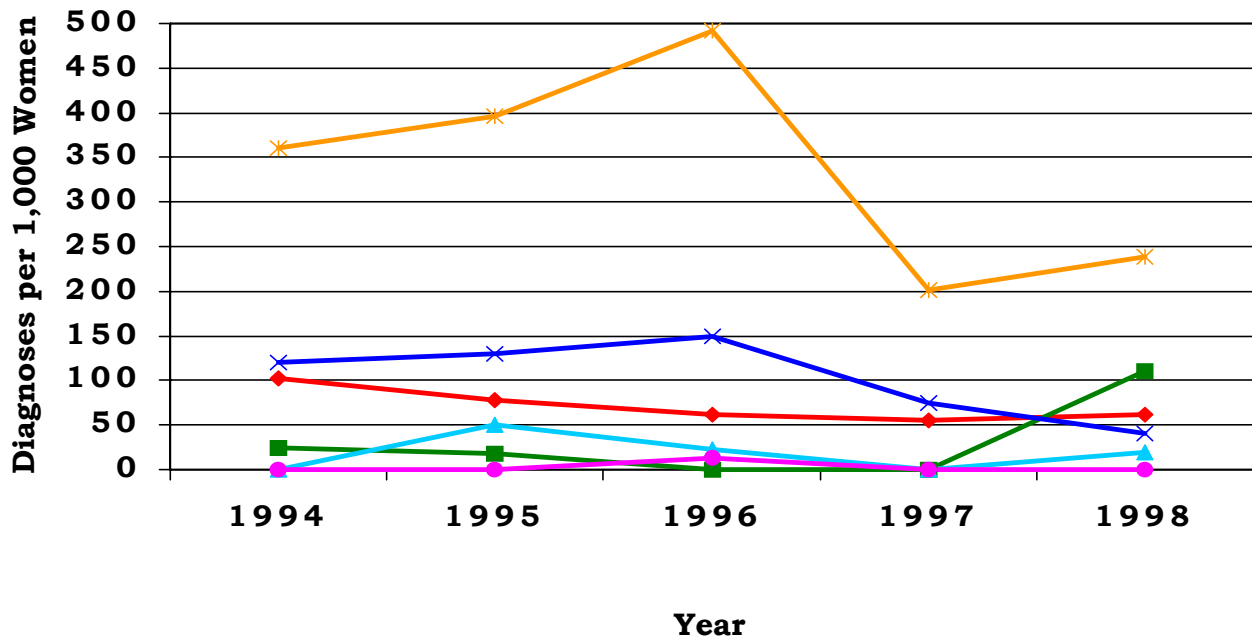
*Possible Sentinel Health Events:* Conditions such as lung cancer or carpal tunnel syndrome may or may not be related to occupation. Detailed occupational and non-occupational information is required to determine the work-relatedness of the illness. For example, lung cancer may result from asbestos exposure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

Of the 288 diagnoses reported by Brookhaven workers in 1998, one definite and three possible sentinel health events were identified (Figure 12). The definite sentinel health event diagnosis involved a back sprain and strain. The possible sentinel health events were identified as one each of carpal tunnel syndrome, asthma, and contact dermatitis. The case of the carpal tunnel syndrome was reported by a male Technical Support/Supervisory (Exempt) worker and resulted in 21 days of absence.

### Sentinel Health Events for Occupations

A sentinel health event for occupations (SHEO) is a disease, disability, or

**Figure 11. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men by Job Category from 1994 to 1998**



- ◆ Management, Administrative & Clerical
- ▲ Professional
- ✱ Bargaining Units
- Scientific
- ✕ Technical
- Miscellaneous

**Figure 12. Characteristics of SHEOs by Gender**

	Total Number of SHEO Diagnoses		Total Number of Days Absent	
	Men	Women	Men	Women
Definite	1	0	13	0
Possible	2	1	28	9
Total	3	1	41	9

### Disabilities Among Active Workers

At Brookhaven, a worker is placed on long-term disability when absent six months. Less than one percent of the work force (21/3,416 workers) were on long-term disability in 1998; seven women and 14 men. Among these workers, seven were on disability for muscle and skeleton conditions; four for heart/circulatory problems; three for cancer; and two for psychological disorders. In addition, one worker went on disability for each of the following conditions: kidney failure, diabetes, legal blindness, a congenital disorder of the spinal column, and an injury to the shoulder and upper arm. Five of the women (71 percent) and 11 of the men (79 percent) were age 50 or older. The remaining workers included three men in the 40-49 age group and two women aged 30-39.

### Deaths Among Active Workers

Nine deaths occurred among Brookhaven workers (two women and seven men) in 1998. Three workers died from heart/circulatory conditions and two workers died from cancer. In addition, one worker had a bacterial infection of the blood and one died due to injuries in a plane crash. The cause of death for two workers was unknown.

### OSHA-Recordable Events

The Occupational Safety and

Health Administration (OSHA) requires employers to maintain a record of occupational injuries and illnesses occurring 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 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.

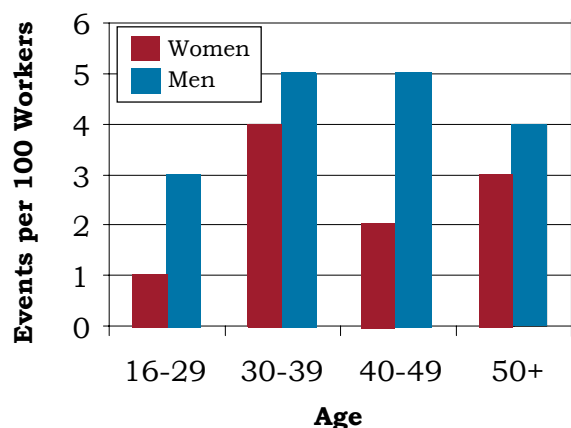
The distribution of OSHA events by gender and age is shown in Figure 13. There were 22 OSHA-recordable events among women and 116 events among men. The rate of OSHA-recordable events was similar for women (3 percent) and men (5 percent). Women in the 30-39 age group and men aged 30-49 had the highest rates of OSHA-recordable events.

The distribution of rates for OSHA-recordable events by job category and gender is shown in Figure 14. The Technical Support/Supervisor (E) group had the highest rate of OSHA events among women (11 per 100 workers), but the rate was based on only one event among nine workers. Women in the Technical group (10 per 100 workers) and Bargaining Units (9 per 100 workers) also had higher rates of OSHA-recordable events than did women in other job categories. The Bargaining Units had the highest rate of OSHA events among men (13 per 100 workers). We found no consistent difference in rates between women and men across job categories.

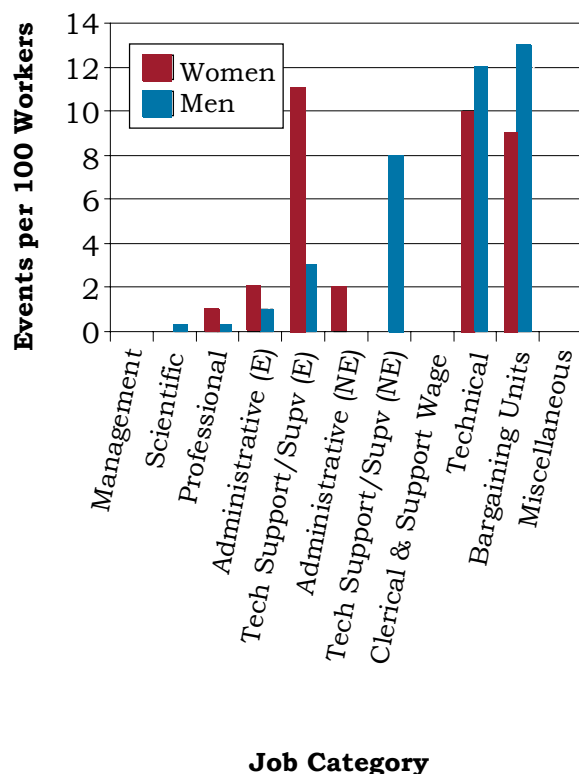
The average number of workdays lost or with restricted activity was similar for women (5 days) and men (4 days).

Women in the Administrative (E) job category averaged seven lost or restricted workdays based on three OSHA events. Men in the Technical Support/Supervisory (NE) category also averaged seven lost or restricted workdays, based on 24 OSHA events. There was no apparent relationship between age or gender and the average number of lost or restricted workdays.

**Figure 13. OSHA-Recordable Events by Gender and Age**



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



## Diagnostic and Accident Categories for OSHA-Recordable Events

One hundred thirty-eight OSHA events recorded on the OSHA 200 logs, 28 diagnoses among women and 147 diagnoses among men (Figure 15). Injuries accounted for 75 percent (21/28) of the diagnoses reported among women. The most common type of OSHA-recordable injury among women was sprains and strains (24 percent). Among men, injuries accounted for 79 percent (116/147) of the diagnoses reported, primarily due to open wounds (32 percent). Sprains and strains (28 percent) and bruises (14 percent) were also frequently reported among men.

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

Diagnostic Category	Gender	
	Women	Men
Digestive	0	2
Infections/Parasites	0	1
Muscles and Skeleton	6	15
Nervous System	0	5
Skin	1	4
Unspecified Symptoms	0	4
Injury	21	116
Fractures - Neck, Trunk	0	1
Fractures - Upper Limb	1	4
Fractures - Lower Limb	1	2
Dislocations	1	0
Back Sprains and Strains	2	18
Other Sprains and Strains	3	14
Intracranial Injuries	1	0
Open Wounds - Head, Neck, Trunk	1	9
Open Wounds-Upper Limb	2	22
Open Wounds-Lower Limb	0	6
Superficial Injuries	0	3
Bruises	2	16
Crushing Injuries	0	1
Foreign Bodies Entering Orifice	0	4
Burns	3	7
Unspecified Injuries	4	5
Adverse Reactions to Non-medical Substances	0	3
Adverse Reactions to External Causes	0	1
<b>Total</b>	<b>28</b>	<b>147</b>

Seventy percent (97) of the 138 OSHA events were described as an accident in the OSHA logs (Figure 16). The majority of events were described as “other accidents,” 71 percent (10/14) among women and 77 percent (64/83) among men. Overexertion and strenuous movements made up the majority of that category. Accidents involving cutting or piercing instruments or objects were the second most common type of accident.

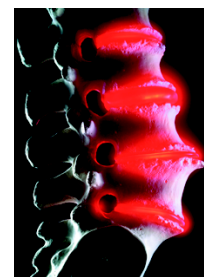
**Figure 16. OSHA-Recordable Accidents by Type and Gender**

Accident Category	Gender	
	Women	Men
	Number of Accidents	Number of Accidents
Motor Vehicle Traffic	0	1
Motor Vehicle Nontraffic	0	2
Poisoning - Non-medicinal	0	2
Falls	2	7
Natural / Environmental Factors	2	3
Submersion / Suffocation / Foreign Bodies	0	4
Other Accidents	10	64
Caught Between Objects	1	5
Cutting / Piercing Instrument / Object	1	13
Hot, Corrosive, or Caustic Material / Steam	1	5
Machinery	0	1
Noise	0	1
Overexertion and Strenuous Movements	6	28
Repetitive Trauma	1	1
Struck by an Object	0	10
Total	14	83

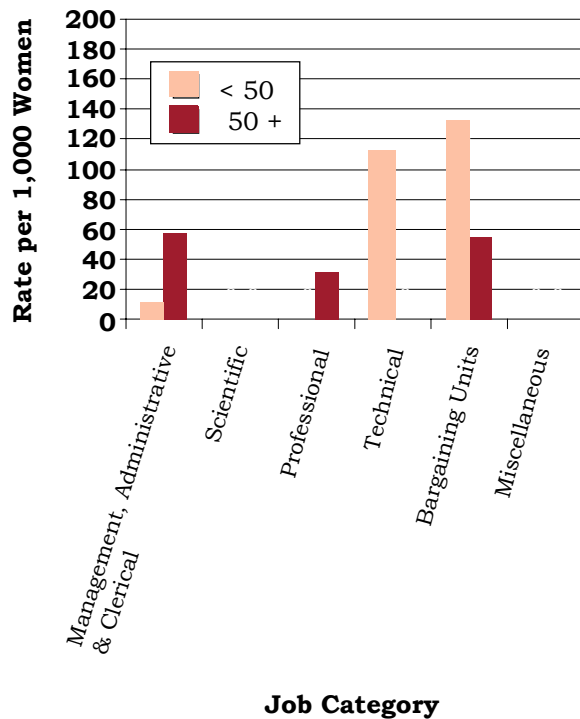
## Rates of OSHA-Recordable Events

The rates of all OSHA-recordable events by age, gender, and job categories are shown in Figures 17 and 18. OSHA-recordable rates among both men and women were highest for Bargaining Units workers. Overall, rates tended to be somewhat higher among workers under 50 years of age than among older workers. Most of the OSHA health conditions involved injury and poisoning. When the rate for OSHA-recordable injuries was considered separately, men in the Bargaining Units and women in the Technical category had the highest rates.

Bargaining Units workers were 17 percent of the work force but accounted for more than half of the OSHA-recordable events (54 percent). Their risk of muscle and skeleton conditions was seven times greater than that of other workers. The risk of injury was twice as high for the Technical Support/Supervisory (Non-Exempt) group, four times greater for the Technical group, and five times greater for Bargaining Units workers than for other job categories. Bargaining Units workers were six times more likely than other workers to experience back sprains and strains. Both Bargaining Units workers and those in the Technical Support/Supervisory (Non-Exempt) group were at higher risk for sprains and strains other than the back (4 times). Open wounds to the upper limb were five times more likely among Bargaining Units workers and 10 times more likely among workers in the Technical job category. Bargaining Units workers were also at higher risk for bruises (6 times).



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

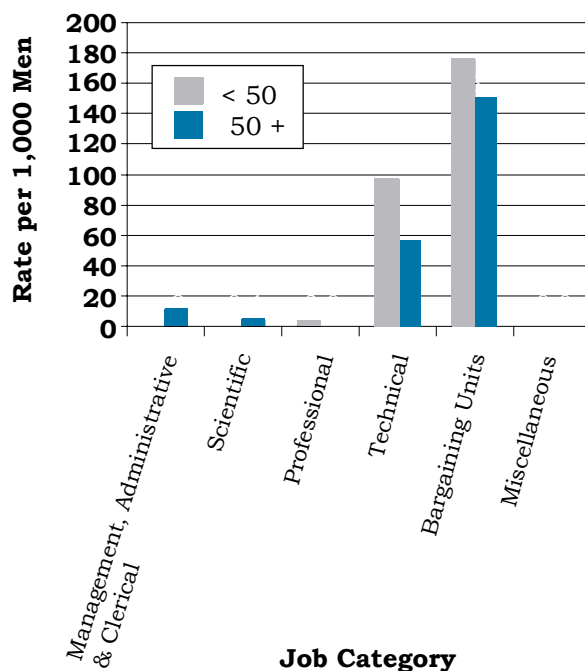


### Time Trends for OSHA-Recordable Events

The age-adjusted OSHA-recordable rates from 1994 to 1998 are shown in Figures 19 and 20. We found no consistent trends for women in most job categories. There was a steady increase in the OSHA-recordable rate among women in the Bargaining Units from 1995 to 1997, followed by a decline for the current year (Figure 19).

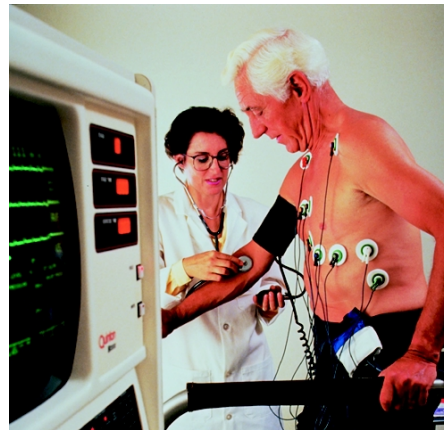
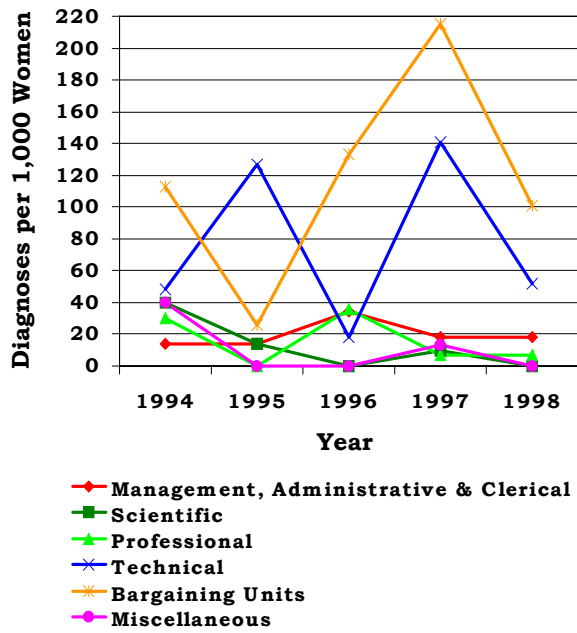


**Figure 18. OSHA-Recordable Rates by Age and Job Category Among Men, All Diagnoses Combined**

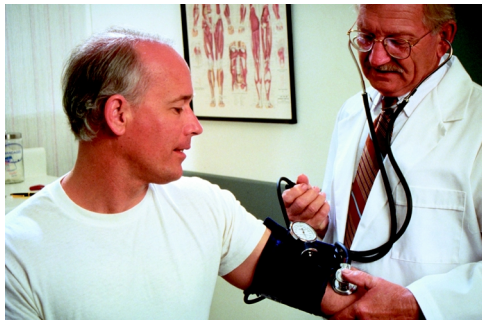
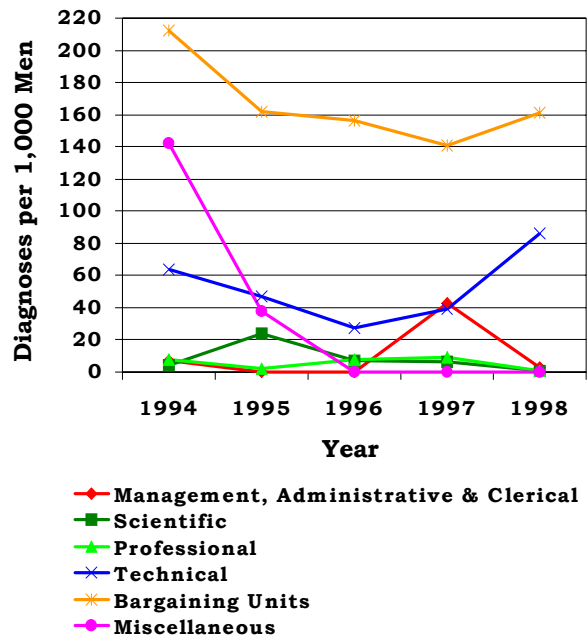


Among men, the rate of OSHA-recordable diagnoses declined among Bargaining Units workers from 1994 to 1997 (Figure 20). The rate among male Technical workers declined from 1994 to 1996 but has increased more recently. We noted little change in other job categories over the five-year period with the exception of a decline in the rate from 1994 to 1996 among men in the Miscellaneous job category. No OSHA-recordable diagnoses have been reported for men in this job category since 1995.

**Figure 19. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Women by Job Category from 1994 to 1998**



**Figure 20. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Men by Job Category from 1994 to 1998**





## 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 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
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**

<b>All conditions</b>	001-V82	All reported health events
<b>Infectious and parasitic diseases</b>	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
<b>Malignant neoplasms</b>	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)
<b>Benign neoplasms and neoplasms of uncertain behavior and unspecified nature</b>	210-229 235-239	Tumors that are not cancerous or do not exhibit cancerous behavior, regardless of the part of the body affected
<b>Endocrine, nutritional, and metabolic diseases and disorders of the immune system</b>	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
<b>Disorders of the blood and blood forming organs</b>	280-289	Anemia and hemophilia (excludes leukemia)

<b>Mental disorders</b>	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
<b>Diseases of the nervous system and sense organs</b>	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
<b>Diseases of the circulatory system</b>	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

<b>Diseases of the digestive system</b>	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
<b>Diseases of the genitourinary system</b>	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

**NOTES**

## **NOTES**