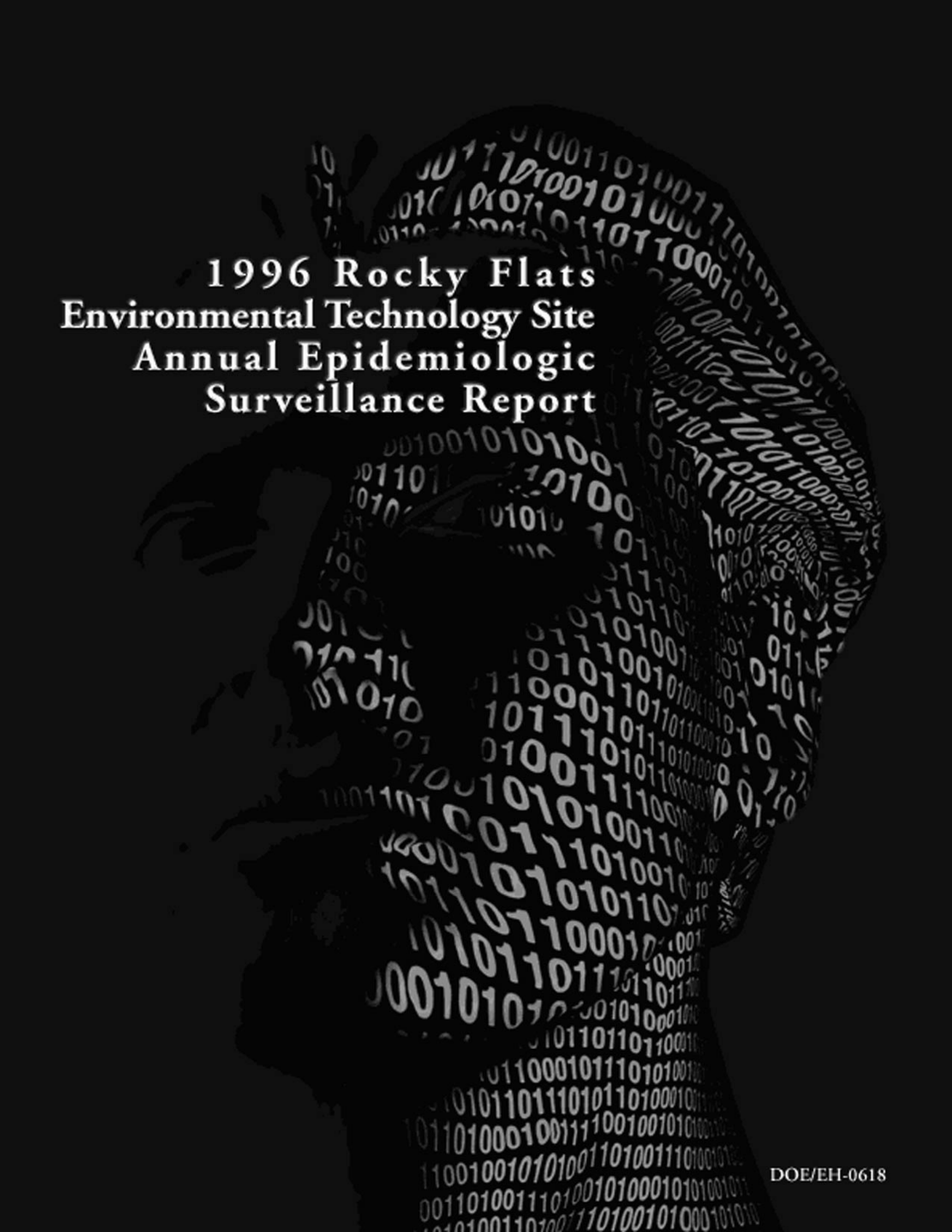

1996 Rocky Flats Environmental Technology Site Annual Epidemiologic Surveillance Report

DOE/EH-0618

ROCKY FLATS
ENVIRONMENTAL TECHNOLOGY SITE

1996 Epidemiologic Surveillance Report

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

http://www.eh.doe.gov/epi/surv

ROCKY FLATS
ENVIRONMENTAL TECHNOLOGY SITE 1996

At a Glance

The percentage of men and women with at least one health-related absence dropped from 12 percent in 1995 to 8 percent in 1996.

For both men and women, the absence rate increased with age.

In general, job categories comprised mainly of salaried staff had lower absence rates; categories with wage earners tended to have higher rates. This difference may represent a disparity between hourly and salaried staff in reporting for medical clearance.

As in 1995, the major categories of diagnoses for both men and women included injuries, respiratory conditions, and muscle and skeleton diagnoses.

We found no evidence of an excess of any type of cancer among Rocky Flats workers. Cancer diagnosis rates remained low for both men and women from 1993 through 1996.

There was an approximate 20 percent decrease in the number of workers with at least one OSHA-recordable event compared with the number in 1995.

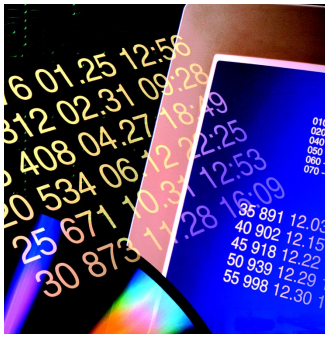
Sprains and strains accounted for 27 percent of the OSHA-recordable injuries reported by women; 21 percent of those reported by men.

Falls and overexertion were the more common types of accidents among both women (60 percent) and men (64 percent).

Service workers and Crafts and Manual Labor workers had an overall occupational injury risk at least three times greater than that of workers in other job categories.

Introduction

The U.S. Department of Energy's (DOE) commitment to assuring the health and safety of its workers includes the conduct of epidemiologic surveillance activities that provide an early warning system for health problems among workers. The Epidemiologic Surveillance Program monitors illnesses and health conditions that result in an absence of five or more consecutive workdays, occupational injuries and illnesses, and disabilities and deaths among current workers.



Epidemiologic surveillance has been ongoing at Rocky Flats Environmental Technology Site since 1992. This report provides a summary of epidemiologic surveillance data collected from Rocky Flats from January 1, 1996 through December 31, 1996. The data were collected by a coordinator at Rocky Flats and submitted to the Epidemiologic Surveillance Data Center located at Oak Ridge Institute for Science and Education, where quality control procedures and preliminary data analyses were carried out. The analyses were interpreted and the final report prepared by the DOE Office of Epidemiologic Studies.

The Epidemiologic Surveillance Report for Rocky Flats has been redesigned for 1996. The information in this report provides highlights of the data analyses conducted. Surveillance reports and additional supporting tables are posted on the Office of Epidemiologic Studies' Web Site **(http://www.eh.doe.gov/epi/surv),** or are available by request. The main sections of the report include: work force characteristics; absences due to injury or illness lasting five or more consecutive workdays; workplace illnesses, injuries, and deaths that were reportable to the Occupational Safety and Health Administration ("OSHA-recordable" events); and disabilities and deaths among current workers.

Note that 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 Rocky Flats with other DOE sites should be made cautiously. The differences between sites and factors at each site that affect the completeness and accuracy of the health information reported can affect the patterns of illness and injury observed.

Site Overview

The Rocky Flats Environmental Technology Site is situated on the western slopes of the Rocky Mountains near Golden, Colorado, 16 miles northwest of Denver. The site encompasses about 400 acres located on a 6,500 acre reserve that includes over 400 separate buildings and structures. The site was established in 1952 by the Atomic Energy Commission to serve as one of seven production plants in the national nuclear weapons complex. The site's operations involved the development of new technology needed for the manufac-

ture and assembly of nuclear weapons. During the Cold War, Rocky Flats was responsible for the fabrication of the hollow plutonium sphere, or "pit," that serves as the trigger device for nuclear warheads. With the end of the Cold War, The plant's mission changed from weapons production to environmental cleanup.

In 1989, Rocky Flats was added to the National Priorities List for Superfund, the national environmental cleanup program. The site has areas in which buried chemicals and nuclear materials have contaminated both the soil and groundwater. The buried chemicals and materials include thousands of cubic yards of wastes left over from the production era that must be removed for disposal. The cleanup of contaminated areas in both the natural environment and the buildings will also contribute to the already large waste volume. In July 1994, the name "Rocky Flats Plant" was changed to "Rocky Flats Environmental Technology Site" to more accurately reflect the current environmental restoration and cleanup mission. Kaiser-Hill, a partnership between ICF-Kaiser and CH2M Hill, assumed responsibility as the integrating management contractor for the site on July 1, 1995.

The site's current mission is to safely manage its existing nuclear wastes and materials until national repositories are established to accept them, clean up the areas of environmental contamination, and decontaminate and decommission the site. The ultimate goal is to close the site.

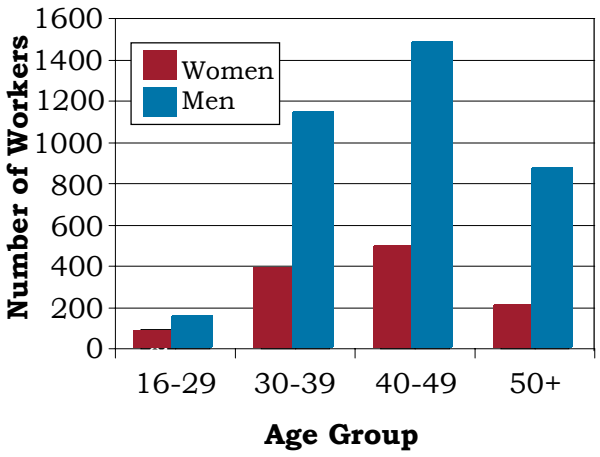
The Rocky Flats Work Force - 1996

A total of 4,827 Rocky Flats employees were included in epidemiologic surveillance in 1996, 2,016 fewer than were present in 1995. The work force declined 29 percent from its peak in 1995. The gender and age distributions of the 1996 work force are shown in Figure 1. There were 3,652 men (76 percent) and 1,175 women (24 percent)

with an average age of 43 years for men and 42 years for women. The majority of the Rocky Flats workers was White (83 percent). Hispanics comprised about 10 percent of the work force; African Americans, Asians, and Native Americans made up most of the remainder.

For this report, individual job titles were grouped into job categories.

Figure 1. The Work Force by Gender and Age



The grouping was done because there were too few workers or not enough health events among workers with a particular job title, which limited the types of analyses that could be performed. Men and women were not distributed equally among the various job categories, as shown in Figure 2. Women were most heavily represented among Administration workers; a larger percentage of men were noted in Professional and Crafts and Manual Labor jobs. A more detailed distribution of the work force by gender, age, and job category is available in the supporting tables for this report, available at **http://www.eh.doe.gov/epi/surv.**

Figure 2. The Work Force by Job Category and Gender

Job Category	Women	Men
Administration	804 68%	1,416 39%
Professional	112 10%	632 17%
Technical	57 5%	331 9%
Service	27 2%	112 3%
Security	52 4%	316 9%
Crafts & Manual Labor	10 1%	390 11%
Nuclear	57 5%	303 8%
Other/Unknown	56 5%	152 4%

Number and Length of Absences

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

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

One change from previous reports is the exclusion of certain health events that lasted at least five consecutive workdays but did not result from an illness or injury. These events included 10 absences for maternity leave and three absences for elective surgical procedures not related to the treatment of an illness or injury.

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

Almost 8 percent of the workers reported at least one absence in 1996, substantially fewer than the 12 percent who reported one or more absences in 1995. The 153 5-day absences among 1,175 women resulted in an absence rate of 13 absences per 100 workers. The rate among men was 8 per 100 workers (277/3,652). This gender difference has been observed at Rocky Flats every year since the site's first Epidemiologic Surveillance report in 1992.

For both men and women, the absence rate increased with age (Figure 3). As shown in Figure 4, the average duration of absence also increased steadily with age among men, but did not change consistently with age among women. We observed no consistent difference between women and men in the average duration of absence.

Figure 3. Absence Rate by Gender and Age

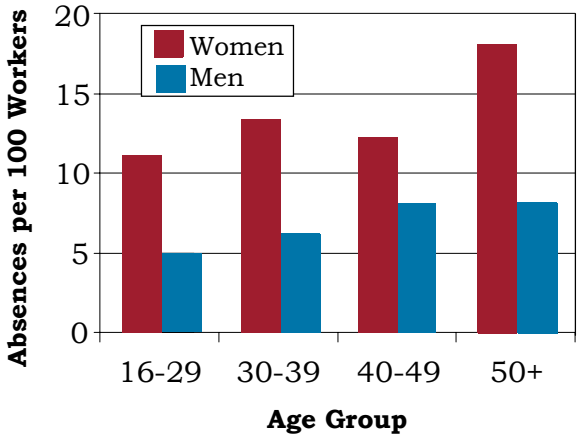


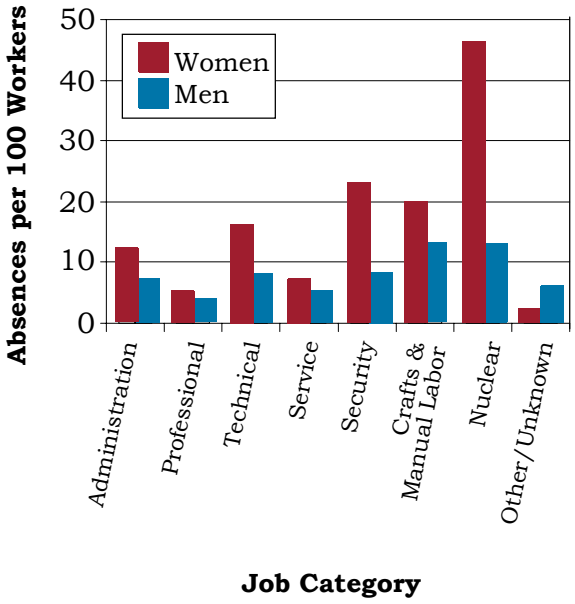
Figure 4. Number of Days Absent by Gender and Age

Gender	Age	Number of Absences	Number of Days Absent	Average Number of Days Absent
Women	16 - 29	10	290	29
	30 - 39	45	941	21
	40 - 49	61	1,922	32
	50 +	37	748	20
	Total	153	3,901	25
Men	16 - 29	8	124	16
	30 - 39	73	1,669	23
	40 - 49	124	3,669	30
	50 +	72	2,360	33
	Total	277	7,822	28

The rate of five-day absences varied by job category for men and women (Figure 5). In general, higher rates were noted in job categories comprised mainly of wage earners; salaried staff tended to have lower rates of reported absence. This difference has been observed at other sites, and may in part reflect a disparity between the two groups in complying with the requirement to report for medical clearance following an absence rather than a true difference in the amount of illness experienced by the two groups. We noted the highest rate of 5-day absences among female Nuclear workers, with 46 absences per 100 women (26/57). High rates were also noted among women in Security and Crafts and Manual Labor jobs. Men in the Nuclear category and those with jobs in Crafts and Manual Labor had the highest rates of absence (Figure 5).

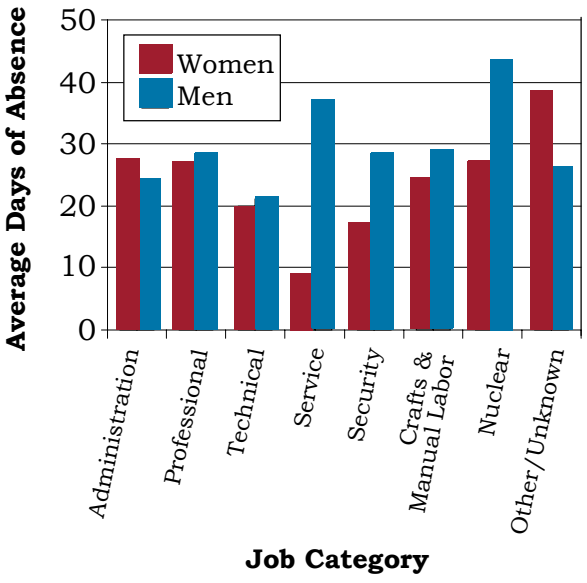
As shown in Figure 6, the average duration of absence was somewhat higher among men than among women in most job categories. Overall, the average duration of absence among men was 28 days; 25 days among women. Women in Administration jobs had a slightly higher average duration of absence than did men, but the difference was small.

Figure 5. Absence Rate by Job Category and Gender



The long average duration of absences among Nuclear workers resulted from six absences lasting more than 100 days. Almost 40 percent of the absences lasting 92 days or longer occurred among the nuclear workers, who make up seven percent of the work force. The Rates of Disease Occurrence section of this report examines the diagnoses underlying these absences.

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



Diagnostic Categories

Epidemiologic surveillance monitors *all* illnesses and injuries among active workers because it is not always possible to determine what health effects are due to occupational exposures and what are due to other causes. Workers who require return-to-work clearances report illness and injury diagnoses to the occupational medicine clinic. An absence due to illness or injury may involve more than one diagnosis, and epidemiologic surveillance includes all reported diagnoses. In addition, the OSHA 200 Log provides information on recorded occupational injuries and illnesses whether or not they involve absences.

This report organizes illnesses and injuries into categories based on a standard reference, the *International Classification of Disease* 9th *Revision Clinical Modification* (ICD-9-CM). The ICD-9-CM is used to classify diagnoses for statistical purposes. You can find specific diagnoses in the Explanation of Diagnostic Categories.

The number of reported diagnoses categorized according to the ICD-9-CM and the number of lost calendar days are presented in Figure 7. The more frequently reported health conditions varied little with age and gender. Women reported 212 diagnoses and accrued 3,901 days of absence related to them. Men reported 347 diagnoses and 7,822 days of absence. As in 1995, injuries, respiratory diagnoses and muscle and-skeleton diagnoses were common among both men and women. Among women, respiratory diagnoses (31 percent), muscle and skeleton diagnoses (15 percent), genitourinary diagnoses (11 percent), injuries (11 percent), and digestive diagnoses (11 percent) comprised 79 percent of all diagnoses. reported in 1996. Most of the respiratory diseases consisted of acute infections such as colds (26 percent), bronchitis and asthma (25 percent), and flu and pneumonia (22 percent). Of the muscular and skeletal conditions, 41 percent involved joint disorders and 38 percent were spinal disorders. Forty-eight percent of the injuries reported by women were back sprains and strains.

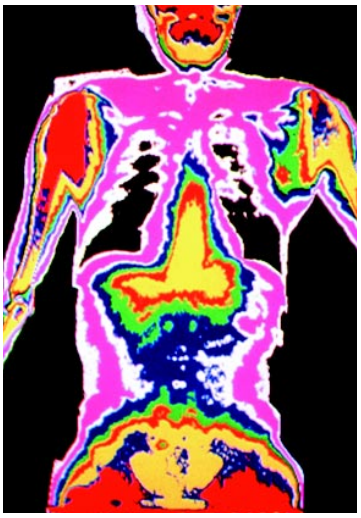
Figure 7. Number of Diagnoses and Lost Calendar Days by Diagnostic Category (Categorized by ICD-9-CM) and Gender

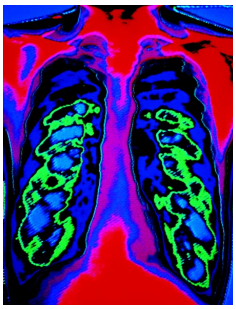
Diagnostic Category	Women		Men	
	Number of Diagnoses	Number of Lost Calendar Days	Number of Diagnoses	Number of Lost Calendar Days
Benign Growths	0	0	2	52
Cancer	3	83	5	286
Digestive	23	324	39	587
Endocrine / Metabolic	2	44	6	78
Existing Birth Condition	0	0	4	67
Genitourinary	24	714	5	69
Heart / Circulatory	5	88	15	769
Infections / Parasites	11	117	12	181
Injury	23	518	82	2,154
Muscles and Skeleton	32	914	52	2,230
Nervous System	9	289	12	210
Psychological	8	241	20	369
Respiratory	65	1,039	70	1,019
Skin	1	19	8	142
Unspecified Symptoms	6	142	15	189

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

Injuries (24 percent), respiratory conditions (20 percent), and muscle and skeleton (15 percent) comprised 59 percent of the diagnoses reported among men in 1996. The same diagnosis categories were the ones most commonly reported by men in 1995. As with women, most respiratory diagnoses among men involved acute conditions (21 percent), pneumonia and flu (33 percent), and bronchitis and asthma (21 percent). Injuries reported by men were comprised primarily of fractures (24 percent), back sprains and strains (17 percent), and other sprains and strains (24 percent). Among the muscle and skeleton diagnoses reported by men, 42 percent were disorders affecting the joints, and 44 percent were disorders affecting the spine.

Figure 8 shows the frequency of reported diagnoses by job category for men and women. Injury was among the more frequently reported diagnostic categories for men in all job categories. Muscle and skeleton conditions were also frequently observed among men in Administration, Security, Crafts and Manual Labor, Nuclear, and Other/ Unknown categories. Respiratory conditions were noted among men in all job categories except the Other/ Unknown category. Digestive diagnoses were common among men but apparently not associated with a particular job category. The more common digestive system diagnoses included hernias, gallbladder disorders, and gastroenteritis and colitis. Four cancer diagnoses were reported by two men in the Professional group. One man had three absences for the same cancer.





Among women, few diagnoses were reported in the Technical, Service, Crafts and Manual Labor, and Other/ Unknown groups. The small number of diagnoses may simply reflect the relatively small number of women employed in these job categories. Injuries were not as widely distributed among women as among men. They were common among women in the Administration, Technical and Nuclear groups. Respiratory conditions were prominent among women in all job categories except the Technical and Other/Unknown groups.

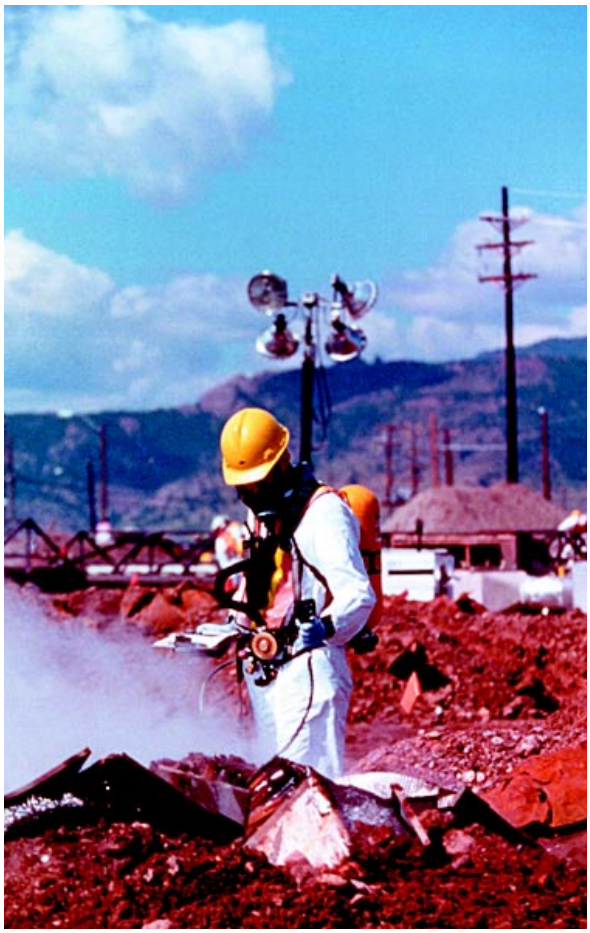


Figure 8. Most Frequently Reported Diagnoses by Job Category and Gender

Job Category	Men	Women
Administration	**Injury (28)** **Respiratory (25)** **Muscles and Skeleton (16)** **Digestive (13)**	**Respiratory (32)** **Muscles and Skeleton (23)** **Genitourinary (17)**
Professional	**Respiratory (11)** **Injury (5)** **Cancer (4)** **Digestive (4)**	**Respiratory (5)** **Digestive (3)**
Technical	**Respiratory (9)** **Injury (7)**	**Injury (3)** **Muscles and Skeleton (3)** **Genitourinary (2)**
Service	**Injury (4)** **Heart/ Circulatory (1)** **Respiratory (1)**	**Respiratory (3)**
Security	**Muscles and Skeleton (9)** **Respiratory (7)** **Digestive (5)** **Injury (4)**	**Respiratory (4)** **Digestive (2)** **Injury (2)** **Muscles and Skeleton (2)**
Crafts & Manual Labor	**Respiratory (11)** **Digestive (10)** **Injury (10)** **Muscles and Skeleton (10)**	**Respiratory (2)** **Injury (1)** **Nervous System (1)**
Nuclear	**Injury (18)** **Respiratory (6)** **Muscles and Skeleton (6)** **Digestive (5)**	**Respiratory (18)** **Injury (4)**
Other/ Unknown	**Injury (6)** **Muscles and Skeleton (5)** **Digestive (1)** **Skin (1)**	**Genitourinary (1)**

Note: Numbers in parentheses are number of diagnoses reported.

Rates of Disease Occurrence

A Word about Rates: The previous section considered the **number** of absences and diagnoses among various worker groups. For example, Figure 7 shows that men reported 52 and women reported 32 diagnoses involving muscle and skeleton conditions during 1996. Men, therefore, reported over 60% more muscle and skeleton conditions than women. As there are over three times as many men as women at Rocky Flats, it is reasonable to expect more muscle and skeleton diagnoses among men than women. Does this mean that men were at greater risk of muscle and skeleton conditions than were women in 1996? To correctly answer this question, the total number of men and women in the work force must be considered. A more accurate way to compare men and women is to calculate the muscle and skeleton diagnosis rate for each gender. Rates are calculated by dividing the number of diagnoses in a given gender by the number of employees of that gender. Multiply this number by 1,000 to get the diagnosis rate per 1,000 workers.

For example:

52 muscle and skeleton diagnoses
÷ 3,652 men = .014 x 1,000 =
14 muscle and skeleton diagnoses
per 1,000 men

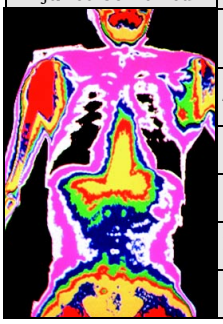
32 muscle and skeleton diagnoses
÷ 1,175 women = .027 x 1,000 =
27 muscle and skeleton diagnoses
per 1,000 women

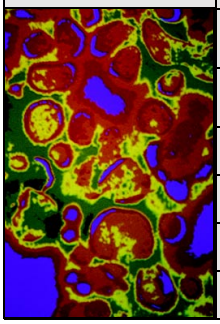
Comparing these rates now correctly suggest that the rate of reported absences due to muscle and skeleton diagnoses among women is higher than the rate for men. They are called crude rates because they do not account for possible differences between men and women such as age and other factors that might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

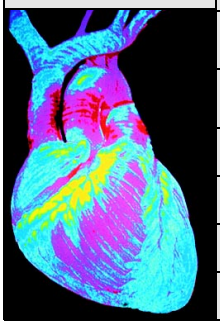
The diagnosis rate (also called the illness and injury rate) is the number of occurrences of a given disease or health condition observed over the course of a year per 1,000 workers at risk of getting that condition (see shaded box). One health condition, arthritis for example, could result in several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

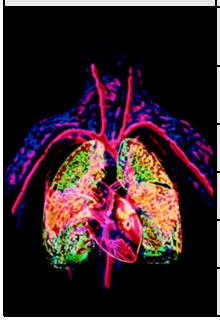
In the following analyses, the four age groups were collapsed into two groups: workers younger than 50 years of age and those 50 years or older (see Figure 9). In addition, the eight job categories were combined into six larger groups. These groups were collapsed to ensure that the number of diagnoses in each group was large enough to analyze. Five groups of diagnoses of particular interest to workers are presented: all illnesses and injuries combined, cancer, heart/circulatory system, respiratory system, and injury. Additional information about 10 other diagnostic groups can be found in the Supporting Tables.

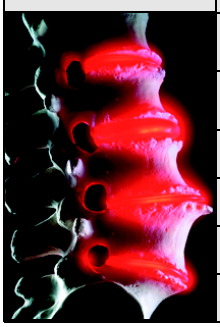
Figure 9. Illness and Injury Rates by Job Category, Gender, and Age

Diagnostic Category	Rate per 1,000			
All Illnesses & Injuries Combined	Occupational Group	Age	Men	Women
	Administration	<50	94	140
		50+	51	238
	Professional/ Technical	<50	55	137
		50+	115	125
	Service/Security	<50	73	262
		50+	94	71
	Crafts & Manual Labor	<50	187	400
		50+	146	0
	Nuclear	<50	169	653
		50+	134	750
	Other/Unknown	<50	88	21
		50+	74	0

Diagnostic Category	Rate per 1,000			
Cancer	Occupational Group	Age	Men	Women
	Administration	<50	0	3
		50+	0	6
	Professional/ Technical	<50	0	0
		50+	18	0
	Service/Security	<50	0	0
		50+	0	0
	Crafts & Manual Labor	<50	0	0
		50+	7	0
	Nuclear	<50	0	0
		50+	0	0
	Other/Unknown	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
Heart/Circulatory	Occupational Group	Age	Men	Women
	Administration	<50	6	3
		50+	6	13
	Professional/ Technical	<50	0	0
		50+	5	0
	Service/Security	<50	0	0
		50+	12	71
	Crafts & Manual Labor	<50	0	0
		50+	21	0
	Nuclear	<50	4	0
		50+	0	0
	Other/Unknown	<50	0	0
		50+	0	0

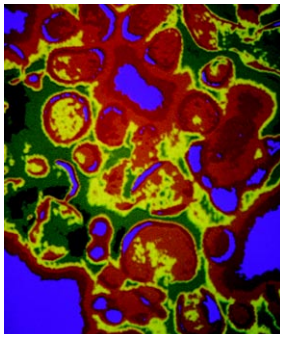
Diagnostic Category	Rate per 1,000			
Respiratory	Occupational Group	Age	Men	Women
	Administration	<50	21	34
		50+	6	63
	Professional/ Technical	<50	16	39
		50+	37	0
	Service/Security	<50	23	108
		50+	0	0
	Crafts & Manual Labor	<50	37	200
		50+	14	0
	Nuclear	<50	25	306
		50+	0	375
	Other/Unknown	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
Injury	Occupational Group	Age	Men	Women
	Administration	<50	24	12
		50+	6	25
	Professional/ Technical	<50	7	26
		50+	32	0
	Service/Security	<50	17	31
		50+	24	0
	Crafts & Manual Labor	<50	28	100
		50+	21	0
	Nuclear	<50	55	61
		50+	75	125
	Other/Unknown	<50	48	0
		50+	0	0

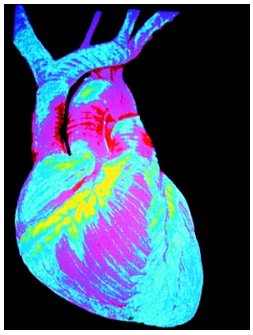
We observed no consistent relationship between age and the rate for all diagnoses combined among women or men. The rate tended to be higher among women than among men in most job categories. The highest rates were observed among women in the Nuclear job category; the highest rates among men were noted among workers in the Crafts and Manual Labor category. Overall, the rates for older women and younger women in a given job category varied more than those observed among men.

Cancer rates in this report are based on reported 5-day absences during the year. A worker may experience several periods of absence from one cancer diagnosis due to medical complications or recurrent treatment. Each reported absence results in a report of a cancer diagnosis. However, it does not necessarily 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 during a given time, usually a year.

The likelihood that an individual in the U.S. will develop cancer increases with age. Cancer rates at Rocky Flats reflect this observation; they were higher among women aged 50 or older than among younger women, and no cancer diagnoses were reported among men younger than 50 years of age. The 8 cancer diagnoses reported during 1996 included 3 diagnoses among 3 women and 5 diagnoses among 3 men. We found no evidence of an excess of any specific type of cancer.



The rate of heart/circulatory disease tended to be higher among older workers. Fifteen of the 20 heart/circulatory system diagnoses reported in 1996 were reported by men. The 20 heart/circulatory disease diagnoses reported in 1996 were a significant drop from the 44 diagnoses reported in 1995. Ten of the diagnoses involved ischemic disease (including restricted blood flow through an artery and heart attack) and five involved hemorrhoids or diseases of the veins or lymphatic channels. The 39 percent of the men in the Rocky Flats work force classified as Administration workers reported 60 percent (9/15) of the heart/circulatory diagnoses reported by men, but no particular diagnosis predominated.



The respiratory diagnosis category contains very different kinds of diseases: acute infectious diseases such as colds, influenza, and pneumonia; sinusitis, and bronchitis; and chronic diseases like allergies, asthma and emphysema. Seventy percent of the respiratory diagnoses involved acute infections. Respiratory disease rates did not change consistently with age. The rates remained low among men across the job categories, but women in the Nuclear job category had particularly high respiratory disease rates, regardless of age. Respiratory disease risk among nuclear workers was almost three times higher than that of workers in other job categories. This increased risk reflected an increase in all types of respiratory diseases, not any

one in particular. Nuclear workers were also at twice the risk of respiratory diseases in 1995.

The injuries in this analysis include both occupational and nonoccupational injuries. Only 2 of the 105 injury and poisoning diagnoses involved poisoning. Most of these injuries were not occupational. Injury rates did not change consistently with age. Injury rates among women were somewhat more variable than those among men, a difference probably attributable to the small number of women in some job categories. Among both women and men, over 40% of the diagnoses were sprains and strains. Men in Nuclear trades and women in both Nuclear and Crafts and Manual Labor job categories had higher injury rates than other workers. Nuclear workers were about 4 times more likely to sustain a back sprain or strain than were other workers. Twenty-nine percent (4/14) of the back sprains and strains reported by men occurred among Nuclear workers, who comprised 8 percent of the men in the work force.

The risk of illness and injury among workers classified in one job category was compared with that of workers in the remaining job categories. In general, these comparisons emphasized the differences between hourly and salaried workers. We noted that Nuclear workers were four times more likely than other workers to report a back sprain or strain in 1996. In 1995, Nuclear workers were 10 times more like to sustain a back sprain or strain than other workers, and they were about four times more likely to report a nonoccupational injury than were workers in other occupational groups. Compared with other workers, their risk of injury was not elevated in 1994.

Similarly, Service workers were over six times more likely to report a sprain or strain other than the back than were workers in other job categories. Fifteen percent (3/20) of the sprains and strains other than those affecting the back reported in 1996 occurred among men in the Service group, which comprised 3 percent of the men in the work force. This risk of other sprains and strains is similar to the risk among these workers in 1995. Crafts and Manual Labor workers had five times the risk of leg and foot fractures compared with workers in other groups. The Supporting Tables for this report contain additional comparisons of disease and injury risk for workers in various job categories.

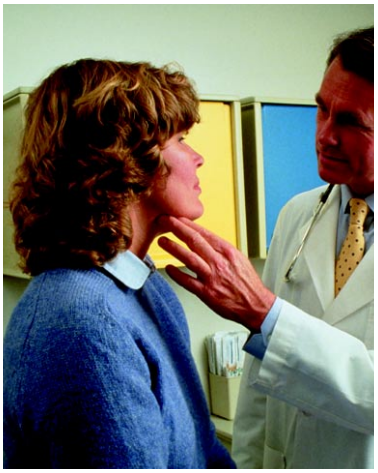
Time Trends

Why Are Rates Age-Adjusted?

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

Epidemiologic Surveillance has been conducted at Rocky Flats since 1992. There are now four years of data, 1993-1996, in which to examine trends in age-adjusted diagnosis rates at Rocky Flats. A major change from previous years is the elimination of pregnancy

and childbirth related conditions (with the exception of an ectopic pregnancy or miscarriage, conditions that *might* be associated with work conditions) as a diagnostic category in the 1996 report. In order to compare 1996 rates with data from past years, pregnancy and childbirth events were eliminated from the data that had been previously published. Age-adjusted rates were then recalculated for the years 1993-1995.



Age-adjusted rates for selected illness and injury categories are presented in Figure 10. The age-adjusted rates for all diagnoses combined dropped substantially in 1996 compared with the previous three-year period for both women and men. Among men, this drop resulted from a substantial decline in the respiratory diagnosis rate. In women, a notable drop was seen in both the respiratory and injury diagnoses rates. Rates were consistently higher among women than among men for all diagnoses combined and for respiratory diagnoses. The rates of cancer and heart/circulatory diagnoses were similar for men and women and remained low throughout the 4-year period.

The rate for all diagnoses combined dropped substantially in 1996 from the previous three-year period among men and women in the Administration, Professional, Technical, and Service groups (Figure 11). These decreases may reflect true decreases in illness, changes in absence reporting requirements, administration of sick leave, or decreased awareness of reporting requirements. Workers in the remaining job categories did not exhibit such a decline in reported diagnoses.

Figure 10. Age-Adjusted Rates for Selected Diagnostic Categories for Men and Women from 1993 to 1996

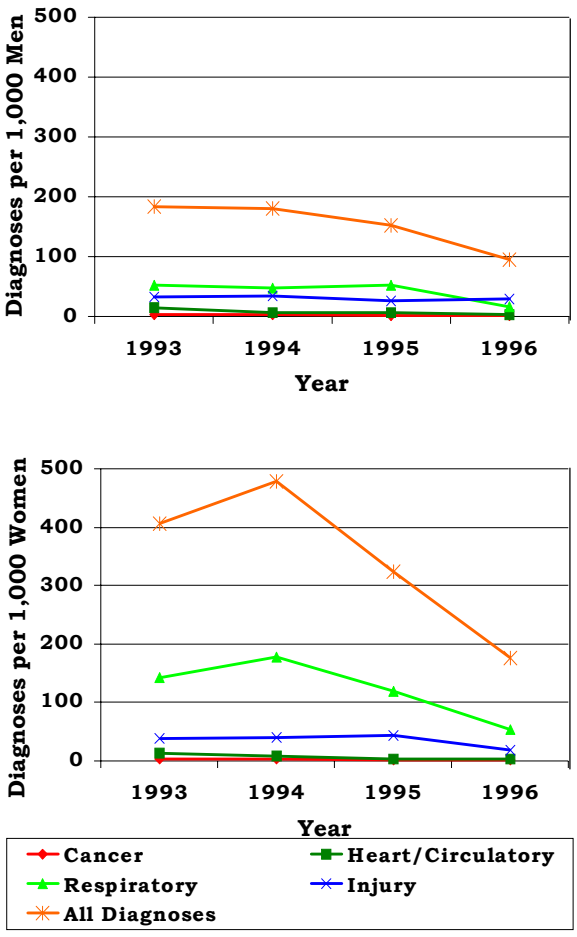
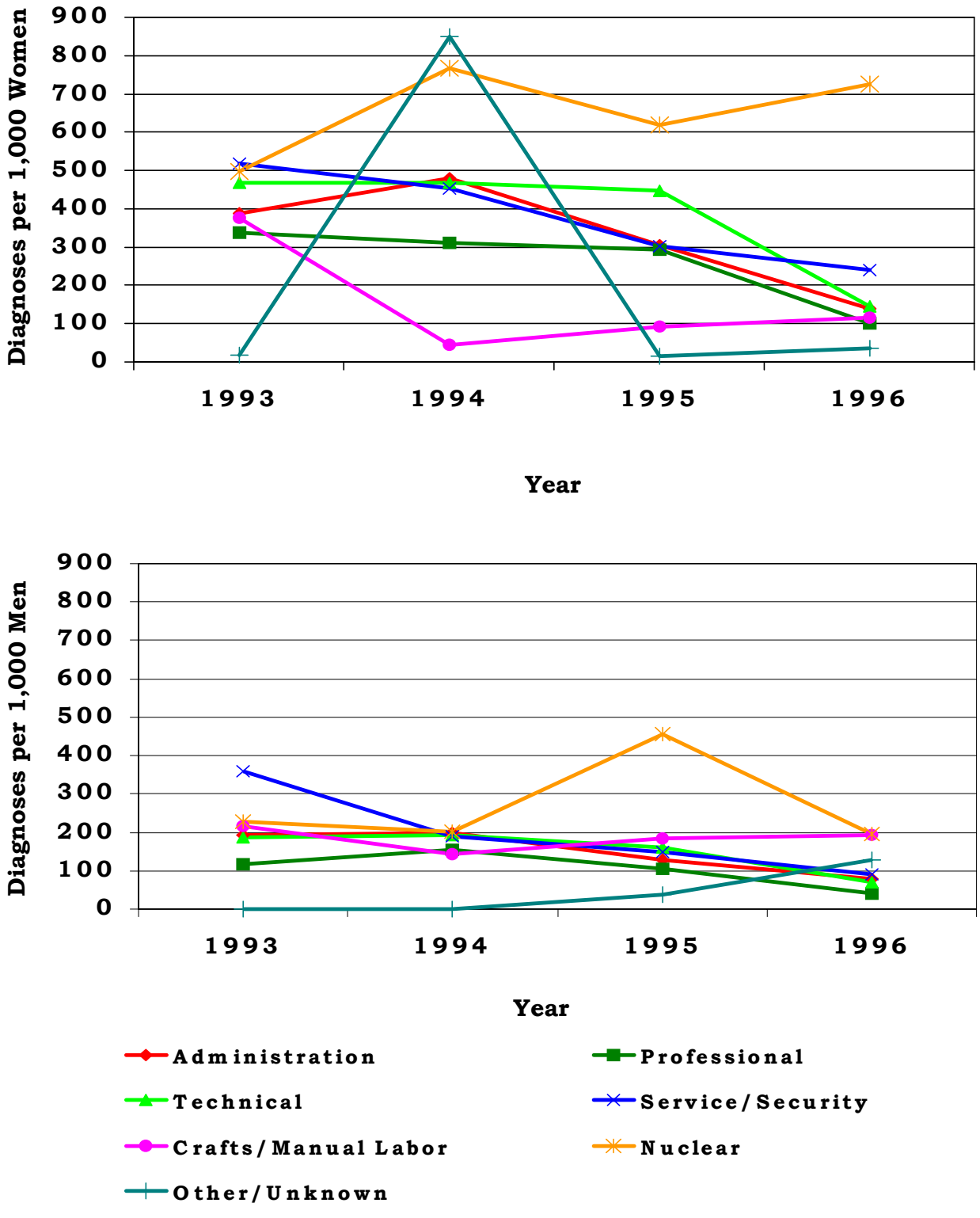


Figure 11. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men by Job Category from 1993 to 1996



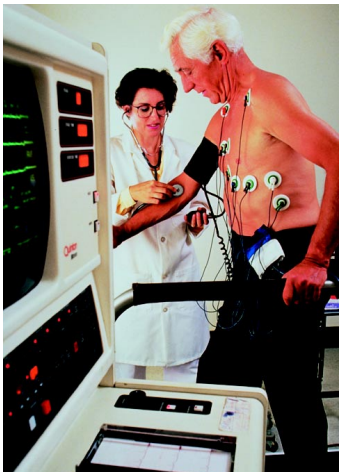
Sentinel Health Events for Occupations

An occupational sentinel health event (SHEO) is a disease, injury, or death which is likely to be occupationally related. Its occurrence may serve as a warning signal that materials substitution, engineering control, personal protection, or medical intervention 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 (refer to the Supporting Tables).

Although sentinel health events may indicate an occupational exposure, many may result from nonoccupational exposures. Due to this uncertainty, sentinel health events are assessed in two categories:

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

Possible Sentinel Health Events: Conditions such as lung cancer or carpal tunnel syndrome may or may not be related to occupation. Detailed occupational and nonoccupational 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.



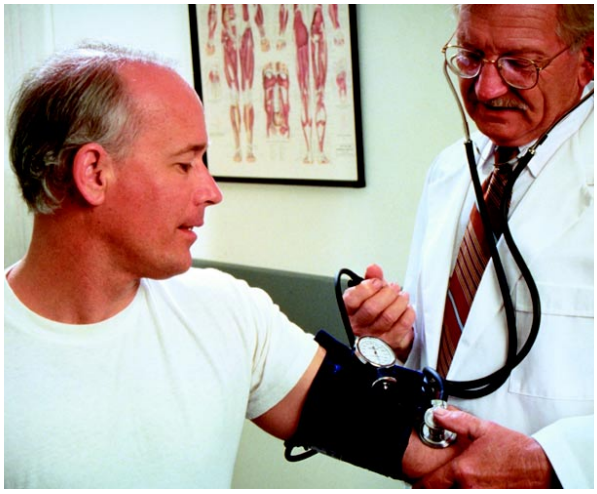
No definite sentinel health events were identified in 1996 (Figure 12). Four of the 430 health events (1 percent) reported in 1996 were identified as possible sentinel health events, including three diagnoses of carpal tunnel syndrome among three workers (two men and one woman). Two carpal tunnel syndrome cases were reported in the Administration group and one was reported by a Technical worker.

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	3	1	70	20
Total	3	1	70	20

Disabilities Among Active Workers

No disabilities among active workers were reported in 1996.

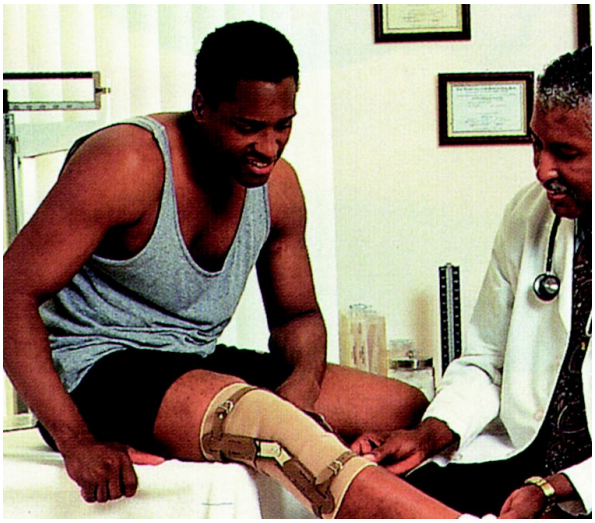


Deaths Among Active Workers

No deaths among active workers were reported in 1996.

OSHA-Recordable Events

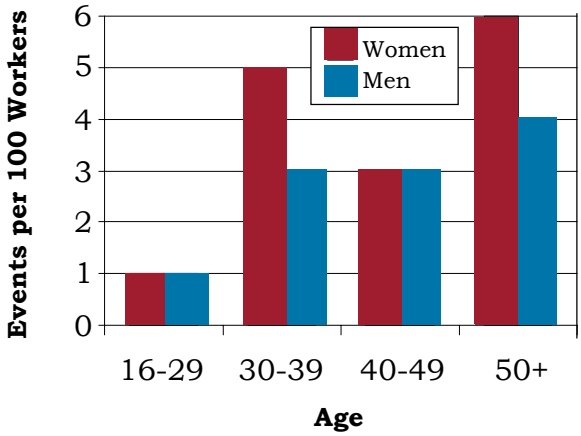
The Occupational Safety and Health Administration (OSHA) requires employers to maintain a record of occupational



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 age and gender is shown in Figure 13.

Figure 13. OSHA-Recordable Events by Gender and Age

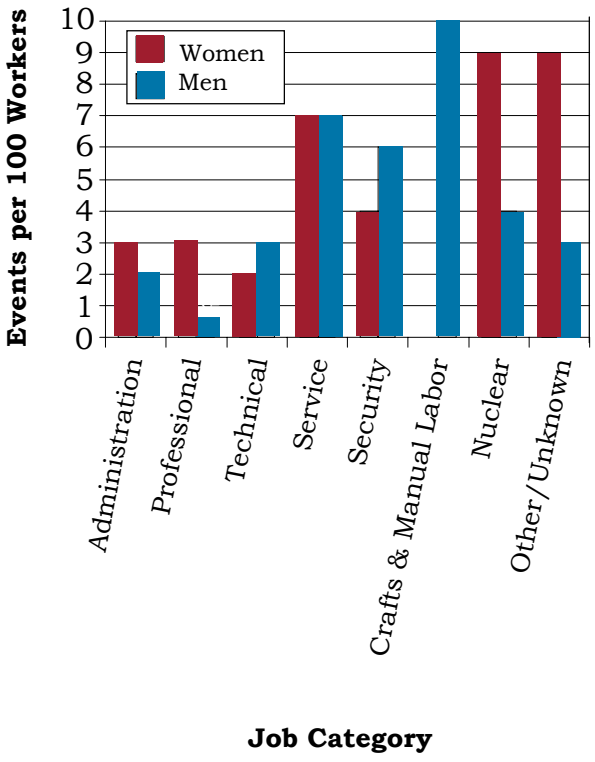


Forty-two women and 113 men had at least one OSHA-recordable event noted in 1996, an approximate 20 percent decrease in the number of workers with at least one recordable event noted in 1995. The overall reduction in occupational injuries reported may reflect changes in the types of work being done at the site or changes in the availability of OSHA data on subcontractor workers following the implementation of integrated contracting at the site. The rate of OSHA-recordable events was somewhat higher among women (4 per 100) than among men (3 per 100). We observed no age-related trend in the rate of OSHA-recordable events among women, but the rate increased with age among men. The average number of workdays lost or with restricted activity was greater for men (15 days) than women (12 days) with the highest average number of days reported by men aged 50 or older (27 days) and women aged 30-39 (18 days).

The rates of OSHA-recordable events by job category and gender are shown in Figure 14. Overall, rates were substantially higher in the Service, Security,

Crafts and Manual Labor, Nuclear and Other/Unknown job categories than in the Administration, Professional, and Technical job categories. Men in the Crafts and Manual Labor group had the highest percentage of workers (9 percent) with at least one OSHA event. The Nuclear and Other/Unknown groups had the highest percentage among women (9 percent). The rates among women in the Nuclear, Professional, and Other/Unknown categories were over twice as high as the rates among men. There were a total of 521 lost or restricted calendar days for women and 1,798 days for men associated with OSHA-recordable events. Professional and Service workers had the highest average number of workdays lost or with restricted activity for OSHA events (31 days for men and women combined). The Supporting Tables provide additional data about OSHA events.

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



Diagnostic and Accident Categories for OSHA-Recordable Events

The 163 OSHA-recordable events involved 76 diagnoses among women and 150 among men, as shown in Figure 15.

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

Diagnostic Category	Gender	
	Women	Men
Muscles and Skeleton	26	48
Nervous System	5	0
Respiratory	1	0
Skin	3	2
Unspecified Symptoms	11	13
Injury	30	87
Fractures-Neck, Trunk	0	1
Fractures-Upper Limb	1	2
Fractures-Lower Limb	2	0
Dislocations	1	0
Back Sprains and Strains	2	8
Other Sprains and Strains	6	10
Intracranial Injuries	1	3
Internal Injuries-Thorax, Abdomen, Pelvis	0	1
Open Wounds-Head, Neck, Trunk	0	6
Open Wounds-Upper Limb	2	5
Open Wounds-Lower Limb	0	1
Superficial Injuries	2	3
Bruises	1	8
Foreign Bodies Entering Orifice	1	3
Unspecified Injuries	10	31
Adverse reactions to Non-medical Substances	1	1
Adverse Reactions to External Causes	0	4

Among women, injuries accounted for 39 percent (30/76) of the diagnoses reported. The most common types of injury reported among women included sprains and strains (27 percent, 8/30) and unspecified injuries (33 percent, 10/30). Injuries accounted for 58 percent (87/150) of the diagnoses reported among men. Sprains and strains were 21 percent (18/87) of the injuries reported among men, and 36 percent (31/87) of the injuries were unspecified. Open wounds (14 percent, 12/87) were also reported frequently among men.

Following injuries, conditions affecting the muscles and skeleton were the second most frequently reported OSHA-recordable diagnoses. These conditions comprised 33 percent (74/226) of the OSHA-recordable diagnoses. They included pain and disorders affecting the joints (47 percent), low back pain (22 percent), and rheumatism and related disorders (31 percent).

Eighty-seven percent (141) of the 163 OSHA events were described as an accident in the OSHA logs. This distribution is shown in figure 16. Falls and overexertion were the more common types of accidents among both women (60 percent) and men (64 percent). Being struck by an object accounted for 14 percent of the accidents among men. Age and occupation did not appear related to the type of accident or the type of injury sustained.

Twenty-two OSHA events were not the result of a specific accident. To be defined as an accident, an injury diagnosis had to result from the OSHA event. Among the events not attributed to a particular accident, 44 percent of the diagnoses were related to the muscles and skeleton and 28 percent to unspecified symptoms.

Figure 16. OSHA-Recordable Accidents by Type and Gender

Accident Category	Gender	
	Women	Men
	Number of Accidents	Number of Accidents
Motor Vehicle Non-Traffic	1	1
Poisoning Non-medicinal	1	1
Falls	11	24
Natural/Environmental Factors	0	4
Submersion/ Suffocation/Foreign Bodies	1	2
Other Accidents	16	79
Caught Between Objects	1	4
Cutting/Piercing Instrument/Object	1	7
Electric Current	0	1
Hot, Corrosive, or Caustic Material/ Steam	0	1
Overexertion and Strenuous Movements	7	47
Repetitive Trauma	3	3
Struck by an Object	1	15
Unspecified	3	1

Rates of OSHA-Recordable Events

The rates for OSHA-recordable events by age category, job category, and gender are shown in figures 17 and 18. Among women in most job categories, rates of OSHA-recordable events tended to be at least twice as high among workers aged 50 and older than among younger workers (Figure 17). The rates tended to be slightly higher among men aged 50 and older than among younger

men, but the rates among men varied much less with age than the rates among women, regardless of occupational group (Figure 18). Women in the Service/Security, Nuclear, and Other/Unknown job categories and men in the Crafts and Manual Labor group had the highest rates for all occupational health conditions combined.

Occupational injuries were responsible for substantial numbers of restricted and lost workdays. Workers in the Crafts and Manual Labor, Service, and Security occupations were more likely to have an OSHA event than other groups. Professional and Service workers had the highest average number of lost or restricted workdays (31). Service workers comprised about 3 percent of the work force but had 25 percent of the days lost and 11 percent of the days restricted. Crafts and Manual Laborers, eight percent of the work force, also contributed significantly to lost (35 percent) and restricted (25 percent) workdays. Service workers and Crafts and Manual Labor workers had an overall occupational injury risk at least three times greater than that of workers in other job categories. Security workers were twice as likely to report an occupational injury as other groups. Much of their increased risk focused on sprains and strains other than those affecting the back.

Compared with other workers, Service workers were over five times more likely than other workers to suffer sprains and strains other than the back and almost four times as likely to report an unspecified injury. Crafts and Manual Labor workers were more than 10 times as likely to sustain a sprain or strain other than of the back and over 3 times more likely to experience an unspecified injury as were other workers.

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

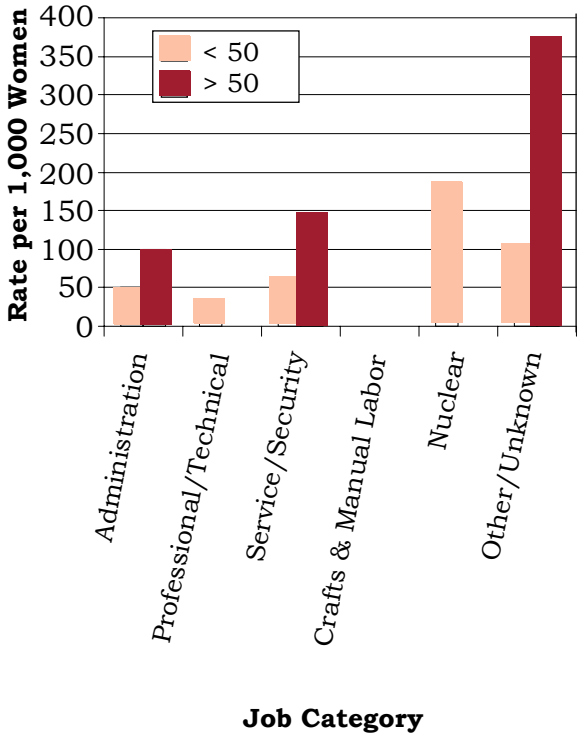
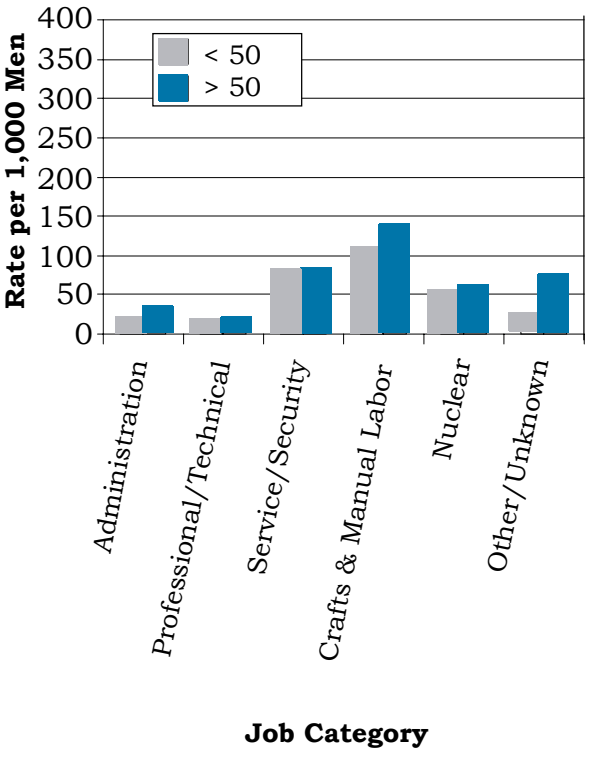


Figure 18. OSHA-Recordable Rates by Age and Job Category Among Men, All Diagnoses Combined



Time Trends for OSHA-Recordable Events

From 1994 through 1996, overall rates for OSHA-recordable diagnoses among women in the Nuclear and Crafts and Manual Labor job categories fluctuated dramatically, perhaps reflecting the small number of women reporting OSHA-recordable events in these categories. We observed an increase in the OSHA-recordable diagnosis rate for women in the Administration and Other/Unknown groups. It is likely that the dramatic increase observed from 1995 to 1996 among women in the Other/Unknown group reflects the small size of this group. Even a small number of events reported in such a small job category (56 workers in 1996 and 57 in 1995) can cause extreme changes in the rates. Rates among women in both the Technical and Service/Security groups showed a consistent decrease over the three-year period (Figure 19).

Among men, the Professional and Technical groups showed a consistent decrease in OSHA-recordable rates from 1994 to 1996 (Figure 20). Following a dramatic decline in the OSHA-recordable rate from 1994 to 1995, both the Service/Security and Nuclear groups showed a continuing but less marked reduction from 1995 to 1996. The Professional job category also experienced a decline over the three-year period, but it was more modest than that observed in the Service/Security and Nuclear groups. The Crafts and Manual Labor and Other/Unknown job categories showed an increase in the OSHA-recordable rate from 1995 to 1996.

Figure 19. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Women by Job Category from 1994 to 1996

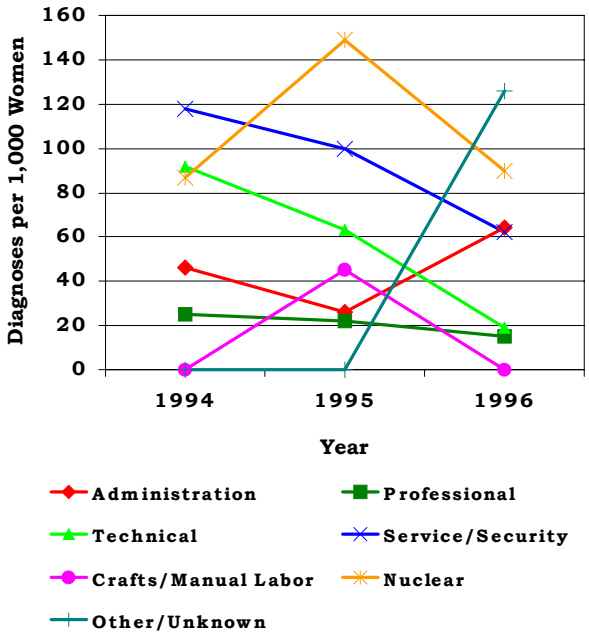
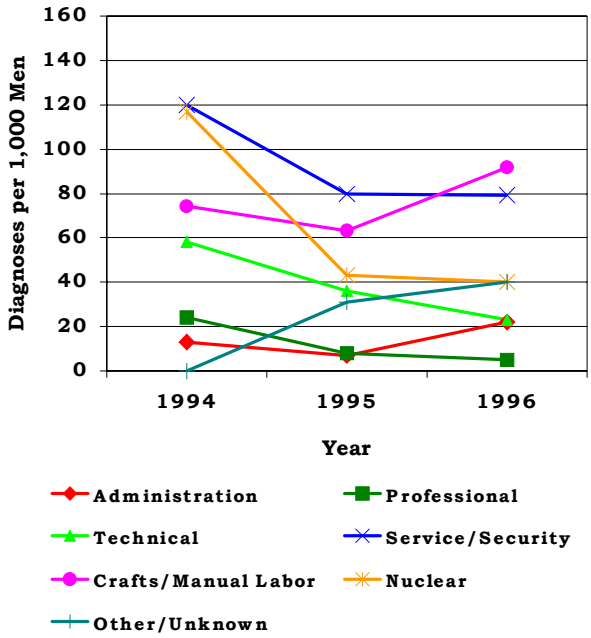


Figure 20. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Men by Job Category from 1994 to 1996



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 nonarthropod diseases of the central nervous system	045-049	Viral meningitis (swelling of the layers covering the brain and spinal cord); viral encephalitis (swelling of the brain); and polio
• Viral diseases accompanied by exanthem	050-057	Diseases accompanied by rashes or blisters like chickenpox, measles, shingles, and herpes
• Arthropod-borne viral diseases	060-066	Encephalitis (swelling of the brain) caused by bites from virus-carrying ticks or mosquitoes
• Other diseases caused by viruses and chlamydiae	070-079	Viral hepatitis, mumps, rabies, and mononucleosis
• Rickettsioses and other arthropod-borne diseases	080-088	Rocky Mountain spotted fever, malaria, and lyme disease
• Other spirochetal diseases	100-104	Trench mouth and Weil's disease (jaundice caused by coil-shaped bacteria)
• Mycoses	110-118	Athlete's foot; fungal infections of fingernails and toenails; and thrush
• Helminthiases	120-129	Pinworms, tapeworms, roundworms, whipworms

• Other infectious and parasitic diseases	130-136	Lice, chiggers, scabies, and mites
• Late effects of infectious or parasitic diseases	137-139	Side effects of TB, chickenpox, or polio even though the disease is no longer active
Malignant neoplasms	140-208, 230-234	All cancers, regardless of the part of the body affected
• Lip, oral cavity, and pharynx	140-149	Lip, mouth, throat, and tongue
• Digestive organs and peritoneum	150-159	Stomach, esophagus (tube that transports food to the stomach), intestines, colon, rectum, anus, liver, pancreas, and gallbladder
• Respiratory system and intrathoracic organs	160-165	Sinuses, throat, voice box, lungs, and heart
• Bone, connective tissue, skin, and breast	170-176	Bone, muscle, ligament, tendon, blood vessels, fat, skin, and breast
• Genitourinary organs	179-189	Kidney, bladder, and cervix, ovary, uterus, and prostate
• Other and unspecified sites	190-199	Eye, brain, and thyroid
• Lymphatic and hematopoietic tissue	200-208	Leukemia, lymphoma, Hodgkin's disease, multiple myeloma, lymphosarcoma, and reticulum cell sarcoma
• Carcinoma in situ	230-234	A cancer that is confined to the site of origin (has not spread to neighboring tissue)
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature	210-229 235-239	Tumors that are not cancerous or do not exhibit cancerous behavior, regardless of the part of the body affected
Endocrine, nutritional, and metabolic diseases and disorders of the immune system	240-279	Diseases affecting the hormone secreting glands and organs. Overactive thyroid; underactive thyroid; vitamin deficiency; diabetes; gout; and problems affecting the antibody producing system
Disorders of the blood and blood forming organs	280-289	Anemia and hemophilia (excludes leukemia)

Mental disorders	290-319	Psychiatric diagnoses - Non-psychotic disorders: depression; anxiety, fear, and stress disorders; alcoholism; drug dependence; and eating disorders, such as anorexia; Psychotic disorders: dementia, schizophrenia, and manic depression
Diseases of the nervous system and sense organs	320-389	Huntington's chorea; Alzheimer's and Parkinson's disease; epilepsy; multiple sclerosis; migraine; diseases of the eye, such as cataract and glaucoma
• Inflammatory diseases of the central nervous system	320-326	Bacterial meningitis (swelling of the layers covering the brain and spine); bacterial encephalitis (swelling of the brain); and brain and spinal abscesses
• Hereditary and degenerative diseases of the central nervous system	330-337	Alzheimer's and Parkinson's disease, tremors, and Huntington's chorea
• Other disorders of the central nervous system	340-349	Multiple sclerosis (MS), cerebral palsy, epilepsy, and migraine
• Disorders of the peripheral nervous system	350-359	Nerve disorders of the face, carpal tunnel syndrome, muscular dystrophy
• Disorders of the eye	360-379	Inflammation and ulcers of the eye and eyelid; detached retina; pink eye; problems with tear ducts; glaucoma; and cataracts
• Diseases of the ear and mastoid process	380-389	Infections of the outer, middle, or inner ear; ringing of the ears; hearing loss
Diseases of the circulatory system	390-459	Rheumatic fever, heart murmurs, heart attacks, angina, hardening of the arteries, varicose veins, hemorrhoids, and phlebitis
• Acute rheumatic fever	390-392	High fever and joint pain with possible heart damage
• Chronic rheumatic heart disease	393-398	Long lasting swelling and damage to the heart which results from rheumatic fever
• Hypertensive disease	401-405	High blood pressure

• Ischemic heart disease (Restricted blood flow to the heart)	410-414	Heart attack and angina
• Diseases of pulmonary circulation	415-417	Blood clots in the lung and pulmonary aneurysm (bulge that develops in the wall of the pulmonary artery, which is the artery that carries blood to the lungs)
• Other forms of heart disease	420-429	Swelling of the inner lining, middle lining, or sac enclosing the heart; heart failure; and irregular heartbeat
• Cerebrovascular disease	430-438	Stroke, bleeding in the brain, and blockage or low blood flow in blood vessels of the brain
• Diseases of the arteries and capillaries	440-448	Hardening of the arteries; aneurysm (bulge that develops in the walls of arteries); and blood clots
• Diseases of the veins, lymphatics, and other circulatory system diseases	451-459	Phlebitis (swelling of a vein), thrombophlebitis (swelling of a vein which has a blood clot), varicose veins, and hemorrhoids
Diseases of the respiratory system	460-519	Colds, sinusitis, laryngitis, pneumonia, influenza, chronic bronchitis, asthma, and emphysema
• Acute respiratory infections	460-466	Colds, sore throat, sinus infections, swollen tonsils, and bronchitis
• Other diseases of the upper respiratory tract	470-478	Allergies, hay fever, sinus infections, bronchitis, and sore throat that continue for a long time
• Pneumonia and influenza	480-487	"The flu" and pneumonia caused by a bacteria or virus
• Chronic obstructive pulmonary diseases and allied conditions	490-496	Emphysema and asthma
• Pneumoconiosis and other lung diseases caused by external agents	500-508	Black lung; miners' asthma; asbestosis; silicosis; berylliosis; and conditions caused by chemical fumes and vapors

• Other diseases of 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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