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Sandia National Laboratories - Albuquerque Annual Epidemiologic Surveillance Report

Sandia National Laboratories – Albuquerque
1999 Annual Epidemiologic Surveillance Report

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http://tis.eh.doe.gov/health/epi/surv/index.html

Sandia National Laboratories – Albuquerque 1999

At A Glance

The highest OSHA-recordable rates occurred among Security workers for both women and men.

Among both men and women, the most common type of OSHA-recordable injury was sprains and strains. Overexertion and strenuous movements made up the majority of accidents. Falls were the second most common type of accident for both men and women.

The high proportion of prostate cancer among men reporting cancer in 1996 has not continued in more recent years, suggesting that the high proportion may have been related to greater participation in screening programs designed to detect this disease.

We noted no important changes in the diagnosis rates for cancer, heart / circulatory conditions, respiratory disease, or injuries in either women or men during 1993-1999.

The highest absence rate, 32 per 100 workers, was among women in the Crafts and Manual Labor group. Among men, Security workers had the highest absence rate, 20 per 100 workers. The same job categories had the highest rates for men and women in 1997 and 1998.

Compared with the number of absences reported in 1998, the number reported by women increased 25 percent and by men 6 percent in 1999. The increase was not related to changes in the size of the work force, which changed only slightly over the same period. Women had higher rates of absence than did men in every job category except the Security and Non-Regular groups.

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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 Sandia National Laboratories–Albuquerque (SNL-AL) from January 1, 1999 through December 31, 1999. The data were collected by a coordinator at SNL-AL 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 conducted at SNL-AL since 1993.

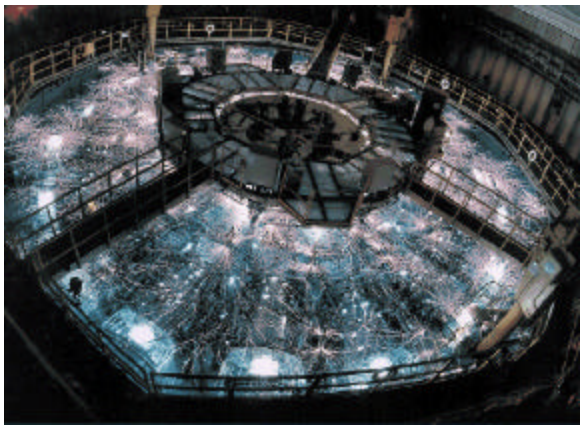
The information presented in this report provides highlights of the data analyses conducted. Surveillance reports and additional supporting tables are posted on the Office of Health Programs' Web site **(http://tis.eh.doe.gov/health/epi/surv/index.html)**, or are available by request. The main sections of the report include: work force characteristics; absences due to injury or illness of 5 or more consecutive workdays; workplace injuries, illnesses, and deaths that were reportable to the Occupational Safety and Health Administration ("OSHA-recordable" events); and disabilities and deaths among current workers. The report also includes sections on time trends that provide comparative information on the health of the work force from 1993 to 1999.

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, so comparisons of SNL-AL 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

Sandia National Laboratories-Albuquerque (SNL-AL) is located at the foot of the Manzano Mountains adjacent to the city of Albuquerque, New Mexico, and is essentially surrounded by Kirtland Air Force Base. For more than 50 years, Sandia has served as one of the major national defense research and development (R&D) laboratories. The facility started in 1945 as Z Division of what is now Los Alamos National Laboratory. As part of the Manhattan Project, the site's mission was ordnance design, testing, and assembly.



The original mission of SNL-AL's R&D nuclear weapons activities expanded to include support of the space program and work on other advanced military technologies, energy programs, arms verification, and control technology and applied research. Sandia's mission continues to evolve, but the site's core mission remains stewardship and development of the nation's nuclear stockpile. Sandia assumed "cradle to grave" responsibility for nuclear weapons in 1995, which includes partnering with the other national laboratories, the military services, and industry to ensure the reliability of the weapons and to oversee their removal from the nuclear stockpile when they are retired.

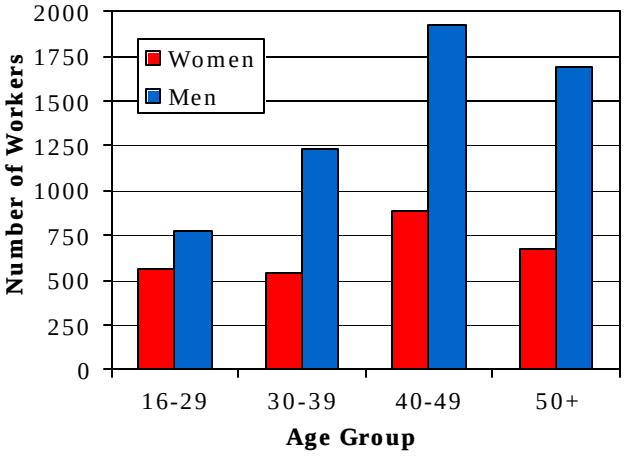
Sandia also continues to conduct vital programs in environmental testing, radiation research, combustion research, computing, microelectronics research and production, and other related fields. In September 1999, the largest construction project ever proposed by SNL-AL—the Microsystems and Engineering Sciences Application (MESA) facility—received DOE approval to proceed with a conceptual design. The purpose of the project is to join Sandia's expertise in weapon design, very fast computing, and microsystems into an immersive environment in which scientists can imagine, design, and create the 21st century's best non-nuclear components of nuclear weapons.

The Sandia Corporation, a Lockheed Martin Company, manages and operates the laboratory under a 1998 modified contract through September 2003.

The Sandia Work Force - 1999

A total of 8,281 SNL-AL employees were included in epidemiologic surveillance in 1999, 7 more workers than were present in 1998. The gender and age distribution of the 1999 work force is shown in Figure 1. There were 2,666 (32 percent) women and 5,615 (68 percent) men in the work force with an average age of 41 years for women and 43 years for men. The majority of the workers was White (70 percent). Hispanics comprised 21 percent and Native Americans, African Americans, and Asians each made up 3 percent of the work force.

Figure 1. The Work Force by Gender and Age



The distribution of workers by job category and gender is shown in Figure 2. Individual job titles reported by SNL-AL were grouped together into six job categories. This was done because there were either too few workers or health events 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. The Professional Staff job category contained over half (54 percent) of the total SNL-AL work force. Sixty-two percent of men were Professional Staff workers, while 39 percent of female employees were in this category. A significant portion of the female workers was comprised of Non-Regular workers (21 percent) and Support Staff (20 percent).

Figure 2. The Work Force by Job Category and Gender

Job Category	Women	Men
Professional Staff	1,041 39%	3,469 62%
Support Staff	546 20%	746 13%
Clerical	441 17%	43 1%
Crafts & Manual Labor	68 2%	425 8%
Security	12 < 1%	115 2%
Non-Regular	558 21%	817 14%

Number and Length of Absences

Epidemiologic surveillance examines illness and injury absences of 5 or more consecutive workdays (also referred to as "5-day absences"). It is based on DOE Order 440.1 that requires contractor management to notify

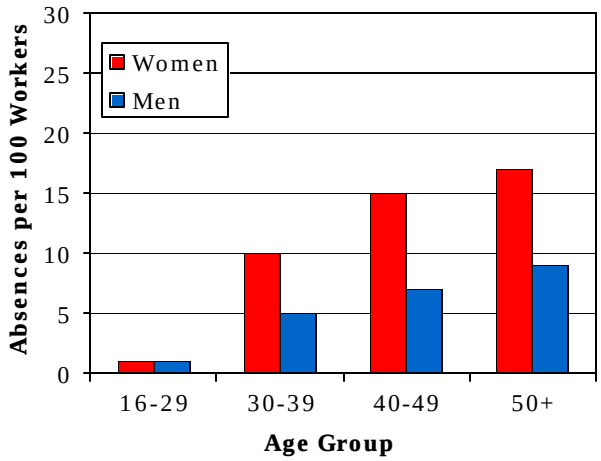
Occupational Medicine when a worker has been absent for 5 or more consecutive workdays. If an absence on a Friday continues through Tuesday, the length of that absence includes the weekend. All injuries and illnesses due to a work-related incident must be reported. Non-occupational illnesses and injuries that involve absences of fewer than 5 days do not routinely require a medical clearance for return to work and are excluded from these analyses.

One change from earlier surveillance reports is the exclusion of some types of health events resulting in an absence of 5 or more consecutive workdays. These include 16 women with 16 reported absences due to maternity leave and 4 women with reported absences due to elective surgical procedures that were not related to the treatment of an illness or injury. No men reported any of these types of absences.

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

The rate of 5-day absences due to injury or illness varied by gender and age (Figure 3). There were 304 absences among 2,666 women resulting in an absence rate of 11 (304 / 2,666) per 100 women. Among the 5,615 men, 352 absences resulted in an absence rate of 6 (352 / 5,615) per 100 men. The rate of 5-day absences increased with age among both men and women. Among workers aged 30 and older, the absence rate was lower among men than among women. Two percent of female and less than 1 percent of male workers had two or more 5-day absences in 1999.

Figure 3. Absence Rate by Gender and Age



The decrease in the number of absences reported by Sandia workers that began in 1996 and continued through 1998 did not continue into 1999. In 1998, the decrease in absences occurred only among men (8 percent), and the number of absences among women increased 8 percent. In

1999, the number of absences reported by women increased 25 percent, while the number of absences reported by men increased 6 percent compared with the number reported in 1998. The increased number of reported absences was probably not related to the number of women and men in the work force, which changed only slightly over the same period.

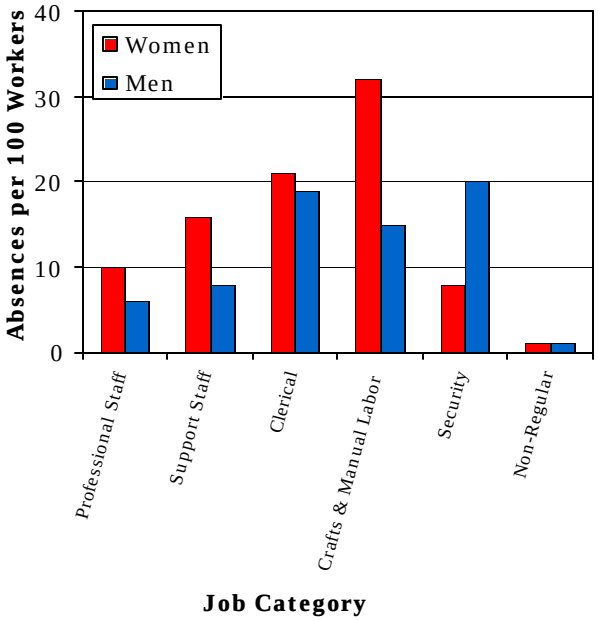
The average length of absence was 20 days for men and 19 days for women (Figure 4). The average length of absence among women increased with age. We noted little change in average duration of absence among women or men 40 years of age and older. Their length of absence was about twice that of women less than 30 years old. As in 1998, the average duration of absence for women was less than that of men in every age group except the 30-39 group.

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	5	53	11
	30-39	54	959	18
	40-49	133	2,651	20
	50+	112	2,177	19
	Total	304	5,840	19
Men	16-29	8	126	16
	30-39	64	886	14
	40-49	135	2,906	22
	50+	145	3,248	22
	Total	352	7,166	20

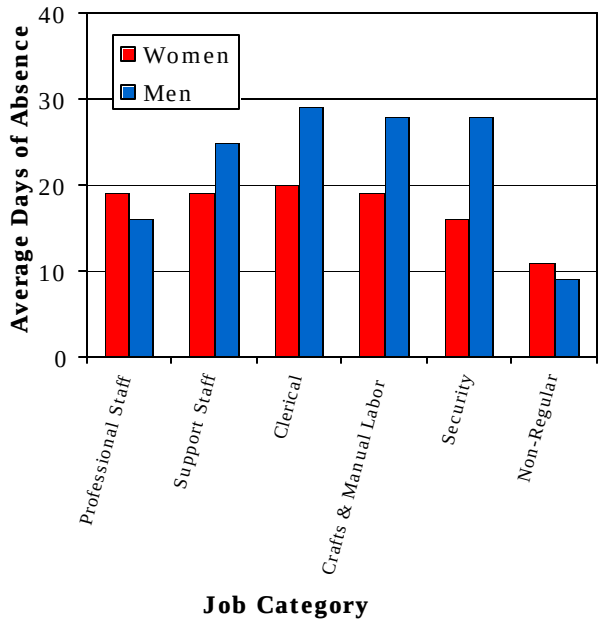
The rate of 5-day absences due to illness or injury varied by job category for men and women (Figure 5). Women had higher rates of absence than did men in every job category except the Security and Non-Regular groups. The highest absence rate, 32 per 100 workers, was noted among women in the Crafts and Manual Labor group. The lowest rate among women, 1 absence per 100 workers, was noted in the Non-Regular group. Among men, Security workers had the highest absence rate, 20 per 100 workers, while the Non-Regular group had the lowest rate at less than 1 absence per 100 workers. The same job categories had the highest rates for men and women in 1997 and 1998.

Figure 5. Absence Rate by Job Category and Gender



The average duration of absence by job category and gender is shown in Figure 6. Men had longer absences than women in every job category except the Professional Staff and Non-Regular groups. The Security group had the highest rate of 5-day absences among men and the second longest average duration of absence (28 days). Men and women in the Clerical group had the longest average absence duration; 29 days for men and 20 days for women. Among both men and women, Non-Regular staff had the shortest average duration of absence.

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 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 diagnostic categories and number of lost calendar days are presented in Figure 7. Women reported 397 diagnoses and men reported 440 diagnoses in 1999. The most frequently reported diagnoses were the same for men and women.

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	17	502	4	106
Blood	0	0	0	0
Cancer	13	669	17	970
Digestive	25	325	53	783
Endocrine / Metabolic	9	143	8	144
Existing Birth Condition	6	183	10	194
Genitourinary	36	696	8	138
Heart / Circulatory	12	238	40	970
Infections / Parasites	7	92	9	132
Injury	44	563	67	1,245
Miscarriage	3	71	NA	NA
Muscles & Skeleton	60	1,178	66	1,606
Nervous System	30	390	27	742
Psychological	14	405	9	149
Respiratory	88	750	93	740
Skin	11	209	7	117
Unspecified Symptoms	22	252	22	285

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

Women lost 5,840 calendar days due to injury and illness. Respiratory conditions (22 percent), muscles and skeleton conditions (15 percent), and injuries (11 percent) accounted for 48 percent of all reported diagnoses among women. Over half (51 percent) of the respiratory conditions were due to respiratory infections, such as colds and sinusitis, followed by bronchitis and asthma (25 percent) and flu and pneumonia (19 percent). Rheumatism made up 35 percent of the muscles and skeleton conditions, followed by joint disorders (30 percent) and acquired deformities, primarily of the hands and feet (20 percent). Of the 44 injury diagnoses, 32 percent were reported as dislocations, 27 percent as sprains and strains, and 25 percent as fractures. One diagnosis related to medical care complications was reported among the injuries.

Men lost 7,166 calendar days due to injury and illness. Fifty-one percent of all reported diagnoses among men were due to respiratory conditions (21 percent), injuries (15 percent), and conditions of the muscles and skeleton (15 percent). Respiratory infections such as colds and sinusitis accounted for 56 percent of the respiratory conditions, followed by pneumonia and flu (19 percent) and bronchitis and asthma (19 percent). Among the 67 diagnoses categorized as injuries were sprains and strains (36 percent), dislocations (25 percent), and fractures (21 percent). Three diagnoses related to complications of medical care and one diagnosis for a drug reaction were reported among the injuries. Forty-one percent of the reported muscles and skeleton conditions were arthritis, 27 percent rheumatism, and 23 percent disc disorders and back problems.

These diagnoses varied some by age among men. Conditions affecting the respiratory system, injuries, and digestive disorders were the top three diagnostic categories for men less than 50 years old. For men at least 50 years old, respiratory conditions were the most frequently reported diagnosis, followed by conditions of the muscles and skeleton, heart / circulatory conditions, and digestive disorders. Forty-eight men reported 53 digestive diagnoses: 51 percent for hernias and 17 percent for appendicitis. Among workers 50 years of age and older, 24 men reported 25 diagnoses related to heart / circulatory conditions. Forty-eight percent of the diagnoses were for hypertension and ischemic heart disease (restricted blood flow to a blood vessel) and 28 percent for diseases of the veins (primarily hemorrhoids).

The most frequently reported diagnoses among women also varied to some extent with age. The two most frequently reported diagnostic categories were respiratory conditions and muscles and skeleton disorders, regardless of age. Among women aged 30-39 and 50 years or older, genitourinary disorders were frequently reported. Almost all of these diagnoses were related to female reproductive conditions. Women aged 40-49 years old frequently reported injuries. Few diagnoses were reported by women in the youngest age group.

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 women, injuries, conditions affecting the muscles and skeleton, digestive disorders, and respiratory diagnoses were common among most job categories.

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

Job Category	Men	Women
Professional Staff	Respiratory (51) Injury (34) Muscles & Skeleton (32)	Muscles & Skeleton (28) Respiratory (24) Genitourinary (14)
Support Staff	Respiratory (16) Injury (12) Heart/Circulatory (10)	Respiratory (31) Muscles & Skeleton (16) Injury (13)
Clerical	Muscles & Skeleton (4) Respiratory (4) Heart/Circulatory (2)	Respiratory (21) Injury (17) Muscles & Skeleton (15)
Crafts & Manual Labor	Respiratory (17) Injury (11) Digestive (9)	Respiratory (12) Digestive (6) Nervous System (3)
Security	Muscles & Skeleton (13) Injury (9) Digestive (6)	Digestive (1)
Non-Regular	Respiratory (4) Digestive (1)	Digestive (2) Injury (1) Muscles & Skeleton (1)

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

Among men, muscles and skeleton conditions, injuries, digestive disorders, and respiratory conditions appeared in most job categories. In comparison with women in the work force, heart / circulatory diagnoses were more common among men. Thirty-six men reported 40 such diagnoses; 12 women reported only 12 diagnoses. Among men, half the diagnoses were for high blood pressure or ischemic heart disease (restricted blood flow to a blood vessel), but among women only 2 diagnoses for hypertension were 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 67 and women reported 44 diagnoses involving injuries during 1999. Men, therefore, reported 52 percent more injuries than women. As there are more than twice as many men as women at Sandia, it seems reasonable to expect more injuries among men than women. Does this mean that men were at greater risk of injuries compared with women in 1999? To correctly answer the question, the total number of men and women in the work force must be considered. To compare risk among men and women, it is necessary to calculate the injury rate for each gender. Rates are calculated by dividing the number of injury diagnoses in a given gender by the total number of employees of that gender. Multiply this number by 1,000 to get the diagnosis rate per 1,000 workers.

For example:

67 injury diagnoses ÷ 5,615 men =
.012 x 1,000 =
12 injury diagnoses per 1,000 men

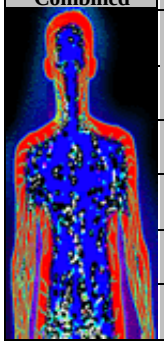
44 injury diagnoses ÷ 2,666 women =
.017 x 1,000 =
17 injury diagnoses per 1,000 women

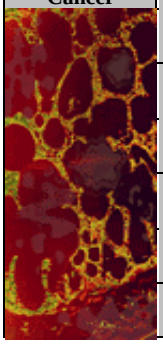
Comparing these rates now correctly suggests that the rate of reported injuries among women is greater than the rate for men. These rates are called **crude rates** because they do not account for possible differences between men and women such as age and other factors that might affect the individual's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

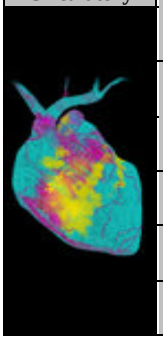
The diagnosis rate, also called the illness and injury rate, is the number of occurrences of a given disease or health condition observed over the course of a year per 1,000 workers at risk of getting that condition (see shaded box). One health condition, arthritis for example, may result in several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

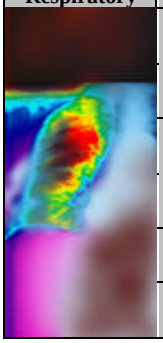
In the following set of analyses, the four age groups previously used were collapsed into two groups, workers less than 50 years of age and those 50 or older (Figure 9). These groups were collapsed to ensure that the number of diagnoses in each group was large enough to analyze. Five groups of diagnoses of particular interest to workers are presented in Figure 9: all illnesses and injuries combined, cancer, heart / circulatory system, respiratory system, and injury. Additional information about 14 other disease groups are also analyzed and can be found in the Supplemental 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
	Professional Staff	<50	59	102
		50+	84	201
	Support Staff	<50	103	199
		50+	99	189
	Clerical	<50	214	284
		50+	345	278
	Crafts & Manual Labor	<50	145	500
		50+	213	346
	Security	<50	359	83
		50+	217	0
	Non-Regular	<50	6	7
		50+	0	0

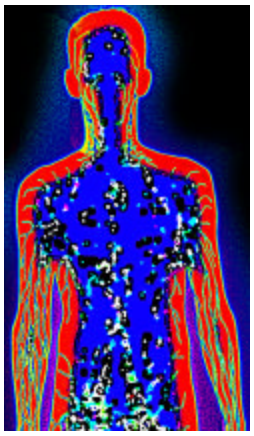
Diagnostic Category	Rate per 1,000			
Cancer	Job Category	Age	Men	Women
	Professional Staff	<50	0	5
		50+	3	0
	Support Staff	<50	6	0
		50+	12	0
	Clerical	<50	0	37
		50+	0	0
	Crafts & Manual Labor	<50	11	0
		50+	20	0
	Security	<50	0	0
		50+	0	0
	Non-Regular	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
Heart / Circulatory	Job Category	Age	Men	Women
	Professional Staff	<50	3	1
		50+	11	8
	Support Staff	<50	10	6
		50+	21	5
	Clerical	<50	143	12
		50+	0	15
	Crafts & Manual Labor	<50	4	0
		50+	40	0
	Security	<50	0	0
		50+	0	0
	Non-Regular	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
Respiratory	Job Category	Age	Men	Women
	Professional Staff	<50	12	18
		50+	20	40
	Support Staff	<50	26	66
		50+	12	38
	Clerical	<50	0	33
		50+	138	66
	Crafts & Manual Labor	<50	44	214
		50+	33	115
	Security	<50	11	0
		50+	0	0
	Non-Regular	<50	5	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
Injury	Job Category	Age	Men	Women
	Professional Staff	<50	10	8
		50+	9	24
	Support Staff	<50	18	19
		50+	12	32
	Clerical	<50	0	45
		50+	34	30
	Crafts & Manual Labor	<50	36	24
		50+	7	0
	Security	<50	87	0
		50+	43	0
	Non-Regular	<50	0	2
		50+	0	0

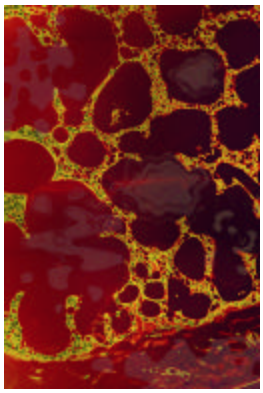
In most job categories, the rates of all illnesses and injuries combined were greater for female Sandia workers less than 50 years old than for older women. However, the Professional Staff aged 50 years or older had an overall illness and injury rate greater than that of younger female Professional Staff members. The relationship between age and diagnosis rates was less consistent among men. This is different from what was seen among men in 1997 and 1998. In both years, older workers had higher rates of all diagnoses combined than younger workers except in the Security group. Women tended to have higher rates than men in a given job category.



Cancer rates presented in this report are based on reported 5-day absences due to cancer. A worker may experience several periods of absence related to one cancer diagnosis due to medical complications or treatment regimens. Each absence results in the report of a cancer diagnosis. However, it does not imply that this is necessarily a new cancer. The cancer rates in this report are *not* comparable to the *incident* rates frequently published in many articles on cancer with which you may be familiar. Incident cancer rates are based on the number of *new* cancer cases diagnosed within a given time, usually 1 year.

The likelihood that an individual in the U.S. will develop cancer increases with age. At SNL-AL, in all job categories in which cancer was reported, rates were higher among older male workers. However, among women, all reported cancer diagnoses were among younger women. Thirty diagnoses related to cancer were reported: 17 diagnoses among 15 men and 13 diagnoses among 7 women. Seven of the workers reporting cancer in 1999 reported cancer in previous years: 3 in 1998, 2 in 1997, 1 in 1996, and 1 in 1984. Two of these workers, both men, reported a cancer at a site different from the site of the previous cancer. One man who reported lung cancer had previously reported cancer of the nasopharynx, and another man who reported liver cancer had previously reported bladder cancer. The other 4 men reported cancer at the same site in 1999 as reported previously: the oral cavity, colon, thyroid, and prostate. One woman reported thyroid cancer in 1998 and 1999. Among the 7 women who reported cancer in 1999, 2 Professional Staff members and 2 Clerical workers reported breast cancer. All 4 were 40 to 49 years of age.

In 1996, we noted that 11 of the 20 men who reported cancer had prostate cancer. We have not seen a continuation of this frequency of prostate cancer since then. Nine of the 11 men reporting prostate cancer in 1996 were in the 50-59 age range and 1 was in the 40-49 age group, relatively young compared with the age distribution of men with prostate cancer reported in both national and New Mexico Tumor Registry statistics. The same age distribution was observed in the 1995 Sandia cancer data, which contained prostate cancer diagnoses reported by 6 men, 5 of whom were under the age of 60. In



1997, we noted only three diagnoses among 3 men, all in the Professional Staff job category. These men had not reported prostate cancer previously. They ranged in age from the late 40s through early 60s, similar to the age distribution observed in previous years. In 1998, 4 men reported prostate cancer. They were all Professional Staff members who were at least 50 years old and had never reported cancer previously. Three men reported prostate cancer in 1999; 1 man had reported prostate cancer in 1996. Among the 3 men who reported prostate cancer in 1999, 2 were Professional Staff and 1 was Support Staff. All were at least 50 years old. This small number of diagnoses suggests that there is no excess of prostate cancer among Sandia workers. Workers in the Clerical and Crafts and Manual Labor groups were at a 5 times increased risk of reporting cancer compared to workers in other job categories. The 4 workers who reported cancer in the Clerical group were all women: two breast cancers, one thyroid cancer, and one sinus cancer. The 5 workers in the Crafts and Manual Labor group who reported cancer were all men: two colon cancers, two thyroid cancers, and one cancer of the lymph tissue.

In general, men and women aged 50 or older had higher rates of heart / circulatory problems than did younger workers. Men in the Clerical group had the highest rates of heart / circulatory disorders. Sixty-three percent (25 / 40) of the 40 diagnoses among men occurred in workers aged 50 or older. High blood pressure and ischemic heart disease (restricted blood flow through an artery) accounted for 48 percent (12 / 25) of the diagnoses. Six of the 12 heart / circulatory diagnoses reported by women were among workers aged 50 or older. One of the diagnoses involved high blood pressure. Clerical workers were at 3 times the risk of reporting a heart / circulatory diagnosis compared to workers in other job categories. The apparently high rate of 143 events per 1,000 workers less than 50 years old, noted among men in the Clerical group, reflected only 2 diagnoses reported by one worker.

Women tended to have higher rates of respiratory disease than did men. Crafts and Manual Labor workers had the highest rates of respiratory diagnoses among women. Among men, Clerical workers had the highest respiratory diagnosis rates. Crafts and Manual Laborers were 3 times and Support Staff twice as likely to report respiratory diagnoses compared with other workers. A similar risk increase has also been noted among the Support Staff since 1997.

Among men, injury rates were greater in younger workers than in older workers. No relationship was seen between injury rates and age among women. Clerical workers had the highest rates of injury among women. The Security group had the highest rates among men. Security workers were 7 times more likely to report an injury than were workers in other job categories. Clerical and Crafts and Manual Labor workers

reported twice as many injuries as did workers in other job categories. Clerical workers were 7 times more likely to report a back sprain and strain. Security workers were 6 times more likely to report a dislocation and 10 times more likely to report a sprain or strain.

In other analyses, the risk of illness and injury among workers classified in one job category was compared with the risk to workers in the remaining five job categories. Clerical, Crafts and Manual Labor, and Security workers were at 2 to 3 times the risk compared with all other groups. Compared with workers in other job categories, Crafts and Manual Labor workers had 3 times the risk of digestive disorders and symptoms, signs, and ill-defined conditions. Similar risks were reported in 1998 among workers in this job category. The Security group had 9 times the risk of congenital anomalies, 8 times the risk of genitourinary conditions, and 6 times the risk of digestive disorders and muscles and skeleton conditions compared with workers in other job categories.

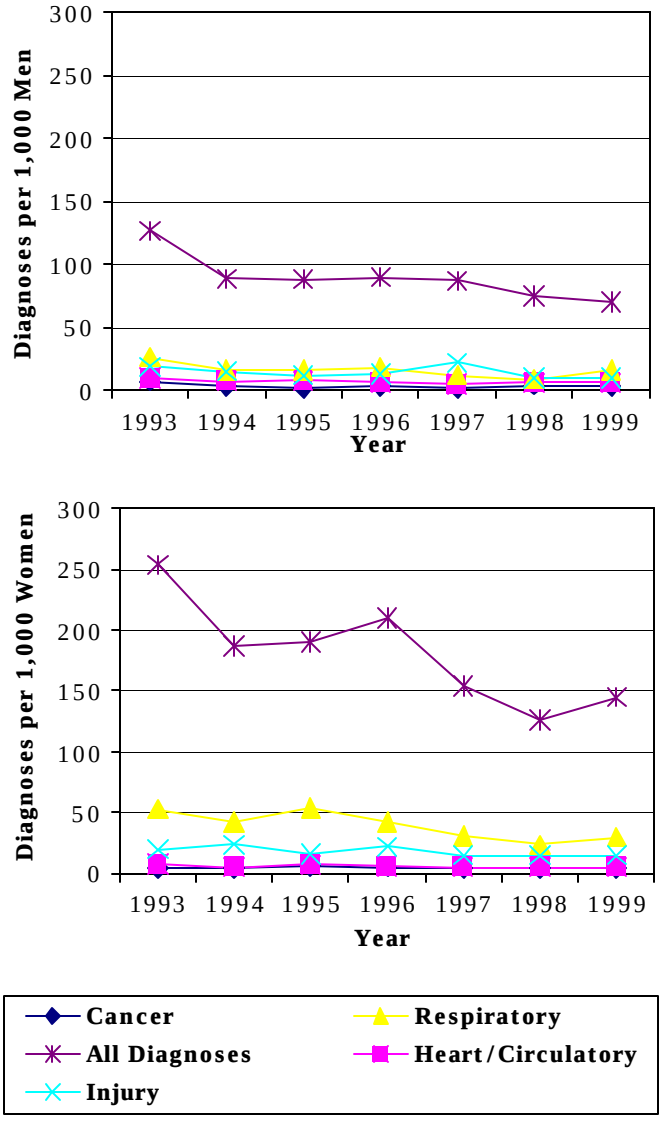
Time Trends

Why Are Rates Age-Adjusted?

The injury and illness rates in this section of the report are **age-adjusted**. Differences in the age composition 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 groups of different ages. 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 1993 and 1994 presented in this report differ from those reported in the 1993 and 1994 *Annual Epidemiologic Surveillance Reports* due to the exclusion of diagnoses associated with maternity leave.

Figure 10. Age-Adjusted Rates for Selected Diagnostic Categories for Men and Women from 1993 to 1999



The age-adjusted rates for all illness and injury categories combined continued to decline over the past 7 years, but the trends were somewhat different between women and men. Among women, the 1999 rate rose after an overall rate decline from 1993 to 1994 and again from 1996 to 1998. Over the 7-year period, the net change reflected over a 40 percent decline in the diagnosis rate for women. Among men, the modest decline noted from 1993 to 1994 was followed by an overall rate that remained essentially unchanged until 1998 when the rate began to decline again. It is likely that the decline noted for both women and men in the last 2 years to some extent reflects the addition of approximately 1,000 Non-Regular workers to the SNL-AL roster of active workers. These workers had no reported absences during 1998 and only 7 absences in 1999, so their addition to the roster contributed to the observed rate reduction. In the discussion that follows, any rate decreases noted from 1997 to 1999 should be considered in light of the impact of these Non-Regular workers.

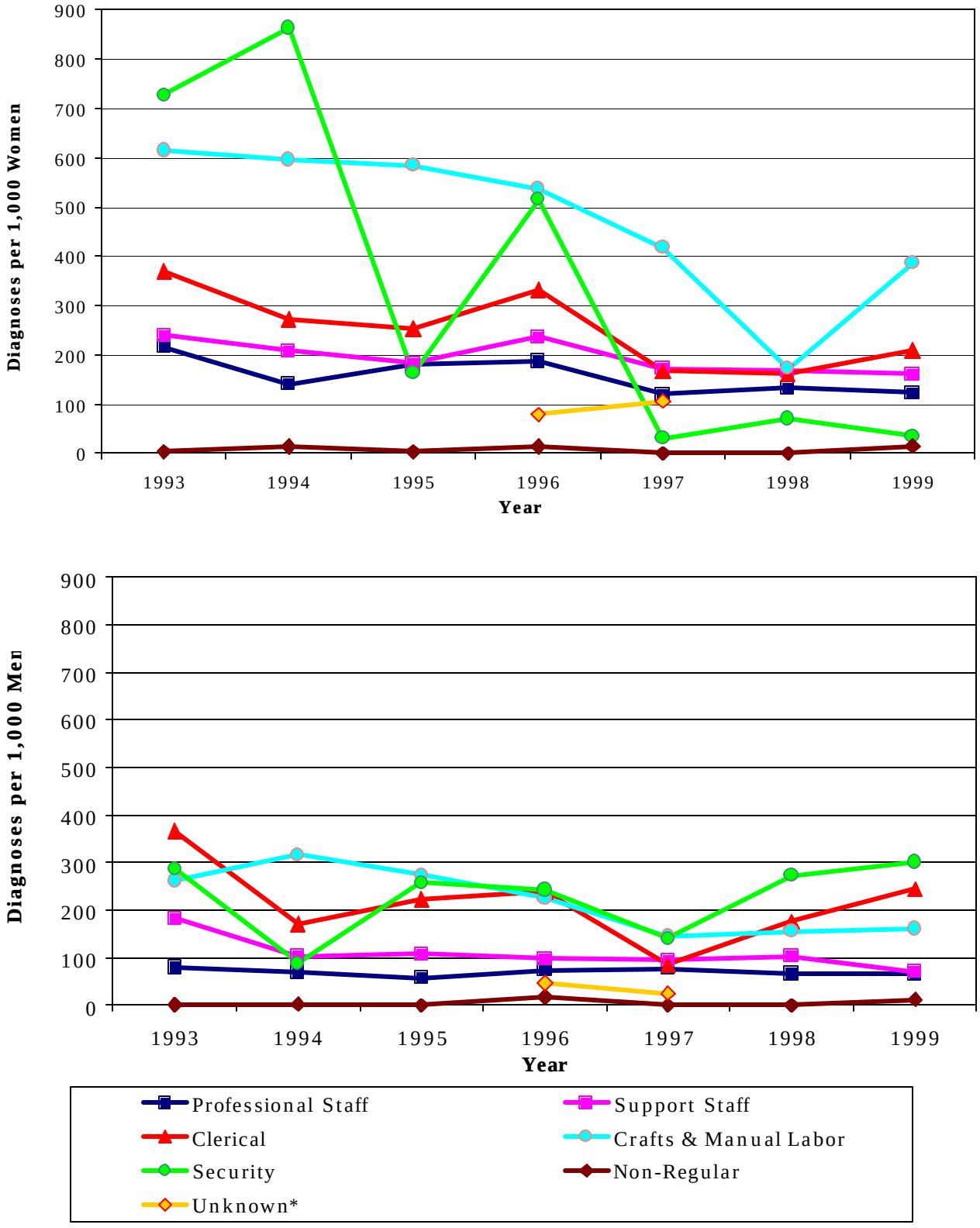
We noted no important changes in the diagnosis rates for cancer, heart / circulatory conditions, respiratory disease, or injuries in either women or men during 1993-1999.

The significant decline in the rate for all diagnostic categories combined in 1998 among women in the Crafts and Manual Labor Group did not continue in 1999 (Figure 11). Among Clerical workers, the rate that declined in 1997 and 1998 compared with the 1993-1996 time period also increased in 1999. Among Clerical workers, the increase in the rate resulted from an increase in all types of illness and injury diagnoses. An increase in diagnoses for respiratory diseases and digestive conditions increased the rate among Crafts and Manual Labor workers. We noted no evidence of significant change among women in the Support Staff or Professional Staff job categories. Over the 7-year period, the diagnosis rate declined substantially among women in Security with dramatic changes from year to year. Such wide fluctuations in the overall diagnosis rate were observed only among female Security personnel. The dramatic changes in rates among female Security workers reflect

relatively small changes in the actual number of diagnoses among this small group of workers. Over the 7-year period, the number of women in the SNL-AL Security job category ranged from 11 to 14 individuals. In 1993, 14 diagnoses were reported among these workers; in 1999, only 1.

Among men, we noted a modest but steady decline in the overall diagnosis rate similar to that observed in women. There was no evidence of any important change among men in the Professional Staff or Crafts and Manual Labor job categories. The overall diagnosis rates for men in both the Security and Clerical groups have not been consistent over the 7-year period. The 1999 rates were higher than the 1998 rates for both job categories. The increases were not due to any particular type of illness or injury.

Figure 11. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men by Job Category from 1993 to 1999



*There were workers for the Unknown category only in 1996 and 1997.

Sentinel Health Events for Occupations

A sentinel health event for occupation (SHEO) is a disease, injury, or death that is likely to be occupationally related. Its occurrence may serve as a warning signal that materials substitution, engineering control, personal protection, or medical care may be required to reduce the risk of illness or injury in the work force. Sixty-four medical conditions associated with workplace exposures from studies of many different industries have been identified as 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 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 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 1999. Eight of 837 (1 percent) diagnoses were identified as *possible* sentinel health events (Figure 12). Five of the 8 possible sentinel health events were identified as carpal tunnel syndrome. These diagnoses, reported by four workers, resulted in 91 lost calendar days. The workers included two in the Professional Staff category and one each in Support Staff and Clerical. Four of the carpal tunnel syndrome diagnoses occurred among workers 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	4	4	240	76
Total	4	4	240	76

Disabilities Among Active Workers

Five women were placed on long-term disability in 1999. Medical conditions responsible for the disabilities included three psychological disorders and one each for joint disorder and cancer. The disabled workers were excluded from other analyses in this report because they were not actively working. Three of the women were Clerical workers and the others were classified as Professional Staff (1) and Support Staff (1).

Deaths Among Active Workers

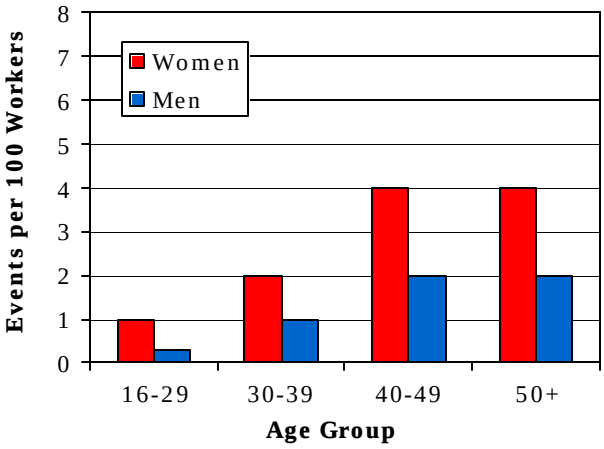
Nine deaths (eight men and one woman) occurred among Sandia workers during 1999. The causes of death included three cases of cancer (one esophagus, one stomach, one bladder); three injuries (gunshot wound to head, blunt force to chest, auto accident); and one each for respiratory condition, heart attack, and poisoning (drug overdose).

OSHA-Recordable Events

The Occupational Safety and Health Administration (OSHA) requires employers to maintain a record of occupational injuries and illnesses that have occurred among employees and to make that information available to OSHA upon 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.

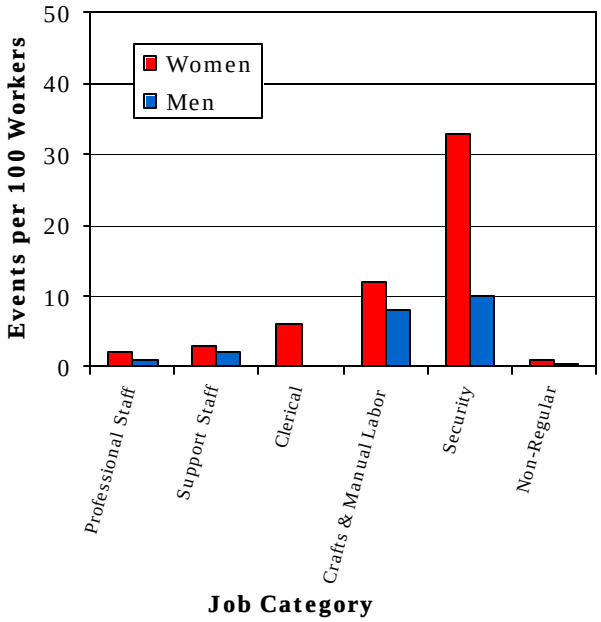
Figure 13. OSHA-Recordable Events by Gender and Age



Seventy-five women and 93 men had at least one OSHA-recordable event noted. The rate of OSHA-recordable events was similar for women (3 per 100) and men (2 per 100). The rate of OSHA-recordable events increased with age among both women and men and was highest among women (4 per 100) and men (2 per 100) aged 40 years and older. The rate was consistently higher among women than men in all age groups examined.

The rates of OSHA-recordable events by job category and gender are shown in Figure 14. The highest rates occurred among Security workers for both women (33 per 100) and men (10 per 100). Women had higher rates than did men in all job categories.

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



Overall, the average number of workdays lost or with restricted activity due to an OSHA event was 14 days. We noted a total of 989 lost or restricted workdays among women and 1,405 workdays lost or restricted among men. Women averaged 13 lost or restricted workdays compared with 15 days among men. Among both men and women, the longest average duration of absence was observed among workers aged 50 or older. The average number of lost or restricted workdays was highest among workers in the Security category (63 days). Men in this job category had an average of 74 lost or

restricted workdays; women averaged 34 lost or restricted workdays. One man in the Security group suffered a sprain / strain of the upper arm and pain in the shoulder when he accidentally fell. The worker reported 67 lost workdays and 347 restricted workdays. Two male Security workers reported injuries from overexertion and strenuous movement. One of the workers suffered a sprain / strain of his lower leg and had a total of 171 lost and restricted workdays. The other worker reported a sprain / strain of the upper arm, injury to his elbow, and pain in the shoulder. A total of 103 workdays were lost or restricted from this event. One woman in this group reported pain in one of her limbs caused by repetitive trauma. She had a total of 131 lost and restricted workdays due to this event.

Diagnostic and Accident Categories for OSHA-Recordable Events

The 174 OSHA events recorded on the OSHA 200 Logs involved 164 diagnoses among women and 180 diagnoses among men (Figure 15).

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

Diagnostic Category	Gender	
	Women	Men
Digestive	0	1
Muscles & Skeleton	65	49
Nervous System	3	4
Psychological	0	1
Respiratory	1	1
Skin	0	1
Unspecified Symptoms	9	12
Injury	86	111
Fractures – Upper Limb	2	5
Fractures – Lower Limb	3	3
Back Sprains & Strains	11	17
Other Sprains & Strains	32	26
Intracranial Injuries	0	1
Open Wounds – Head, Neck, Trunk	2	3
Open Wounds – Upper Limb	2	9
Superficial Injuries	1	3
Bruises	3	12
Foreign Bodies Entering Orifice	2	2
Burns	0	4
Injuries to Nerves & Spinal Cord	1	0
Unspecified Injuries	24	23
Adverse Reactions to Non-Medical Substances	2	1
Adverse Reactions to External Causes	1	1
Complications of Surgical / Medical Care	0	1

Injuries accounted for 52 percent of the diagnoses reported among women and 62 percent of the diagnoses reported among men. Among women, the most common (50 percent) type of OSHA-recordable injury was sprains and strains. Injuries among men were also primarily due to sprains and strains (39 percent). Men also frequently reported bruises (11 percent). Twenty-eight percent of the reported injuries among women and 21 percent of the injuries among men were unspecified.

Ninety-nine percent (172) of the 174 OSHA events were described as an accident in the OSHA logs (Figure 16). The majority of events were "other accidents." Overexertion and strenuous movements made up the majority of that category. Falls made up the second most common type of accident for both women and men.

Figure 16. OSHA-Recordable Accidents by Type and Gender

Accident Category	Gender	
	Women	Men
	Number of Accidents	Number of Accidents
Motor Vehicle Traffic	0	2
Motor Vehicle Non-Traffic	0	1
Poisoning – Non-Medicinal	2	1
Surgical & Medical Procedures	0	1
Falls	23	18
Natural / Environmental Factors	1	0
Submersion / Suffocation / Foreign Bodies	1	2
Other Accidents	51	74
Caught Between Objects	2	4
Cutting / Piercing Instrument / Object	2	5
Electric Current	0	2
Hot, Corrosive, or Caustic Material / Steam	1	1
Machinery	0	1
Overexertion & Strenuous Movements	22	33
Repetitive Trauma	17	10
Struck by an Object	7	18

Rates of OSHA-Recordable Events

The rates of all OSHA-recordable events by age and job categories and gender are shown in Figures 17 and 18. The OSHA-recordable rates were highest among male Security workers, women less than age 50 in the Security group, and women Crafts and Manual Laborers 50 years and older. Men in the Crafts and Manual Labor group also showed high rates. Most of the OSHA health conditions involved injury and poisoning. We saw no consistent relationship between age and the rate of OSHA-recordable events among women; men aged 50+ tended to have higher rates than younger men.

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

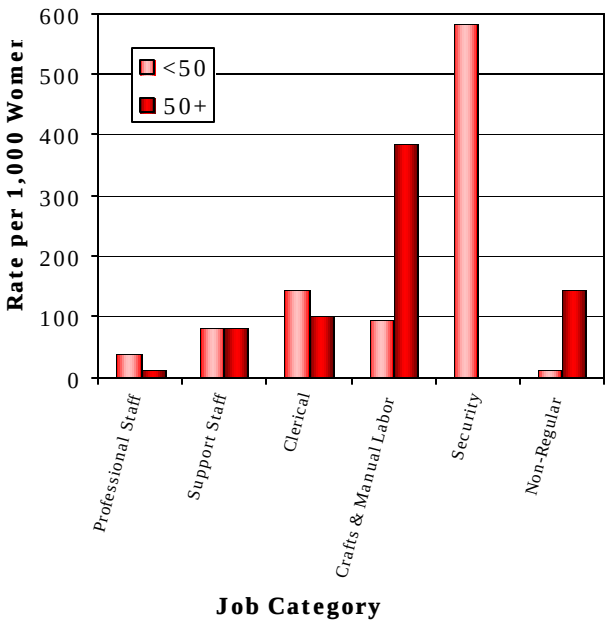
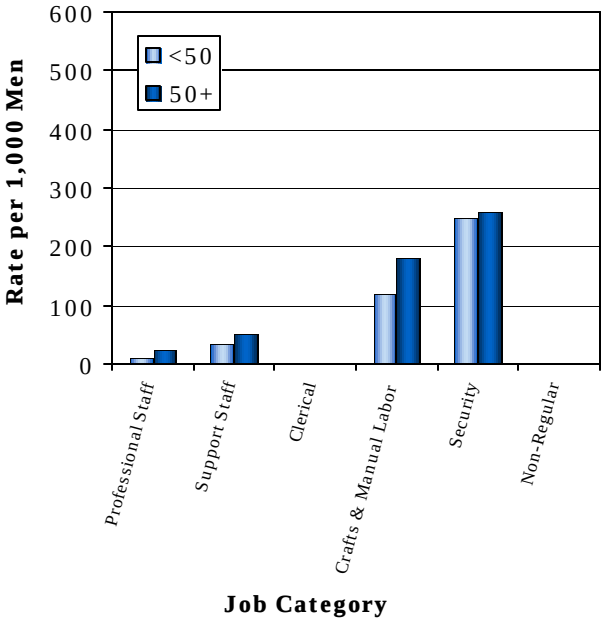


Figure 18. OSHA-Recordable Rates by Age and Job Categories Among Men, All Diagnoses Combined



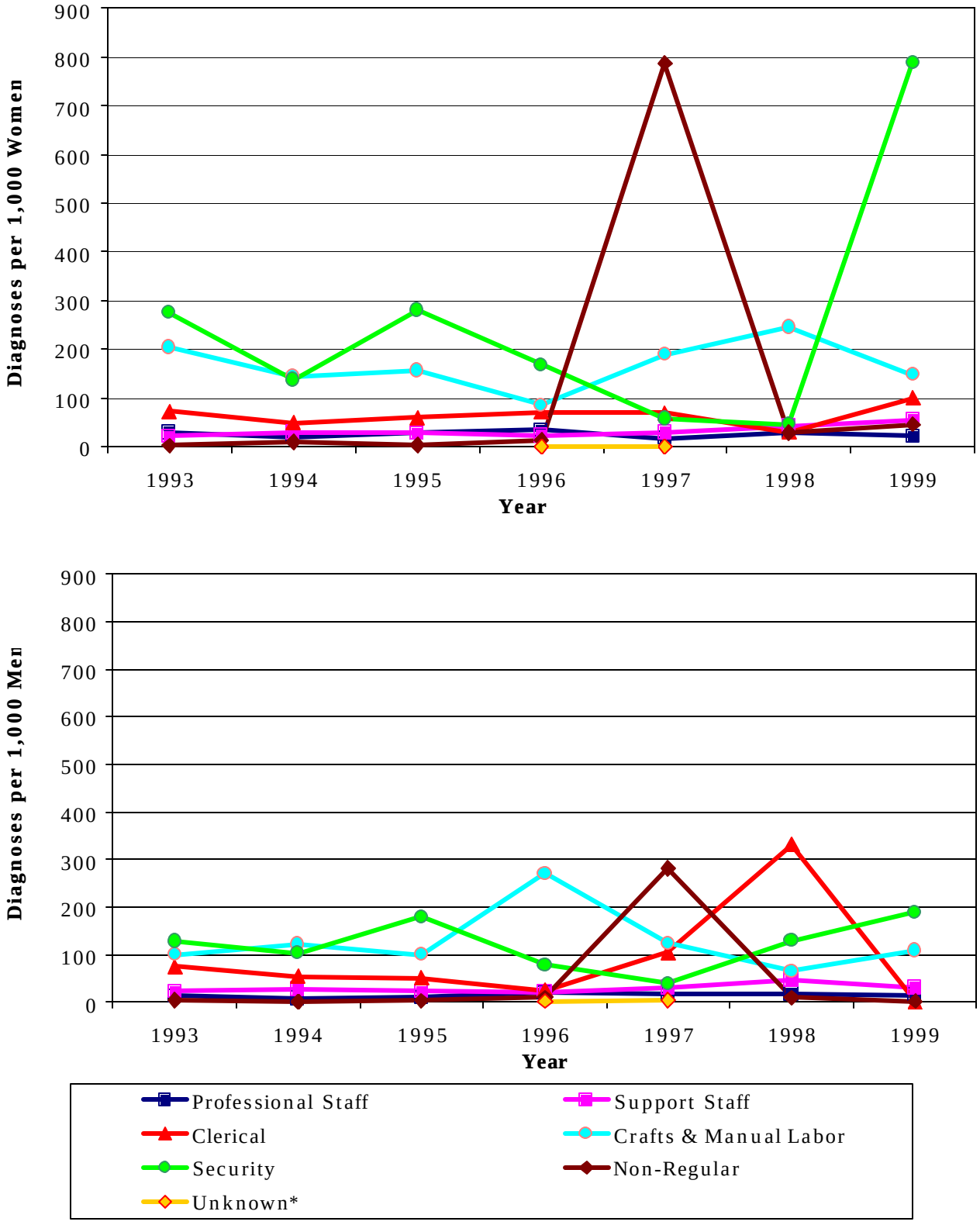
Not all workers were at equal risk for occupational injury. Compared with other workers, Crafts and Manual Laborers were at least 5 times more likely to report a sprain and strain than other groups. They also were at higher risk for bruises (9 times), and 5 times more likely to suffer an open wound to the upper limb. Security workers were also at greater risk of sprains and strains (8 times greater for back sprains and strains and 23 times greater for other sprains and strains). They were also 11 times more likely than other workers to report a bruise. Crafts and Manual Laborers and Security workers were also at greater risk for muscles and skeleton disorders (4 times and 9 times, respectively). In addition, the Security group was at 19 times greater risk of symptoms, signs, and ill-defined conditions. Clerical workers were 4 times more likely to report complications and unspecified injuries.

Time Trends for OSHA-Recordable Events

The age-adjusted rates for all OSHA-recordable diagnostic categories combined from 1993 to 1999 are shown in Figure 19. Overall, there was no indication of sustained changes in the rates of OSHA-recordable events among Sandia workers during the 7-year period. The rate for all diagnoses combined, which increased dramatically during 1997 for men and women in the Non-Regular group, returned close to the 1996 level beginning in 1998. Rates remained stable over the 7-year period for women in the Professional Staff. An upward trend was noted for Support Staff beginning in 1997. Although rates were more erratic among workers in Crafts and Manual Labor and Security, there was no evidence of a consistent trend.

Among men, Professional Staff and Support Staff had stable rates throughout the 7-year period. The OSHA-recordable rate among men in Security declined from 1995 to 1997, followed by increases in 1998 and 1999. The rate increased sharply among Crafts and Manual Laborers from 1995 to 1996, returned to its former level in 1997, declined further in 1998, and increased in 1999, providing no evidence of a trend in the rate among these workers. The variation in the rates for men in the Clerical group is due to the small number of employees and events during this time.

Figure 19. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Women and Men by Job Category from 1993 to 1999



*There were workers for the Unknown category only in 1996 and 1997.

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
Infections/Parasites	001-139
Injury	800-999
Miscarriage	630-676
Muscles and Skeleton	710-739
Nervous System	320-389
Psychological	290-319
Respiratory	460-519
Skin	680-709
Unspecified Symptoms	780-799

ICD-9-CM Codes

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

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

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

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

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

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

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

Diseases of the musculoskeletal system and connective tissue	710-739	Arthritis, systemic lupus erythematosus, ankylosing spondylitis, herniated intervertebral 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

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