# 1999 Fernald National Laboratory Annual Epidemiologic Surveillance Report

DOE/EH-0636

# FERNALD

# 1999 Epidemiologic Surveillance Report

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

**http://tis.eh.doe.gov/health/worksurv/epidemiologic.html**

# FERNALD 1999

## At a Glance

There were 415 absences of 5 or more workdays among Fernald employees in 1999 compared with 462 in 1998. In addition there was a 13 percent decrease in the number of lost workdays due to illness and injury from 1998 to 1999.

Male employees lost 9,063 workdays due to illness and injury in 1999. The leading causes of absence were due to injuries (28 percent), respiratory conditions (16 percent), and muscles and skeleton conditions (13 percent).

Female employees lost 5,847 workdays due to illness and injury in 1999. The leading causes for these absences were injuries (22 percent), respiratory conditions (18 percent), and muscles and skeleton conditions (11 percent).

Workers classified in the job category as Nuclear Specialties continue to have the highest rates for all injuries and illnesses combined. The age-adjusted rates for all diagnoses combined for male nuclear workers increased between 1994 to 1998, decreasing in 1999.

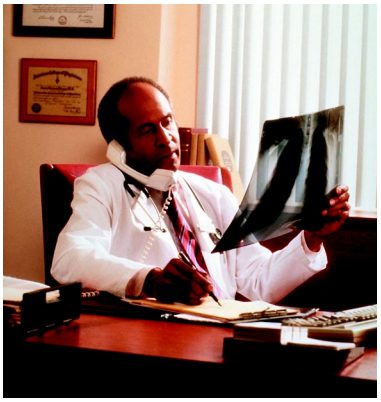
Workers in the Nuclear Specialties category have the highest rates of OSHA recordable events (illnesses and injuries that are associated with the work environment) for all workers.

## 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 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 the Fernald Environmental Management Project (FEMP) from January 1, 1999 through December 31, 1999. Epidemiologic Surveillance has been ongoing at Fernald since 1993. The data were collected by a coordinator at FEMP and submitted to DOE's Epidemiologic Surveillance Data Center, located at Oak Ridge Institute for Science and Education, where quality control procedures and data analyses were carried out. The analyses were interpreted and the final report prepared by the DOE Office of Health Programs.

The information presented in this report provides highlights of the data analyses conducted. Earlier surveillance reports and additional supporting tables are posted on the Office of Health Programs Web site **(http://tis.eh.doe.gov/health/worksurv/epidemiologic.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. This 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; therefore, comparisons of FEMP 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 patterns of illness and injury observed.

## Site Overview

The Fernald Environmental Management Project (FEMP), located approximately 20 miles northwest of downtown Cincinnati, Ohio, once produced pure uranium metal products used in various U.S. defense programs. Construction began in 1951 in the midst of the Cold War era. Production operations started in 1953 and were suspended in July 1989. FEMP was originally called the Feed Materials Production Center (FMPC) because it produced "feed" in the form of purified uranium metal for use by other DOE sites that made nuclear

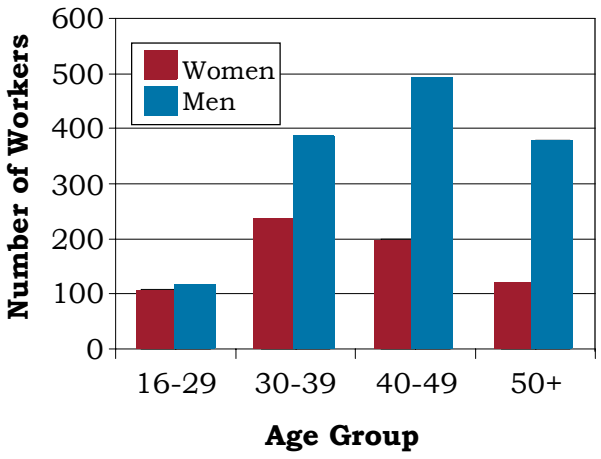
weapons. The site was designed as a large-scale, integrated facility capable of converting uranium ore and recycled material into uranium metal through a series of chemical and metallurgical conversions. These activities resulted in contamination with radioactive wastes that include uranium tailings emitting radon gas, thorium, and radium, as well as other hazardous materials such as heavy metals, barium, and asbestos. In November 1989, the site was added to the Superfund National Priority List, which requires site cleanup and remediation activities. Production activities officially ended in June 1991. Fernald, managed by Fluor Daniel Fernald since December 1992, is now engaged in an environmental cleanup program to address concerns associated with the former production mission.

## The Fernald Work Force - 1999

A total of 2,031 Fernald employees were included in epidemiologic surveillance in 1999, a decrease of 95 workers from 1998. The gender and age distribution of the 1999 work force is shown in Figure 1. There were 661 (33 percent) women and 1,370 (67 percent) men in the work force. The average age of male Fernald workers was 43 years and 40 years

for females. The majority (88 percent) of the workers was White, 10 percent were African Americans, and the remaining 2 percent were Asians, Hispanics, and Native Americans.

**Figure 1. The Work Force by Gender and Age**



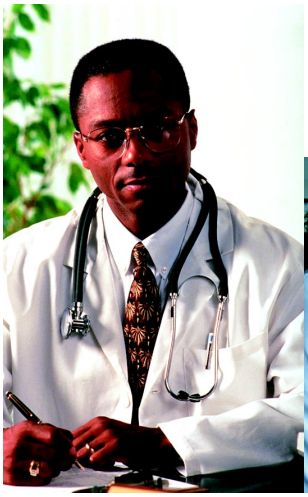

The distribution of workers by job category and gender is shown in Figure 2. As reported by Fernald, individual job titles were grouped together into job categories. This is because there were either too few workers or health events within a particular job title, thereby limiting the type of analyses that could be conducted. Men and women were not distributed equally among the various job categories. Fifty-nine percent of the men were classified as white-collar workers compared with 41 percent of the female work force. More than half of the female workers (52 percent) were Clerical or Service workers.

**Figure 2. The Work Force by Job Category and Gender**

| Job Category | Women | Men |
|---|---|---|
| Management | 4<br>1% | 46<br>3% |
| Administration | 19<br>3% | 109<br>8% |
| Professional | 97<br>15% | 228<br>17% |
| Engineering, Scientific, & Health Care | 105<br>16% | 297<br>22% |
| Technical Support | 47<br>7% | 128<br>9% |
| Clerical | 227<br>34% | 24<br>2% |
| Service | 116<br>17% | 182<br>13% |
| Security | 5<br>1% | 29<br>2% |
| Craft & Repair | 6<br>1% | 183<br>13% |
| Nuclear Specialties | 35<br>5% | 144<br>11% |

## Number and Length of Absences

Epidemiologic surveillance examines 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 less than 5 days do not routinely require a medical clearance for return to work and are therefore excluded from these analyses.



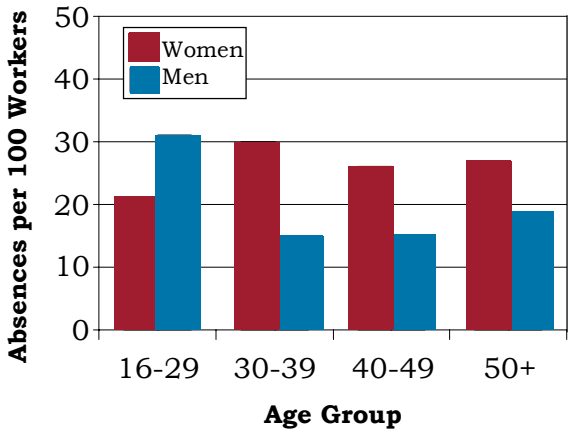
Specific health events resulting in an absence of 5 or more consecutive workdays were excluded. These included 19 women with 19 reported absences due to maternity leave, and 1 woman with a reported absence due to elective surgical procedures not related to the treatment of an illness or injury.

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

The rate of 5-day absences due to injury or illness varied by gender and age as shown in Figure 3. There were 177 5-day absences among 661 women resulting in an absence rate of 27 per 100 workers (177/661). Among the 1,370 men, there were 238 absences resulting in an absence rate of 17 per 100 workers (238/1,370). The rate of 5-day absences did not vary with age.

The average length of absence by gender and age is shown in Figure 4. A total of 14,910 calendar days of work (9,063 days for men and 5,847 days for women) were lost at Fernald in 1999 due to reported illness or injury. The average length of absence was 38 days for men and 33 days for women. The average length of absence increased with age among men and women.

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




The rate of 5-day absences due to illness or injury varied by job category for men and women as shown in Figure 5. In general, women had higher rates of absence across similar job categories compared with men. Nuclear Specialties had the highest 5-day absence rate among male workers (44 per 100 workers) and among female workers (60 per 100 workers). This same job category

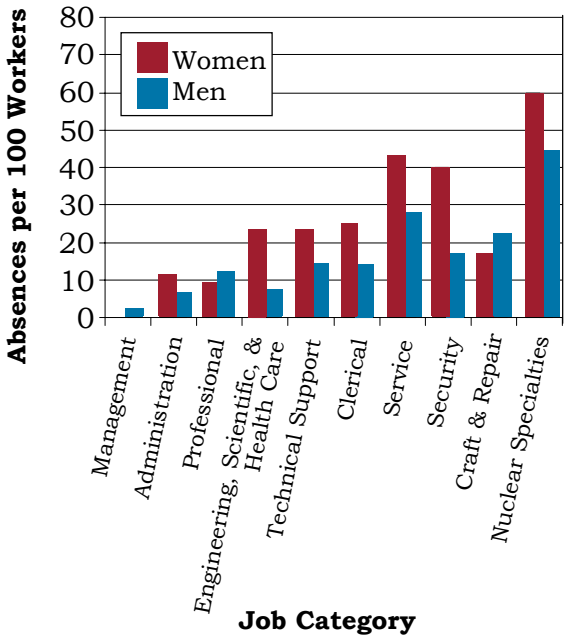
**Figure 4. Number of Days Absent by Gender and Age**

| Gender | Age | Number of Absences | Number of Days Absent | Average Number of Days Absent |
|---|---|---|---|---|
| Women | 16 - 29 | 22 | 486 | 22 |
| | 30 - 39 | 71 | 2,182 | 31 |
| | 40 - 49 | 52 | 1,734 | 33 |
| | 50 + | 32 | 1,445 | 45 |
| | Total | 177 | 5,847 | 33 |
| Men | 16 - 29 | 36 | 1,103 | 31 |
| | 30 - 39 | 59 | 2,237 | 38 |
| | 40 - 49 | 72 | 2,742 | 38 |
| | 50 + | 71 | 2,981 | 42 |
| | Total | 238 | 9,063 | 38 |

also had the highest rate of absence in 1997 and 1998. There were no 5-day absences among females in Management during 1999.

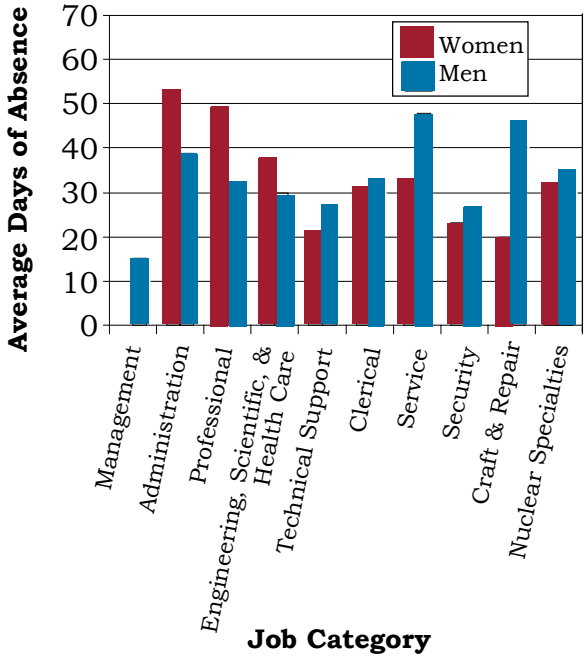
The average duration of absence by job category and gender is shown in Figure 6. Within a job category, men tended to have longer average length of absence than women.

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




Among women, the Administration group had the longest average length of absence, 53 days, and the third lowest 5-day absentee rate. Among men, Service workers had the longest average absence duration, 48 days, and the second highest 5-day absentee rate.

**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. 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 health events for statistical purposes. You can find specific health conditions in the Explanation of Diagnostic Categories.

The number of reported diagnoses categorized according to the ICD-9-CM and number of lost calendar days (may include weekends and holidays) are presented in Figure 7. Lost calendar days for each absence are counted more than once when multiple diagnoses occur in different diagnostic categories for the same absence. There were 297 diagnoses reported by female and 368 diagnoses reported by male Fernald employees in 1999. Female employees lost 5,847 workdays (7,974 when multiple diagnoses occured per absence) due to injury and illness. Among women, injuries (22 percent), respiratory conditions (18 percent), and muscles and skeleton conditions (11 percent) accounted for 51 percent of all reported diagnoses. Forty-eight percent of the injuries were reported as sprains and strains and 21 percent were fractures. Among the 66 diagnoses for injuries, 4 were allergic reactions and 2 were related to complications of medical care. Back pain and disk disorders made up 47 percent of muscles and skeleton conditions, followed by rheumatism (29 percent). The respiratory conditions were due to acute upper respiratory infections (50 percent), flu and pneumonia (26 percent), and bronchitis and asthma (22 percent).

Men lost 9,063 workdays (12, 480) when multiple diagnoses occured per absence) due to injury and illness.

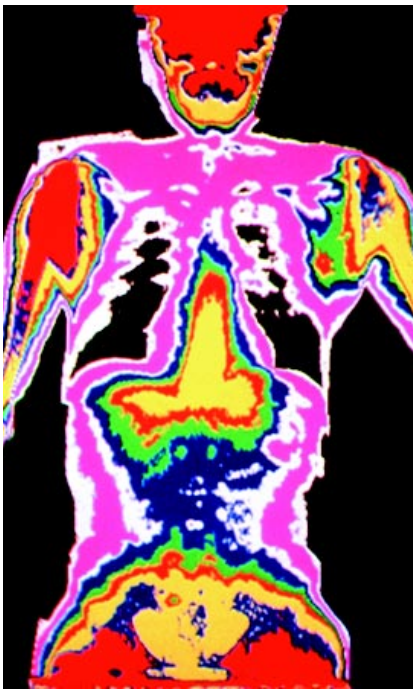
**Figure 7. Number of Diagnoses and Lost Calendar Days by Diagnostic Category (Categorized by ICD-9-CM) and Gender**

| Diagnostic Category | Women | | Men | |
|---|---|---|---|---|
| | Number of Diagnoses | Number of Lost Calendar Days | Number of Diagnoses | Number of Lost Calendar Days |
| Benign Growths | 7 | 358 | 5 | 140 |
| Blood | 0 | 0 | 1 | 64 |
| Cancer | 2 | 299 | 6 | 309 |
| Digestive | 19 | 453 | 29 | 750 |
| Endocrine / Metabolic | 4 | 216 | 5 | 118 |
| Existing Birth Condition | 3 | 89 | 2 | 31 |
| Genitourinary | 19 | 597 | 7 | 101 |
| Heart / Circulatory | 8 | 241 | 27 | 1,436 |
| Infections / Parasites | 4 | 76 | 7 | 98 |
| Injury | 66 | 1,269 | 103 | 3,660 |
| Miscarriage | 3 | 23 | NA | NA |
| Muscles & Skeleton | 34 | 1,298 | 49 | 2,358 |
| Nervous System | 15 | 429 | 6 | 381 |
| Psychological | 31 | 1,024 | 36 | 1,458 |
| Respiratory | 54 | 1,027 | 60 | 904 |
| Skin | 1 | 14 | 4 | 97 |
| Unspecified Symptoms | 27 | 561 | 21 | 575 |

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

The most frequently reported diagnoses varied little by gender. Among male workers, 57 percent of all reported diagnoses were due to injuries (28 percent), respiratory conditions (16 percent), and muscles and skeleton conditions (13 percent). Frequently reported injuries were sprains and strains (47 percent), dislocations (15 percent), and fractures (14 percent). Three complications of medical care were reported among the 103 diagnoses categorized as injuries. A closer look at diagnoses affecting the muscles and skeleton showed that 47 percent were back problems, 22 percent were joint disorders, and 20 percent were rheumatism. Bronchitis and asthma accounted for 33 percent of the respiratory conditions followed by acute respiratory infections (32 percent) and pneumonia and flu (28 percent).

Among men, the above diagnoses did not vary much by age. Psychological conditions were a frequently reported diagnosis for workers under 30. Twenty-one workers reported 36 diagnoses.



Among the 6 men under age 30, 10 of the 14 diagnoses were for anxiety, depression and stress. Workers 50 years of age and older reported more heart/ circulatory diseases. Thirteen of the men in this age group reported 14 diagnoses: 5 diagnoses for hypertension, 4 for ischemic heart disease (restricted blood flow to an artery), and the remainder for other heart diseases and diseases of the arteries and veins.

Among women, the most frequently reported diagnoses were consistent among the various age groups with one exception. Psychological conditions replaced muscles and skeleton conditions as frequently reported diagnoses for workers less than 40; 18 women reported 22 diagnoses, with all but 2 for anxiety, depression, and stress.

Figure 8 shows the frequency of reported diagnoses by job category for men and women. The types of diagnoses were similar among the job categories. Among men, injuries, respiratory disorders, muscles and skeleton conditions, psychological conditions, and digestive conditions appeared most often in the job categories. Twenty-five men reported 29 diagnoses for digestive disorders; 12 diagnoses for hernias, 7 for intestinal disorders, 3 for appendicitis, and 3 for gallbladder conditions. One man in the Technical Support group reported 4 cancer diagnoses, all related to lymphoma. Among women, injuries, conditions affecting the muscles and skeleton, respiratory diagnoses, and psychological disorders were common among the job categories.

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

| Job Category | Men | Women |
|---|---|---|
| Management | Digestive (1)<br>Unspecified Symptoms (1) | None |
| Administration | Digestive (2)<br>Muscles & Skeleton (2)<br>Cancer (1)<br>Heart/ Circulatory (1)<br>Injury (1)<br>Psychological (1) | Muscles & Skeleton (2)<br>Infections/ Parasites (1)<br>Respiratory (1) |
| Professional | Injury (8)<br>Respiratory (8)<br>Digestive (7)<br>Muscles & Skeleton (6)<br>Unspecified Symptoms (6) | Benign Growths (2)<br>Muscles & Skeleton (2)<br>Cancer (1)<br>Digestive (1)<br>Genitourinary (1)<br>Injury (1)<br>Nervous System (1)<br>Psychological (1)<br>Respiratory (1) |
| Engineering, Scientific, & Health Care | Injury (10)<br>Respiratory (5)<br>Heart/ Circulatory (4) | Injury (7)<br>Muscles & Skeleton (7)<br>Psychological (7)<br>Respiratory (7) |
| Technical Support | Digestive (5)<br>Cancer (4)<br>Psychological (4) | Injury (7)<br>Respiratory (4)<br>Digestive (3) |
| Clerical | Injury (3)<br>Endocrine/ Metabolic (1)<br>Heart/ Circulatory (1)<br>Muscles & Skeleton (1)<br>Respiratory (1) | Respiratory (22)<br>Injury (18)<br>Muscles & Skeleton (10)<br>Unspecified Symptoms (10)<br>Genitourinary (9) |
| Service | Injury (27)<br>Muscles & Skeleton (19)<br>Psychological (10)<br>Respiratory (10) | Injury (18)<br>Respiratory (17)<br>Muscles & Skeleton (11) |
| Security | Psychological (3)<br>Injury (2)<br>Existing Birth Condition (1)<br>Genitourinary (1)<br>Infections/ Parasites (1)<br>Muscles & Skeleton (1)<br>Respiratory (1) | Psychological (2) |
| Craft & Repair | Injury (18)<br>Respiratory (14)<br>Muscles & Skeleton (11)<br>Heart/ Circulatory (9) | Injury (1) |
| Nuclear Specialties | Injury (31)<br>Respiratory (19)<br>Psychological (12)<br>Digestive (7) | Injury (14)<br>Digestive (5)<br>Psychological (4)<br>Unspecified Symptoms (4) |

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

## Rates of Disease Occurrence

**A Word about Rates:** The previous section considered the number of absences and health conditions among various worker groups. For example, Figure 7 shows that men reported 103 diagnoses and women reported 66 diagnoses involving injuries during 1999. Men, therefore, reported 56 percent more injuries than women. As there are more than twice as many men as women at Fernald, 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 between 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:

103 injury diagnoses
÷ 1,370 men = .075 x 1,000 =
75 injury diagnoses per 1,000 men

66 injury diagnoses
÷ 661 women = .100 x 1,000 =
100 injury diagnoses per 1,000 women

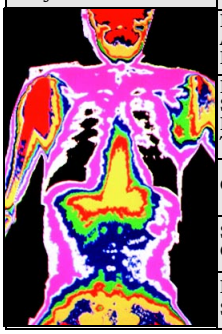
Comparing these rates now correctly suggests that the rate of reported absences due to injuries among women is higher than the rate for men. They are called **crude rates** because they do not account for possible differences between men and women, such as age and other factors that might affect the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

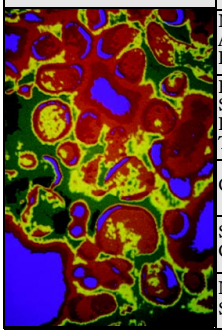
The diagnosis rate, also called the illness and injury rate, is the number of occurrences of a given disease or health condition observed over the course of a year per 1,000 workers at risk of getting that condition (see shaded box). One health condition, arthritis for example, may result in several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

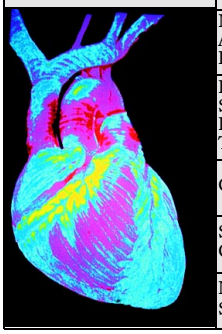
In the following set of analyses, the four age groups were collapsed into two groups, workers less than 50 years of age and those 50 or older. In addition, the 10 occupational categories were combined into 5 larger groups. These groups were collapsed to ensure that the number of diagnoses in each group was large enough to analyze. Five groups of diagnoses of particular interest to workers are presented in Figure 9: all illnesses and injuries combined, cancer, heart/circulatory system, respiratory system, and injury.

There was a slight tendency for rates of all illnesses and injuries combined to be greater for male Fernald workers less than 50 years old compared with those greater than 50.

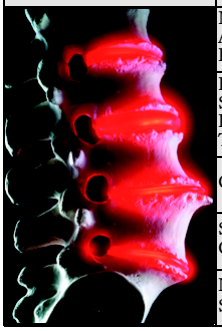
**Figure 9. Illness and Injury Rates by Job Category, Gender, and Age**

| Diagnostic Category | Rate per 1,000 | | | |
|---|---|---|---|---|
| All Illnesses & Injuries Combined | Job Category | Age | Men | Women |
|  | Management / Administration / Professional | <50 | 120 | 108 |
| | | 50+ | 177 | 222 |
| | Engineering, Scientific, & Health Care/ Technical Support | <50 | 124 | 356 |
| | | 50+ | 179 | 765 |
| | Clerical | <50 | 333 | 426 |
| | | 50+ | 0 | 510 |
| | Service/Security/ Craft & Repair | <50 | 404 | 676 |
| | | 50+ | 366 | 545 |
| | Nuclear Specialties | <50 | 667 | 1,280 |
| | | 50+ | 644 | 500 |

| Diagnostic Category | Rate per 1,000 | | | |
|---|---|---|---|---|
| Cancer | Job Category | Age | Men | Women |
|  | Management / Administration / Professional | <50 | 0 | 10 |
| | | 50+ | 8 | 0 |
| | Engineering, Scientific, & Health Care/ Technical Support | <50 | 0 | 0 |
| | | 50+ | 42 | 59 |
| | Clerical | <50 | 0 | 0 |
| | | 50+ | 0 | 0 |
| | Service/Security/ Craft & Repair | <50 | 0 | 0 |
| | | 50+ | 9 | 0 |
| | Nuclear Specialties | <50 | 0 | 0 |
| | | 50+ | 0 | 0 |

| Diagnostic Category | Rate per 1,000 | | | |
|---|---|---|---|---|
| Heart/Circulatory | Job Category | Age | Men | Women |
|  | Management / Administration / Professional | <50 | 8 | 0 |
| | | 50+ | 16 | 0 |
| | Engineering, Scientific, & Health Care/ Technical Support | <50 | 12 | 0 |
| | | 50+ | 32 | 0 |
| | Clerical | <50 | 48 | 17 |
| | | 50+ | 0 | 59 |
| | Service/Security/ Craft & Repair | <50 | 11 | 0 |
| | | 50+ | 63 | 45 |
| | Nuclear Specialties | <50 | 30 | 40 |
| | | 50+ | 44 | 0 |

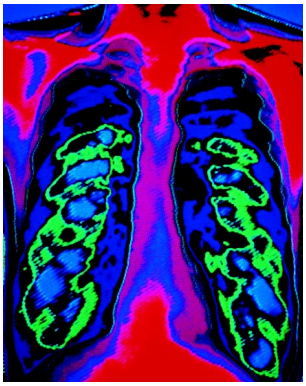
| Diagnostic Category | Rate per 1,000 | | | |
|---|---|---|---|---|
| Respiratory | Job Category | Age | Men | Women |
|  | Management / Administration / Professional | <50 | 19 | 20 |
| | | 50+ | 24 | 0 |
| | Engineering, Scientific, & Health Care/ Technical Support | <50 | 18 | 74 |
| | | 50+ | 11 | 59 |
| | Clerical | <50 | 48 | 74 |
| | | 50+ | 0 | 176 |
| | Service/Security/ Craft & Repair | <50 | 53 | 143 |
| | | 50+ | 89 | 91 |
| | Nuclear Specialties | <50 | 121 | 80 |
| | | 50+ | 156 | 0 |

| Diagnostic Category | Rate per 1,000 | | | |
|---|---|---|---|---|
| Injury | Job Category | Age | Men | Women |
|  | Management / Administration / Professional | <50 | 23 | 10 |
| | | 50+ | 24 | 0 |
| | Engineering, Scientific, & Health Care/ Technical Support | <50 | 30 | 81 |
| | | 50+ | 32 | 176 |
| | Clerical | <50 | 143 | 74 |
| | | 50+ | 0 | 98 |
| | Service/Security/ Craft & Repair | <50 | 138 | 171 |
| | | 50+ | 71 | 45 |
| | Nuclear Specialties | <50 | 263 | 400 |
| | | 50+ | 111 | 400 |

The opposite is true for female Fernald workers. Rates for female employees were higher than those for males in the same job category, with two exceptions. Men less than 50 years in the Management/Administration/Professional group and men 50+ years in the Nuclear Specialties group had higher rates than women in the same age group. The highest illness and injury rates for all employees were among individuals classified as Nuclear Specialties.

Cancer rates presented in this report are based on reported 5-day absences due to cancer. A worker may experience several periods of absence from one cancer diagnosis due to medical complications or treatment regimens. 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. Cancer *incidence rates* are based on the number of new cancer cases diagnosed within a given time, usually a year.

Eight diagnoses related to cancer were noted with two diagnoses reported by two women and six diagnoses reported by three men. None of the workers reporting cancer in 1999 reported cancer during the previous 6 years. The likelihood that an individual in the U.S. develops cancer increases with age; our data reflect this observation. Only one of the five workers reporting cancer was less than 50 years old.



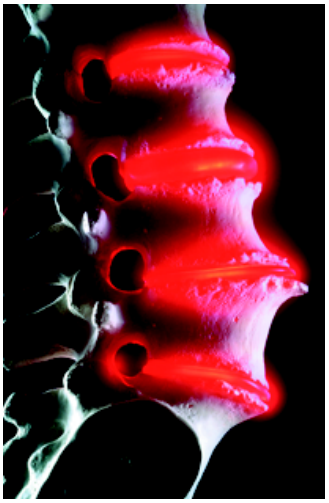
Older male workers generally had the greatest rates of heart/circulatory problems. Fourteen of the 27 diagnoses reported by men were among workers aged 50 and older; 5 diagnoses were for hypertension and 4 involved ischemic heart disease (restricted blood flow through an artery). Men categorized as Nuclear Specialties had the highest rates of heart/circulatory disorders. All 5 diagnoses in this group were for hypertension or ischemic heart disease. There was no apparent trend between age and heart/circulatory disorders among women. Women reported 8 heart/circulatory diagnoses; 4 of these were among women younger than 50. Four of the 8 diagnoses involved hypertension and ischemic heart disease. The Clerical group reported 6 of the 8 diagnoses reported by women. Craft and Repair workers were almost 3 times as likely to report a heart/circulatory diagnosis compared to workers in other occupational groups.

Women generally had higher rates of respiratory disease than men. Among women, workers under age 50 tended to have higher rates compared with older workers. There was no pattern between respiratory disease and age among men. Nuclear Specialties workers were almost 3 times as likely to report a respiratory diagnosis as other job categories.

Men younger than 50 years tended to have higher rates of injuries than older men. There was no pattern between injuries and age among women. The highest injury rates were among men and women in the Nuclear Specialties

group. Service and Nuclear Specialties workers were 2 to 4 times more likely to report an injury than other groups. Nuclear Specialties workers were also over 3 times more likely to report a sprain or strain. Service workers were almost 7 times more likely to report contusions (bruises); 38 percent (5 of 13) of the reported contusions were among these workers who made up 15 percent of the work force.

In another set of analyses, the risk of illness and injury among workers classified in one job category was compared with workers in the other nine job categories. Service and Nuclear Specialties workers were twice as likely to report an illness or injury compared to all other groups. These same occupational groups were also at increased risk for other illnesses and injuries compared to other workers. The risk of muscles and skeleton disorders was almost 3 times greater among Service workers. Benign tumors, psychological disorders, and conditions of the digestive, and genitourinary systems, as well as symptoms, signs, and ill-defined conditions were elevated 3- to 6-fold among workers in the Nuclear Specialties group compared with other workers. Among Security workers, psychological disorders were over 4 times more likely to be reported compared to other workers. The risk of muscles and skeleton disorders were over 2 times as great among Craft and Repair workers.



## Time Trends

### Why Are Rates Age-Adjusted?

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

In 1995, Fernald began to report job categories that were not available in 1993 and 1994. In order to examine time trends from 1993 to 1999, some job categories used in 1995 through 1999 were combined to reflect the broader categories used in earlier years. The accompanying table shows how the categories were combined:

| 1995 - 1999 Job Categories | 1993 & 1994 Job Categories |
|---|---|
| Office Management and Administration | Management |
| Office Management and Administration | Administration |
| Other Management and Administration | Professional |
| Engineering, Scientific, and Health Care | Engineering, Scientific, and Health Care |
| Technical Support | Technical Support |
| Office Management and Administration | Clerical |
| Service | Service |
| Service | Security |
| Craft and Repair | Craft and Repair |
| Nuclear Specialties | Nuclear Specialties |

There are 7 years of epidemiologic surveillance data for Fernald workers. It is important to note that the age-adjusted rates for the years 1993 and 1994 presented in this report differ from the *1993* and *1994 Annual Epidemiologic Surveillance Reports* due to the exclusion of absences resulting from maternity leave.

Age-adjusted rates for selected diagnoses from 1993 -1999 are presented in Figure 10. The steady increase seen in the age-adjusted rates for all diagnoses combined and heart/circulatory conditions among men from 1993 through 1998 diminished in 1999. The rate of injuries has steadily increased among men and women over the 7-year period. Among women, the decline in the age-adjusted rate for all diagnoses combined that began in 1998 continued in 1999.

The age-adjusted rates for illnesses and injuries by job category are shown in Figure 11. The rates of diagnoses among men have remained fairly constant for most job categories, although there is an indication of a decline in the rates in the last year or two among all occupational groups except Technical Support. Among women, the rates also appear to be declining slightly in most occupational groups. This decreasing trend is particularly noteworthy for women in the Service and Nuclear Specialties groups. The decrease does not appear to be due to a reduction in any particular diagnostic category.

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

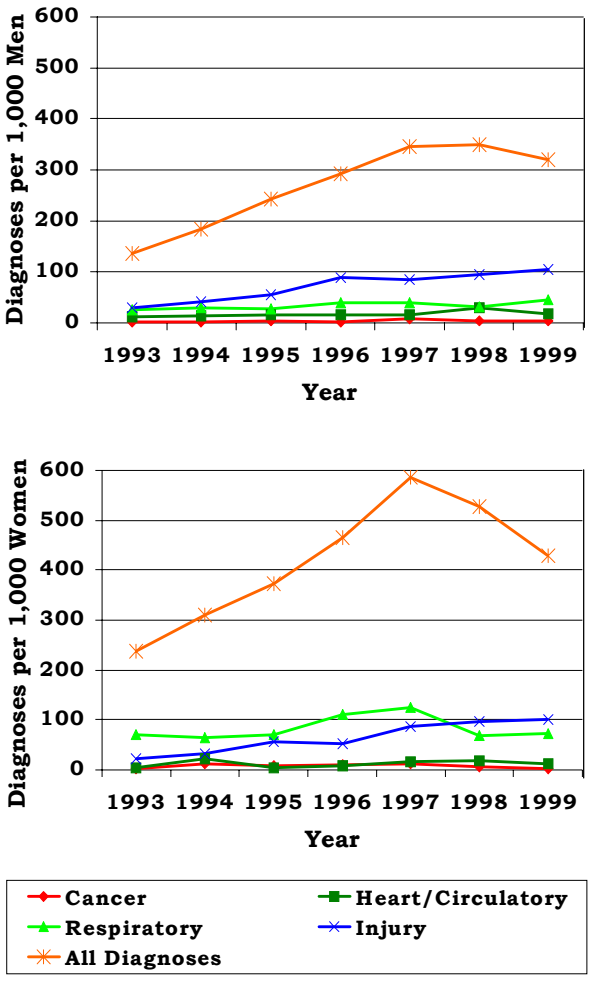
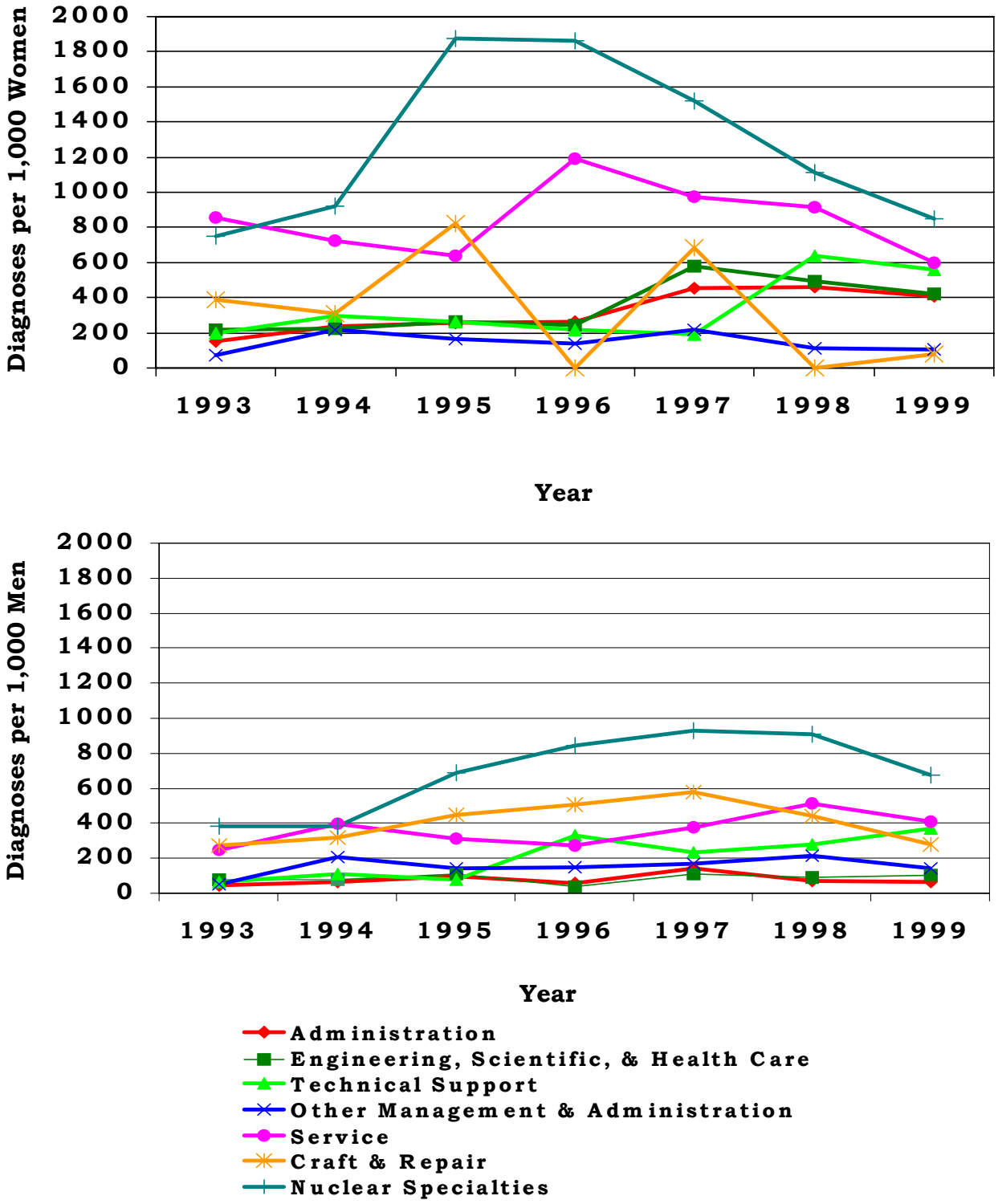


**Figure 11. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men by Job Category from 1993 to 1999**




In 1993 there was a job category for "other" workers which did not appear for 1994 through 1999. There were 36 workers in this "other" group. These workers were excluded from the figure presented here.

## Sentinel Health Events for Occupations

A sentinel health event for occupation (SHEO) is a disease, disability, or death which is likely to be occupationally related. Its occurrence may serve as a warning signal that material substitution, engineering control, personal protection, or medical care may be required to reduce the risk of illness or injury among the work force. Sixty-four medical conditions associated with workplace exposures from studies of many different industries have been identified as sentinel health events. Although sentinel health events may indicate an occupational exposure, many may result from non-occupational exposures. Due to this uncertainty, sentinel health events are assessed in two categories:

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

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

Carpal tunnel syndrome may result from a job requiring typing or from a hobby such as playing the piano.

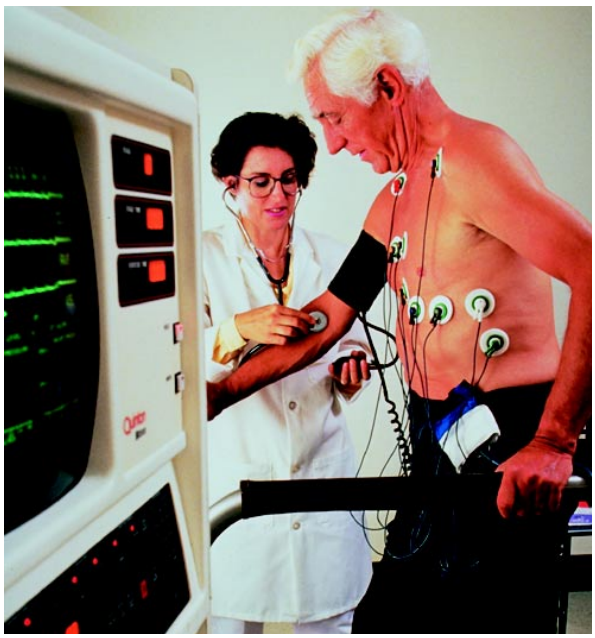
Sixteen definite and 7 possible sentinel health event diagnoses were identified among the 665 reported diagnoses (Figure 12). Three of the sentinel health events were due to carpal tunnel syndrome and accounted for 117 days absent.

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

| | Total Number of SHEO Diagnoses | | Total Number of Days Absent | |
|---|---|---|---|---|
| | Men | Women | Men | Women |
| Definite | 12 | 4 | 449 | 144 |
| Possible | 3 | 4 | 234 | 143 |
| Total | 15 | 8 | 683 | 287 |

## Disabilities Among Active Workers

No disabilities were reported by FEMP in 1999.



## Deaths Among Active Workers

Four deaths occurred among male FEMP workers in 1999. Two deaths were due to cancer (colon/rectum and lung), one was due to an infection, and one to an accident. The deaths due to cancer were both in workers less than 55 years of age.

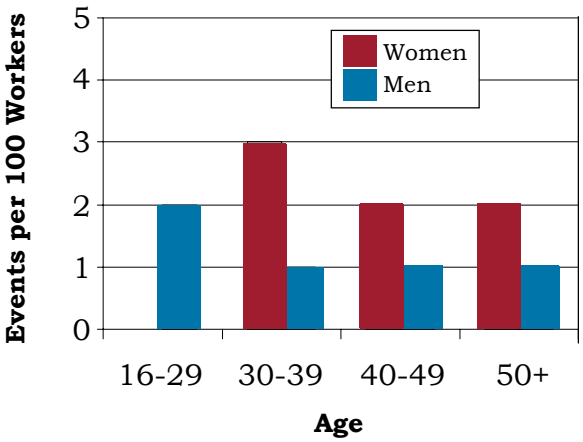
## OSHA-Recordable Events

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**



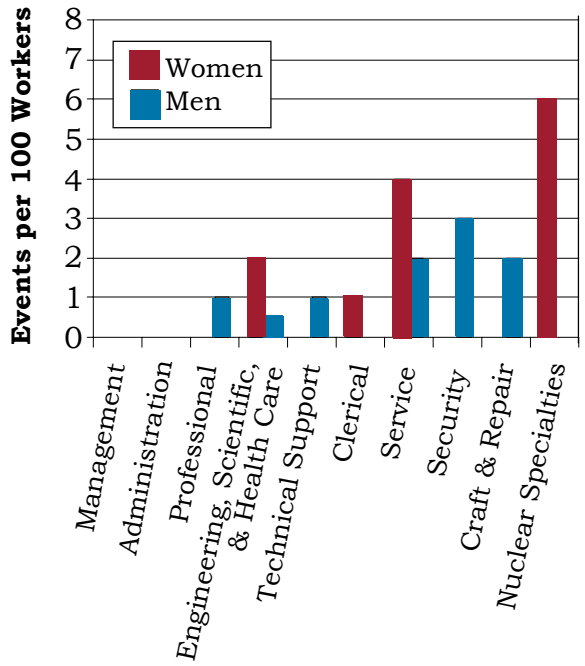

There were 12 women and 13 men with at least one OSHA-recordable event. The rate of OSHA-recordables was higher for women (2 per 100) than men (1 per 100) and was highest among men aged 16-29 (2 per 100) and women aged 30-39 (3 per 100).

The rates of OSHA-recordable events by job category and gender are shown in Figure 14. For men and women combined, the Service and Security groups had the highest rates of OSHA events, 3 per 100. Among female Fernald workers, the Nuclear Specialties group had the highest rate of OSHA events, 6 per 100. Among males, the highest rate for an OSHA event was 3 per 100 among Security workers.

A total of 814 days were lost or restricted due to OSHA events in 1999. On average, there were 50 workdays lost or with restricted activity for men and 13 days for women. The highest average lost or restricted workdays for men (139 days) occurred among workers aged 30-39 years; two OSHA events resulted in a total of 278 lost or restricted workdays. Among women, workers aged 40-49 had the highest average lost or restricted workdays (19 days).

There were no OSHA events reported by women aged 16-29. By job category, male Craft and Repair workers averaged 85 lost or restricted workdays, higher than any other group. Nuclear Specialties workers averaged the highest lost or restricted workdays among women (35 days). Overall, no OSHA events were reported by Management or Administration workers.

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




## Diagnostic and Accident Categories for OSHA-Recordable Events

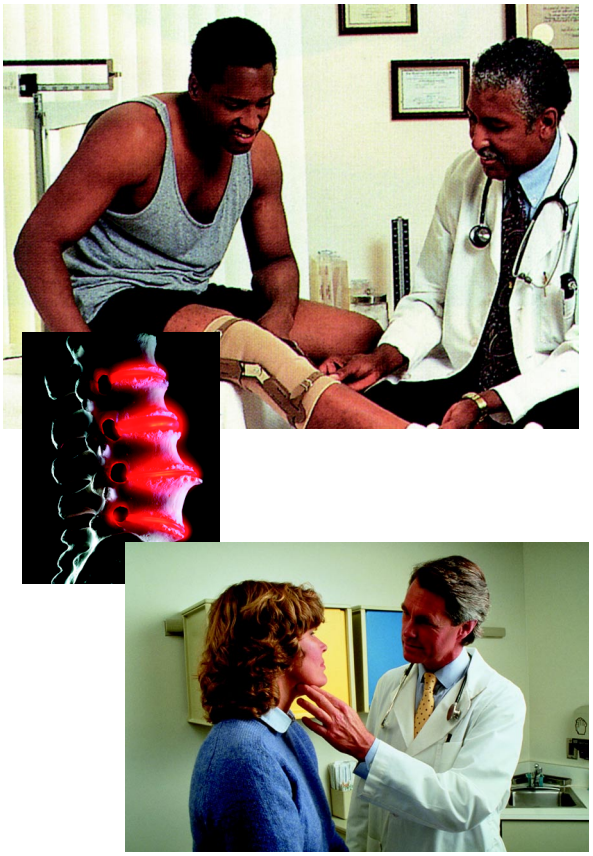
There were 25 OSHA events recorded on the OSHA 200 Logs, 16 diagnoses among women and 14 diagnoses among men, as shown in Figure 15.

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

| Diagnostic Category | Gender | |
|---|---|---|
| | Women | Men |
| Muscles & Skeleton | 1 | 1 |
| Nervous System | 1 | 0 |
| Injury | 14 | 13 |
| Fractures-Lower Limb | 0 | 3 |
| Dislocations | 1 | 1 |
| Back Sprains & Strains | 2 | 1 |
| Other Sprains & Strains | 4 | 2 |
| Open Wounds-Head, Neck, Trunk | 1 | 0 |
| Open Wounds-Upper Limb | 0 | 2 |
| Open Wounds-Lower Limb | 1 | 1 |
| Bruises | 4 | 0 |
| Foreign Bodies Entering Orifice | 1 | 2 |
| Adverse Reactions to Non-Medical Substances | 0 | 1 |

Injuries accounted for 88 percent of the diagnoses reported by women. The most frequently recorded OSHA injuries were 6 sprains and strains and 4 bruises. Among men, injuries accounted for 93 percent of the diagnoses reported, primarily due to 3 each for fractures of the lower limb, sprains and strains, and open wounds.

All of the 25 OSHA events were described as "an accident" in the OSHA logs. The distribution of accidents by category is shown in Figure 16. Forty-two percent of the events were described as "other accidents" among women (5/12); this was somewhat higher among men (54 percent; 7/13). Being "struck by an object" was reported most frequently (4/12), followed by overexertion and strenuous movements (3/12) and repetitive trauma (3/12). Falls were the second most common type of accident reported (7/25).



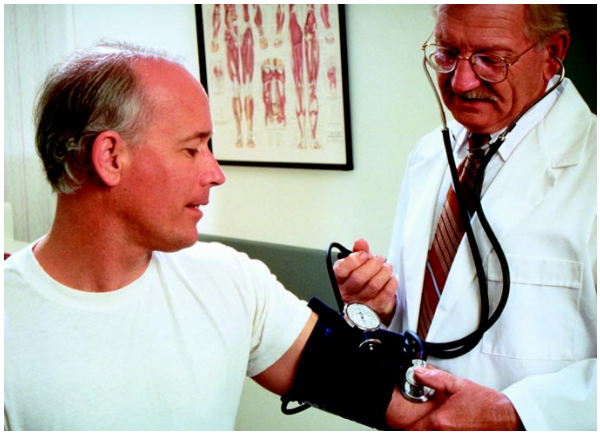


**Figure 16. OSHA-Recordable Accidents by Type and Gender**

| Accident Category | Gender | |
|---|---|---|
| | Women | Men |
| | Number of Accidents | Number of Accidents |
| Motor Vehicle - Traffic | 2 | 0 |
| Falls | 4 | 3 |
| Natural/Environmental Factors | 0 | 1 |
| Submersion / Suffocation / Foreign Bodies | 1 | 2 |
| Other Accidents | 5 | 7 |
| Struck by an Object | 2 | 2 |
| Caught Between Objects | 0 | 1 |
| Cutting/Piercing Instrument/Object | 0 | 1 |
| Overexertion & Strenuous Movements | 1 | 2 |
| Repetitive Trauma | 2 | 1 |

## 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 for men and women combined were highest among Service/Security/Craft and Repair workers. Most of the OSHA health conditions involved injuries. When the rate for

OSHA-recordable injuries was considered separately, the Nuclear Specialties category showed the highest injury rates for women. Among men, Service/Security/Craft and Repair workers had the highest rate of injuries, which is a trend that began in 1997. Service/Security/Craft and Repair workers made up 26 percent of the work force, but accounted for 56 percent of the OSHA-recordable events. Service workers were at a 4 times greater risk of injury than other workers.

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

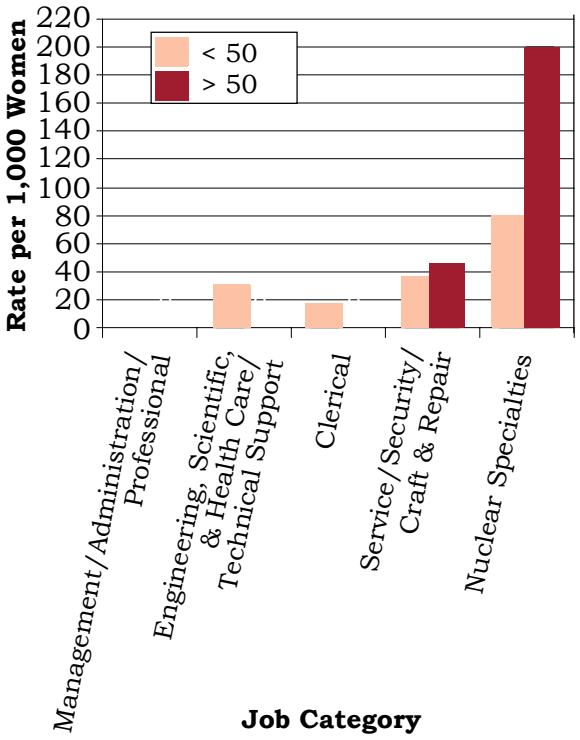
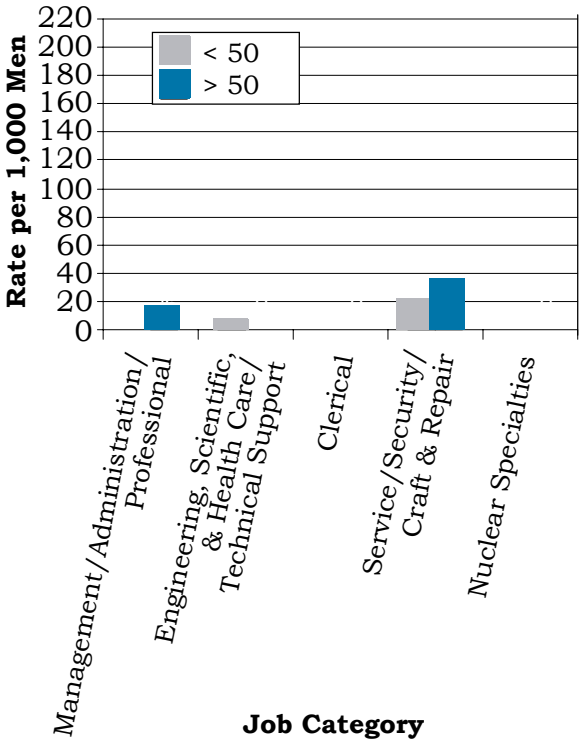



**Figure 18. OSHA-Recordable Rates by Age and Job Categories Among Men, All Diagnoses Combined**



## Time Trends for OSHA-Recordable Events

The age-adjusted rates for all OSHA-recordable diagnoses combined from 1993 to 1999 by job category and gender are shown in Figures 19 and 20. During the 7-year period, the overall rates for OSHA-recordable events did not change greatly for most of the job categories among men and women. There were no significant changes noted in the injury rates among OSHA-recordable events from 1993 to 1999.

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

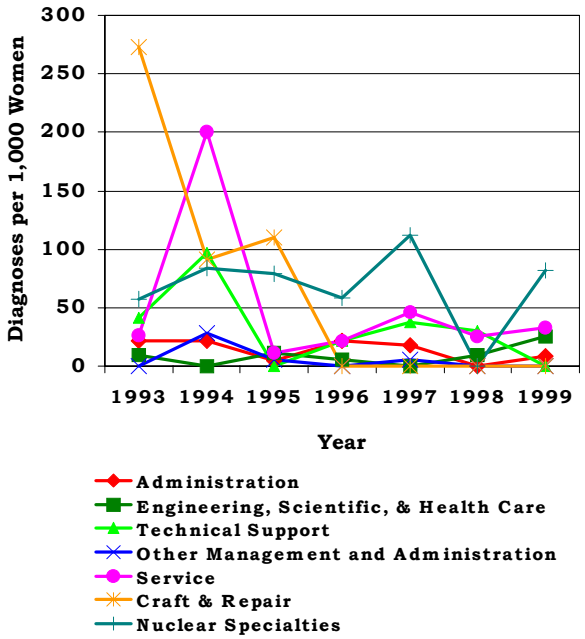
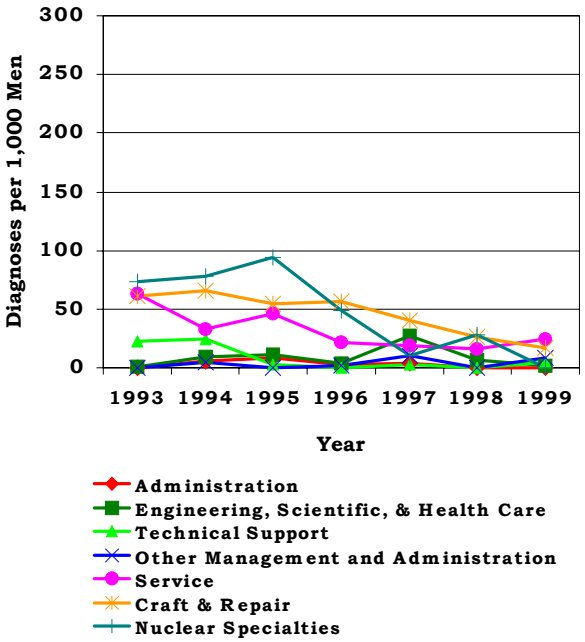



**Figure 20. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Men by Job Category from 1993 to 1999**




In 1993, there was a job category for "other" workers which did not appear for 1994 through 1999. There were 36 workers in this "other" group. These workers were excluded from the figure presented here.

## 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<br>235-239 |
| Blood | 280-289 |
| Cancer | 140-208<br>230-234 |
| Digestive | 520-579 |
| Endocrine/Metabolic | 240-279 |
| Existing Birth Condition | 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 |

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| • 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 |

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| • 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 |

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| **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 |

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| • 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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