

2000

Fernald Environmental Management Project Annual 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/epi/surv/index.html>

ACKNOWLEDGEMENT

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Fernald Environmental Management Project 2000

At A Glance

There were 444 absences of 5 or more workdays among Fernald employees in 2000, compared with 415 in 1999. Although the number of absences decreased, there was a 23 percent increase in the number of lost workdays due to injury and illness from 1999 to 2000.

Male employees lost 10,298 workdays due to illness and injury in 2000. The leading causes of absence were muscles and skeleton conditions (23 percent), injuries (18 percent), and respiratory conditions (14 percent).

Female employees lost 8,085 workdays due to illness and injury in 2000. The leading causes for these absences were psychological conditions (15 percent), respiratory conditions (14 percent), genitourinary conditions (13 percent), and injuries (13 percent).

The age-adjusted rates for illnesses and injuries increased for most job categories in 2000. The increase was most notable for male and female Service, Craft and Repair, and Nuclear Specialties workers.

Over time, male workers in the Nuclear Specialties category and in the Crafts and Repair category have had the highest rates of OSHA-recordable events (illnesses and injuries that are associated with the work environment). Among women, the highest OSHA-recordables over time have also been for workers in the Nuclear Specialties category and those categorized as Service Workers.

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Introduction

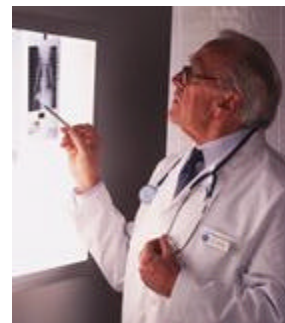
The U.S. Department of Energy's (DOE) commitment to assuring the health and safety of its workers includes the conduct of epidemiologic surveillance activities that provide an early warning system for health problems among workers. The Epidemiologic Surveillance Program monitors illnesses and health 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, 2000 through December 31, 2000. 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 preliminary 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/epi/surv/index.html>), or are available by

request. The main sections of the report include: work force characteristics; absences due to injury or illness of 5 or more consecutive workdays; workplace injuries, illnesses, and deaths that were reportable to the Occupational Safety and Health Administration ("OSHA-recordable" events); and disabilities and deaths among current workers. This report also includes sections on time trends that provide comparative information on the health of the work force from 1993 to 2000.



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.



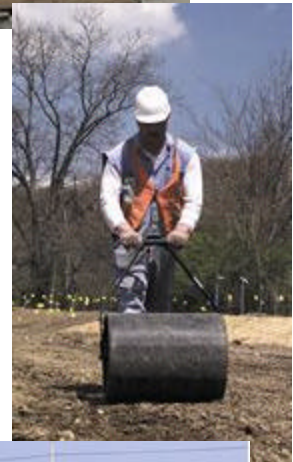
Site Overview

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 Fernald since December 1992, has engaged in an environmental cleanup program to address concerns associated with the former production mission. In November 2000, DOE awarded a 10-year closure contract for the Fernald site to Fluor Fernald that provided the framework for the final cleanup of the site. All key cleanup decisions for the site are made with public participation from federal and state regulators and the public.

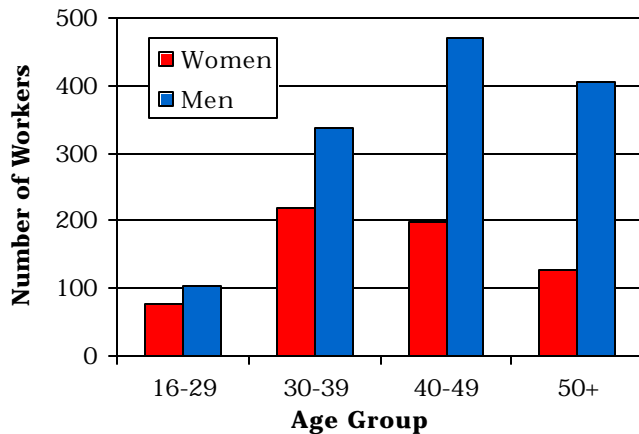


The Fernald Work Force - 2000

A total of 1,941 Fernald employees were included in epidemiologic surveillance in 2000, a decrease of 90 workers from 1999. The age and gender distribution of the 2000 work force is shown in Figure 1. There were 623 (32 percent) women and 1,318 (68 percent) men in the work force. The average age of male Fernald workers was 44 years and 41 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 gender and job category is shown in Figure 2. As reported by Fernald, individual job titles were grouped together into 10 job categories. This is because there were either too few workers or health events within a particular job title, thereby limiting the

types of analyses that could be conducted. Men and women were not distributed equally among the various job categories. Fifty-nine percent of the men were classified as white-collar workers compared with approximately 42 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	3 <1%	47 4%
Administration	18 3%	103 8%
Professional	92 15%	211 16%
Engineering, Scientific, & Health Care	101 16%	282 21%
Technical Support	46 7%	125 10%
Clerical	209 34%	21 2%
Service	113 18%	188 14%
Security	3 <1%	28 2%
Craft & Repair	6 1%	177 13%
Nuclear Specialties	32 5%	136 10%



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.

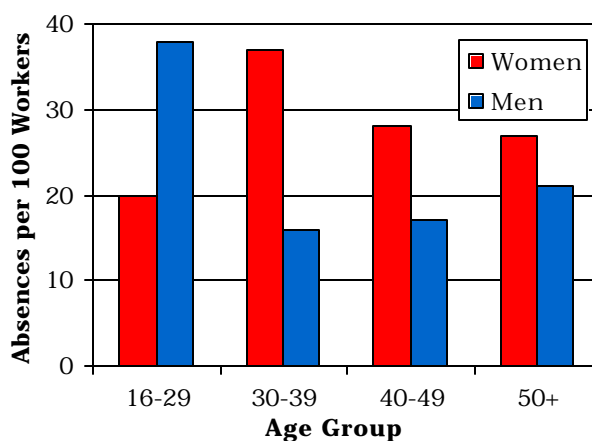
Specific health events resulting in an absence of 5 or more consecutive workdays were excluded. These include 13 women with 14 reported absences due to maternity leave, and 2 women with 2 reported absences due to elective surgical procedures not related to the treatment of an illness or injury.

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 187 5-day absences among 623 women resulting in an absence rate of 30 per 100 workers (187 / 623). Among the 1,318 men, there were 257 absences resulting in an absence rate of 19 per 100 workers (257 / 1,318). The rate of 5-day absences peaked for 30-39 year

old women and then decreased with age. Among men, workers under 30 years of age had the highest absence rate with the rate remaining fairly constant for older workers.

Figure 3. Absence Rate by Gender and Age



The average length of absence by gender and age is shown in Figure 4. A total of 18,383 calendar days of work (10,298 days for men and 8,085 days for women) was lost at Fernald in 2000



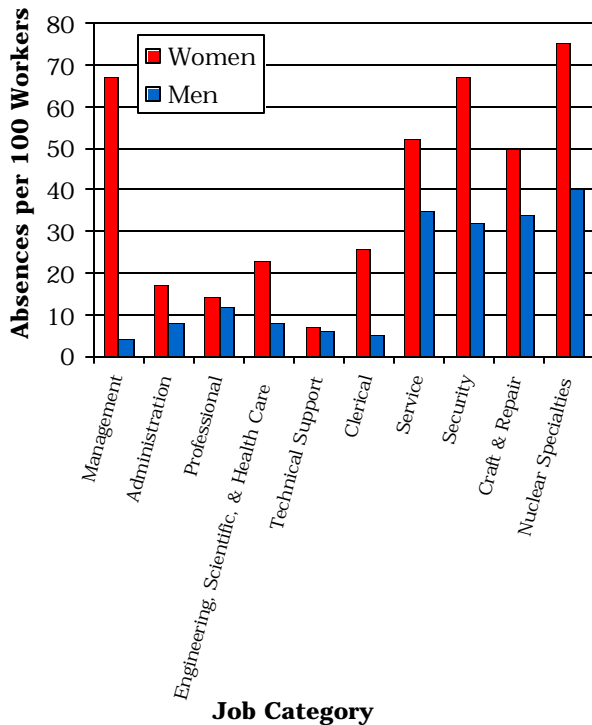
due to reported illness or injury. The average length of absence was 40 days for men and 43 days for women. The average length of absence increased with age among men and women. The total calendar days of work lost increased 23 percent from 1999 to 2000. The increase was greater among women (38 percent) than among men (14 percent). A portion of the large increase resulted from an absence lasting 948 days reported by a Professional woman in the 50 years and older age group.

Figure 4. Number of Days Absent by Gender and Age

Gender	Age	Number of Absences	Number of Days Absent	Average Number of Days Absent
Women	16-29	15	508	34
	30-39	81	2,756	34
	40-49	56	2,049	37
	50+	35	2,772	79
	Total	187	8,085	43
Men	16-29	39	949	24
	30-39	53	1,955	37
	40-49	81	3,654	45
	50+	84	3,740	45
	Total	257	10,298	40

The rate of 5-day absences due to illness or injury varied by job category for men and women as shown in Figure 5. 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 (40 per 100 workers) and among female workers (75 per 100 workers). This same job group has had the highest rate of absence since 1995.

Figure 5. Absence Rate by Job Category and Gender

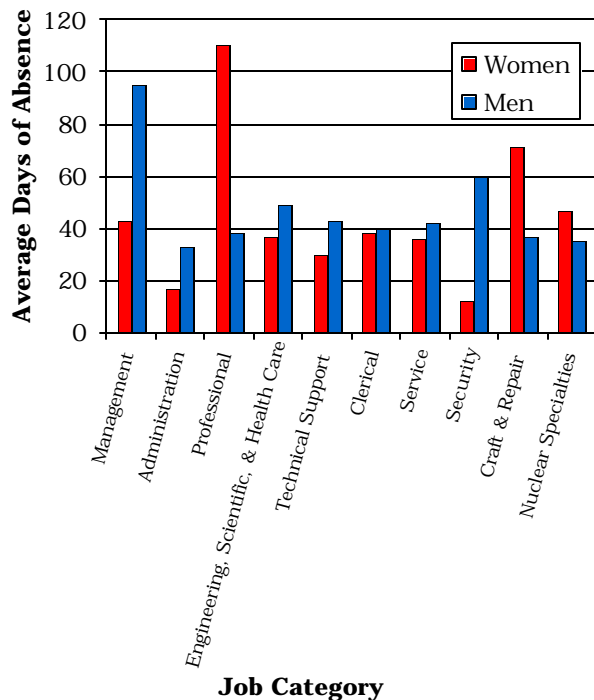


The average duration of absence by job category and gender is shown in Figure 6. Within a job category, men tended to have a longer average length of absence than women. Among women, the Professional group had the longest average length of absence, 110 days, and the second lowest 5-day absentee rate.



Removing the woman with the absence that lasted 948 days reduces the average length of absence among this job category to 41 days. Among men, Management workers had the longest average absence duration, 95 days, and the lowest 5-day absentee rate. One of the two absences reported by men in this job category lasted 181 days.

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 Disease, 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 321 diagnoses reported by female and 447 diagnoses reported by male Fernald employees in 2000.

Female employees lost 8,085 workdays (12,345 when multiple diagnoses occurred per absence) due to injury and illness. Among women, psychological conditions (15 percent), diseases of the respiratory system (14 percent), genitourinary conditions (13 percent), and injuries (13 percent) accounted for 55 percent of all reported diagnoses. Ninety-two percent of the psychological diagnoses were

adjustment disorders, anxiety, and depression. Back disorders and rheumatism each made up 28 percent of muscles and skeleton conditions. The respiratory conditions were due to upper respiratory infections (41



percent), bronchitis and asthma (34 percent), and flu and pneumonia (23 percent). Conditions involving the female reproductive organs accounted for 90 percent of the conditions of the genitourinary tract. Thirty-seven percent of the injuries were reported as sprains and strains and 22 percent were fractures. Among the 41 diagnoses for injuries, 3 were related to complications of medical care.



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	16	617	6	104
Blood	4	183	5	131
Cancer	9	407	5	321
Digestive	17	676	46	1,473
Endocrine/ Metabolic	5	436	8	244
Existing Birth Condition	2	165	1	70
Genitourinary	41	1,223	8	212
Heart/ Circulatory	4	217	37	1,412
Infections/ Parasites	9	139	9	321
Injury	41	1,549	79	2,469
Miscarriage	2	32	NA	NA
Muscles & Skeleton	32	2,147	103	4,568
Nervous System	26	878	13	432
Psychological	49	1,944	29	955
Respiratory	44	941	63	1,290
Skin	1	33	11	370
Unspecified Symptoms	19	758	24	739

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

Men lost 10,298 workdays (15,111 when multiple diagnoses occurred per absence) due to injury and illness. The most frequently reported diagnoses varied somewhat by gender. Among male workers, 55 percent of all reported diagnoses were due to muscles and skeleton conditions (23 percent), injuries (18 percent), and respiratory conditions (14 percent). A closer look at diagnoses affecting the muscles and skeleton showed that 49 percent were back problems, 25 percent were rheumatism, and 20 percent were

conditions affecting the joints. Frequently reported injuries were sprains and strains (42 percent), fractures (16 percent), and dislocations (13 percent). Eight complications of medical care were reported among the



79 diagnoses categorized as injuries. Upper respiratory infections accounted for 41 percent of the respiratory conditions, followed by chronic obstructive pulmonary disease (32 percent) and pneumonia and flu (21 percent). Among the 20 diagnoses for chronic obstructive pulmonary disease, 70 percent were bronchitis and asthma and 30 percent were for chronic obstructive airway disease.

Among men, the above diagnoses did not vary much by age. Workers 50 years of age and older reported more heart / circulatory diseases. Fourteen men in this age group reported 20 diagnoses: 8 diagnoses for hypertension, 7 for ischemic heart disease (restricted blood flow to an artery), and the remainder to cerebrovascular disease and hemorrhoids.

Among women, the most frequently reported diagnoses were consistent among the various age groups with one exception. Digestive and respiratory conditions, unspecified symptoms, and injuries were the frequently reported diagnoses for workers 50 years of age and older.

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, and digestive conditions appeared most often in the job categories. Thirty-six men reported 46 diagnoses for digestive disorders: 20 diagnoses for hernias, 13 for intestinal disorders, and 6 for gallbladder conditions and gastrointestinal bleeding. Among women, respiratory diagnoses, genitourinary conditions, injuries, conditions affecting the muscles and skeleton, nervous system diagnoses, and psychological disorders were common among the job categories. Twenty women reported 26 diagnoses for nervous system disorders: 8 diagnoses for migraines, 7 for carpal tunnel syndrome and other peripheral nerve disorders, 6 for ear disorders, and 4 for eye disorders.



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

Job Category	Men	Women
Management	Cancer (2) Muscles & Skeleton (1)	Nervous System (3)
Administration	Heart/Circulatory (6) Digestive (3) Genitourinary (3) Muscles & Skeleton (3)	Nervous System (2) Respiratory (2) Digestive (1) Infections/Parasites (1) Unspecified Symptoms (1)
Professional	Muscles & Skeleton (13) Injury (9) Respiratory (7) Digestive (5)	Genitourinary (7) Cancer (4) Benign Growths (2) Muscles & Skeleton (2) Psychological (2) Respiratory (2)
Engineering, Scientific, & Health Care	Muscles & Skeleton (12) Injury (7) Digestive (6)	Genitourinary (8) Respiratory (7) Cancer (4)
Technical Support	Muscles & Skeleton (4) Digestive (3) Infections/Parasites (2) Unspecified Symptoms (2)	Respiratory (2) Infections/Parasites (1) Injury (1) Muscles & Skeleton (1) Unspecified Symptoms (1)
Clerical	Muscles & Skeleton (1)	Injury (15) Psychological (15) Respiratory (10) Unspecified Symptoms (9)
Service	Muscles & Skeleton (27) Injury (26) Respiratory (16) Heart/Circulatory (8)	Psychological (21) Genitourinary (16) Injury (16) Respiratory (16) Muscles & Skeleton (11)
Security	Digestive (5) Respiratory (4) Heart/Circulatory (2) Injury (2) Psychological (2)	Digestive (1) Existing Birth Conditions (1) Respiratory (1)
Craft & Repair	Muscles & Skeleton (19) Respiratory (18) Digestive (15) Injury (13)	Muscles & Skeleton (5) Injury (1)
Nuclear Specialties	Muscles & Skeleton (22) Injury (19) Respiratory (14) Digestive (7)	Psychological (9) Nervous System (6) Genitourinary (5) Injury (5)

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 79 diagnoses and women reported 41 diagnoses involving injuries during 2000. Men, therefore, reported about twice as many injuries as 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 2000? To correctly answer the question, the total number of men and women in the work force must be considered. To compare risk among men and women, it is necessary to calculate the injury rate for each gender. Rates are calculated by dividing the number of injury diagnoses in a given gender by the total number of employees of that gender. Multiply this number by 1,000 to get the diagnosis rate per 1,000 workers.

For example:

79 injury diagnoses ÷ 1,318 men =
 $.060 \times 1,000 =$
 60 injury diagnoses per 1,000 men

41 injury diagnoses ÷ 623 women =
 $.066 \times 1,000 =$
 66 injury diagnoses per 1,000 women

Comparing these rates now correctly suggests that the rate of reported absences due to injuries among women is slightly 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.

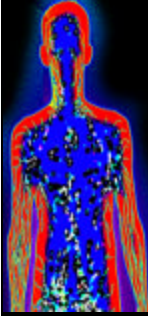
The diagnosis rate, also called the illness and injury rate, is the number of occurrences of a given disease or health condition observed over the course of a year per 1,000 workers at risk of getting that condition (see shaded box). One health condition, arthritis for example, may result in several 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.

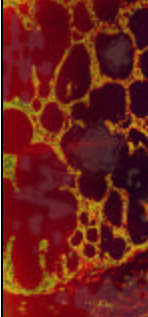
There was a slight tendency for rates of all illnesses and injuries combined to be greater for male Fernald workers 50 years of age and older compared with those less than 50. The opposite is true for female Fernald workers. Rates for female employees were higher than those for males in the same job category. The highest illness and injury rates for all employees were among individuals classified as Nuclear Specialties. This occupational group also had the highest rates in 1999.


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


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	154	284
		50+	209	278
	Engineering, Scientific, Health Care/Technical Support	<50	86	250
		50+	272	421
	Clerical	<50	56	487
		50+	0	364
	Service/Security/ Craft & Repair	<50	593	939
		50+	585	739
	Nuclear Specialties	<50	625	1,526
		50+	875	1,154

Diagnostic Category	Rate per 1,000			
Respiratory	Job Category	Age	Men	Women
	Management/ Administration/ Professional	<50	18	42
		50+	22	0
	Engineering, Scientific, Health Care/Technical Support	<50	7	63
		50+	19	53
	Clerical	<50	0	65
		50+	0	0
	Service/Security/ Craft & Repair	<50	109	111
		50+	68	261
	Nuclear Specialties	<50	80	105
		50+	146	154

Diagnostic Category	Rate per 1,000			
Cancer	Job Category	Age	Men	Women
	Management/ Administration/ Professional	<50	0	42
		50+	15	0
	Engineering, Scientific, Health Care/Technical Support	<50	0	8
		50+	29	158
	Clerical	<50	0	6
		50+	0	0
	Service/Security/ Craft & Repair	<50	0	0
		50+	0	0
	Nuclear Specialties	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
Injury	Job Category	Age	Men	Women
	Management/ Administration/ Professional	<50	31	11
		50+	30	0
	Engineering, Scientific, Health Care/Technical Support	<50	16	23
		50+	29	0
	Clerical	<50	0	45
		50+	0	145
	Service/Security/ Craft & Repair	<50	135	131
		50+	34	174
	Nuclear Specialties	<50	182	211
		50+	63	77

Diagnostic Category	Rate per 1,000			
Heart/ Circulatory	Job Category	Age	Men	Women
	Management/ Administration/ Professional	<50	22	0
		50+	22	0
	Engineering, Scientific, Health Care/Technical Support	<50	0	0
		50+	39	0
	Clerical	<50	0	13
		50+	0	0
	Service/Security/ Craft & Repair	<50	44	10
		50+	59	0
	Nuclear Specialties	<50	0	53
		50+	125	0

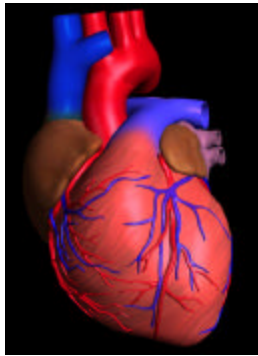
regimens. The cancer rates in this report are *not* comparable to the *incident rates* frequently published in many articles on cancer with which you may be familiar. *Cancer incident rates* are based on the number of new cancer cases diagnosed within a given time, usually a year.

Nine absences related to cancer were noted with nine diagnoses reported by five women and five

diagnoses reported by four men. One of the workers reporting cancer in 2000 reported cancer during the previous 7 years. The likelihood that an individual in the U.S. develops cancer increases with age; our data reflect this observation. Only three of the nine workers reporting cancer were less than 50 years old.

Older male workers had the greatest rates of heart / circulatory problems.

Twenty of the 37 diagnoses reported by men were among workers aged 50 and older; 8 diagnoses were for hypertension and 7 involved ischemic heart disease (restricted blood flow through an artery). Men categorized as Service / Security /



Craft and Repair had the highest rates of heart / circulatory disorders.

Thirteen of the 19 diagnoses in this group were for hypertension or ischemic heart disease. Women reported 4 heart / circulatory diagnoses; all 4 of these were among women younger than age 50. Two of the 4 diagnoses involved hypertension.

Women had higher rates of respiratory disease than men with the exception of workers 50 years of age and older in the Management / Administration / Professional group. Among women, workers under age 50 tended to have higher rates compared with older workers. The opposite was true among men. The Service and Security workers were 3 to 4 times as likely to report a respiratory diagnosis as other job categories.

Men and women younger than 50 years tended to have higher rates of injuries than older workers. These same patterns were noted in 1999. As in 1999, the highest injury rates in 2000 were among men and women in the Nuclear Specialties group. Service and Nuclear Specialties workers were 2 to 3 times more likely to report an injury than other groups. Nuclear Specialties workers were over 6 times more likely to report a complication of medical care.

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, Craft and Repair, 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 psychological disorders was twice as great among Service workers compared to other occupational groups. Benign tumors, endocrine / metabolic disorders, psychological disorders, conditions of the nervous system, and muscles and skeleton disorders, as well as unspecified symptoms were elevated 2- to 6-fold among workers in the Nuclear Specialties group compared with other workers. The risk of psychological conditions was almost 4 times, muscles and skeleton disorders was over 2 times, and unspecified symptoms was 3 times as great among Craft and Repair workers. Among Security workers, digestive disorders were almost 7 times more likely to be reported compared to other 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 2000, some job categories used in 1995 through 2000 were combined to reflect the broader categories used in earlier years. The accompanying table shows how the categories were combined:

1995 - 2000 Job Category	1993 and 1994 Job Category
Management	Office Management and Administration
Administration	Office Management and Administration
Professional	Other Management and Administration
Engineering, Scientific, and Health Care	Engineering, Scientific, and Health Care
Technical Support	Technical Support
Clerical	Office Management and Administration
Service	Service
Security	Service
Craft and Repair	Craft and Repair
Nuclear Specialties	Nuclear Specialties

There are 8 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 all diagnoses combined are shown in Figure 10. There was a steady increase in the rates for men and women from 1993 through 1997. This was followed by a decline or leveling off until a resumption in the increase in 2000. Figure 11 shows age-adjusted rates for selected diagnostic categories. The most notable trend has been an increase in muscles and skeleton conditions and injuries for men and women.

The age-adjusted rates for illnesses and injuries by job category are shown in Figure 12. The rates of diagnoses among men and women increased for most job categories in 2000. These increases in the rates appear after a decline in most occupational groups in 1999. The large changes in the rates for women in the Technical Support, Service, Craft and Repair, and Nuclear Specialties groups are the result of small numbers of female workers in each of these groups.

Figure 10. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men from 1993 to 2000

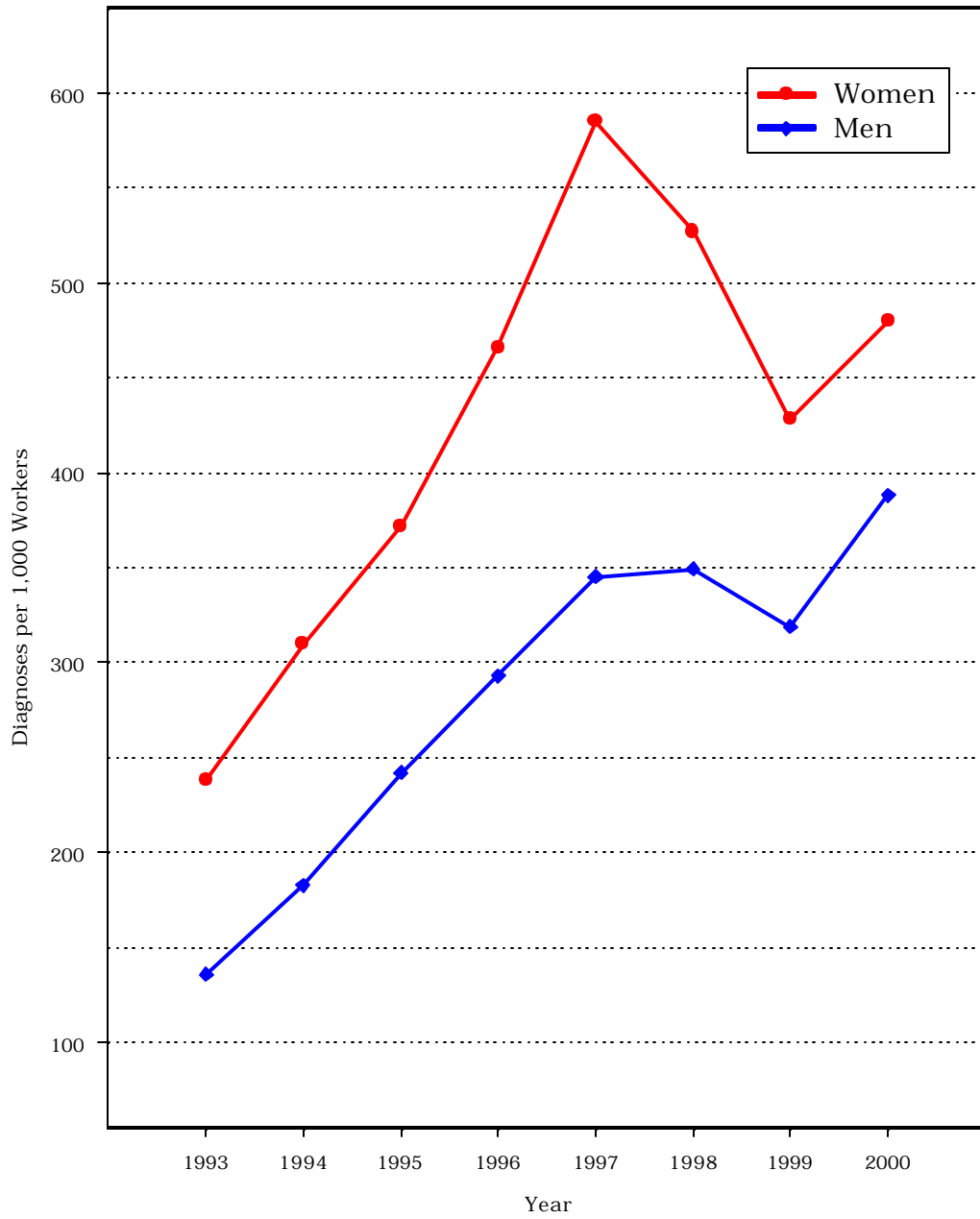


Figure 11. Age-Adjusted Rates for Selected Diagnostic Categories Among Women and Men from 1993 to 2000

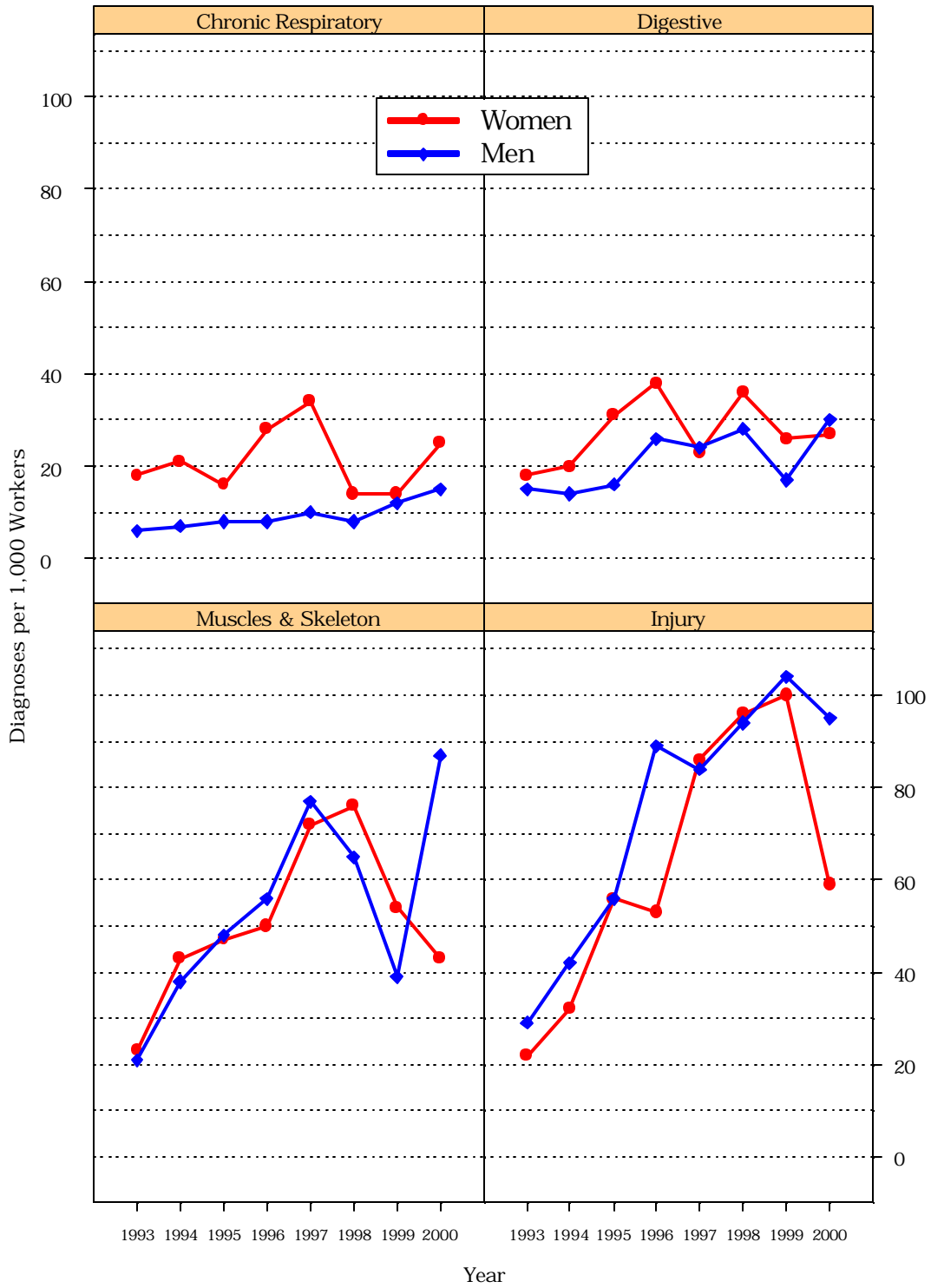
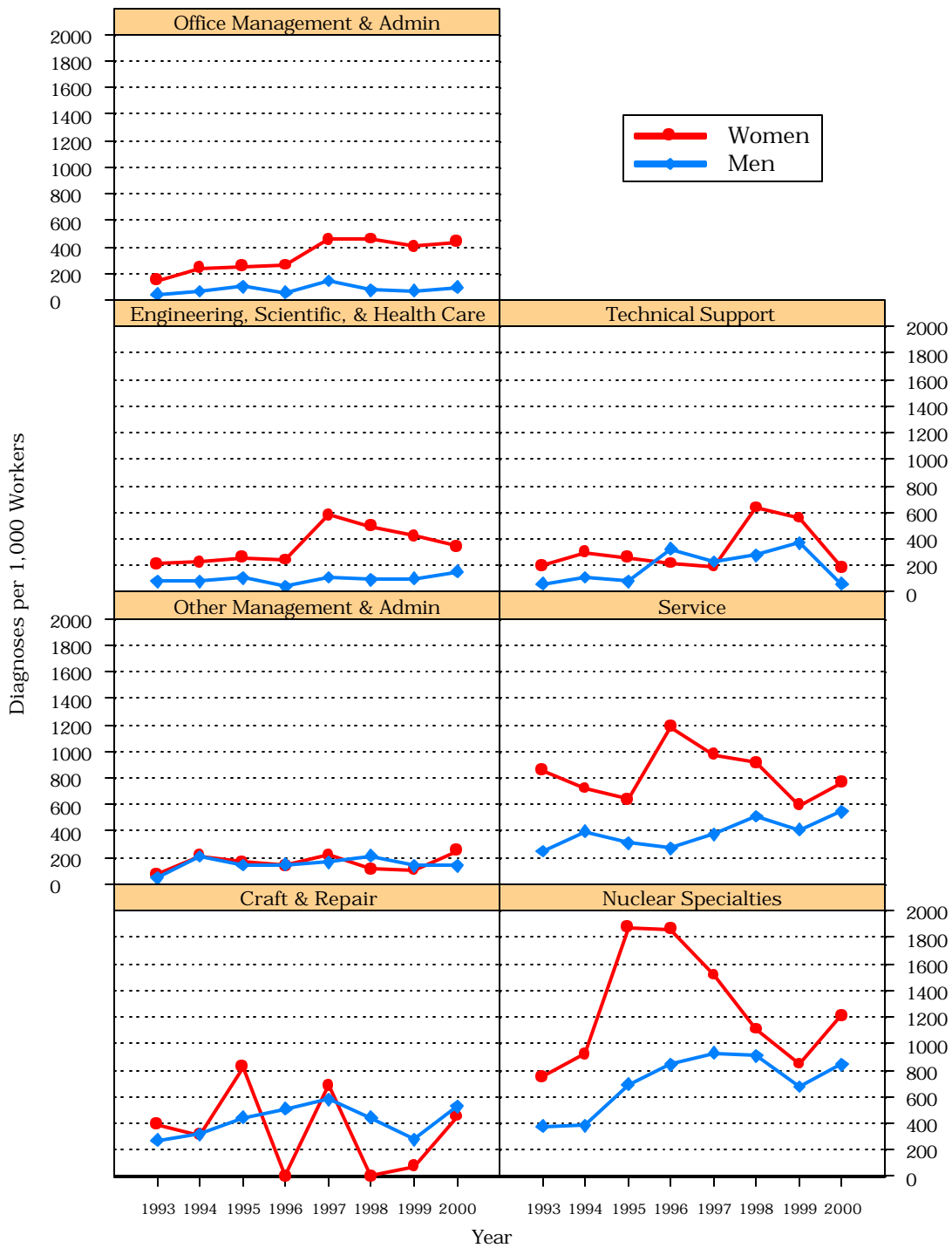


Figure 12. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men by Job Category from 1993 to 2000



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:

Diseases that are unlikely to occur in the absence of an occupational exposure. Asbestosis, a lung disease resulting from exposure to asbestos, is an example.

Possible Sentinel Health Events:

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

One definite and 7 possible sentinel health event diagnoses were identified among the 768 reported diagnoses (Figure 13). The one definite sentinel health event was for cellulitis of the leg due to an injury which occurred prior to the employee coming to Fernald. The seven possible sentinel health events were due to carpal tunnel syndrome and accounted for 343 days absent. Five of these events occurred among women; four events were reported among workers aged 30-39.

Figure 13. Characteristics of SHEOs by Gender

	Total Number of SHEO Diagnoses		Total Number of Days Absent	
	Men	Women	Men	Women
Definite	1	0	12	0
Possible	2	5	89	254
Total	3	5	101	254

Disabilities Among Active Workers

One disability was reported by FEMP in 2000 due to a psychological disorder. This worker was excluded from other analyses in this report because he was not actively working.

Deaths Among Active Workers

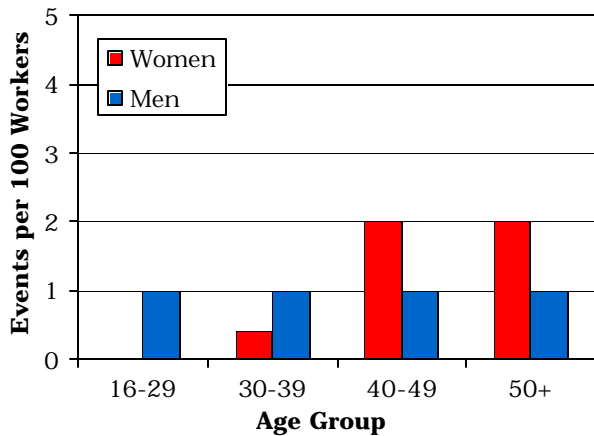
Three deaths (two men and one woman) occurred among FEMP workers in 2000. The deaths were due to lung cancer, a heart / circulatory disorder, and asthma. The deaths were all in workers less than age 55.

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.

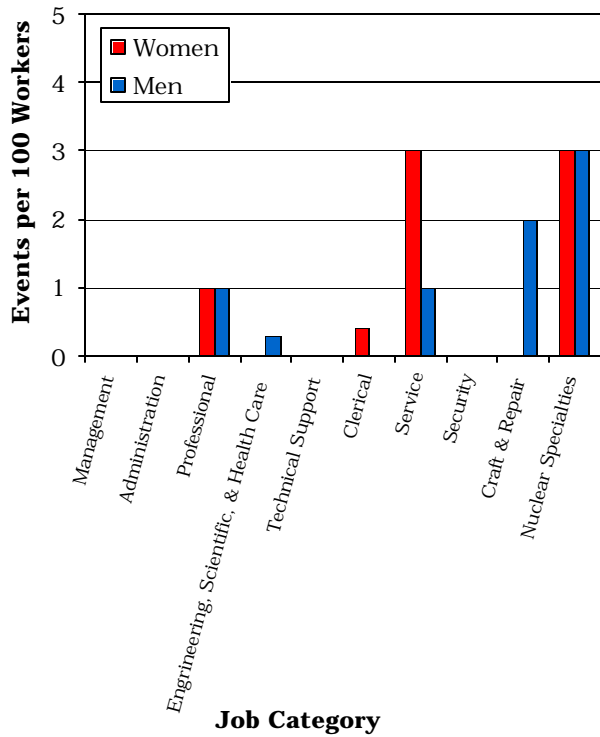
The distribution of OSHA events by age and gender is shown in Figure 14. There were 6 women and 13 men with at least one OSHA-recordable event. The rate of OSHA-recordables was the same for women and men (1 per 100) and was highest among women in the 40-49 and 50+ age groups (2 per 100).

Figure 14. OSHA-Recordable Events by Gender and Age



The rates of OSHA-recordable events by job category and gender are shown in Figure 15. For men and women combined, the Nuclear Specialties group had the highest rate of OSHA events, 3 per 100. Among female Fernald workers, the Service and Nuclear Specialties groups had the highest rates of OSHA events, 3 per 100. Among males, the highest rate for an OSHA event was 3 per 100 among Nuclear Specialties workers.

Figure 15. OSHA-Recordable Events by Job Category and Gender



A total of 244 days were lost or restricted due to OSHA events in 2000. On average, there were 9 workdays lost or with restricted activity for men and 22 days for women. The highest average lost or restricted workdays for men (25 days) occurred among workers aged 30-39 years; three OSHA events resulted in a total of 76 lost or restricted workdays. Among women, workers aged 50+ had the highest average lost or restricted workdays (55 days); two OSHA events resulted in a total of 109 lost or restricted workdays. There were no OSHA events reported by women aged 16-29.

By job category, female Nuclear Specialties workers averaged 109 lost or restricted workdays, higher than any other group. This was due to one event in which a worker fell and fractured her elbow. Nuclear Specialties workers also averaged the highest average lost or restricted workdays among men (25 days). Among men and women, no OSHA events were reported by Management, Administration, Technical Support, or Security workers.

Diagnostic and Accident Categories for OSHA-Recordable Events

There were 19 OSHA events recorded on the OSHA 200 Logs, 9 diagnoses among women and 20 diagnoses among men, as shown in Figure 16. Injuries accounted for 89 percent of the diagnoses reported by women. The most frequently recorded OSHA injuries were 5 sprains and strains. Among men, injuries accounted for 85 percent of the diagnoses reported, primarily due to 6 sprains and strains, 4 fractures, and 4 open wounds.

Figure 16. OSHA-Recordable Diagnoses by Diagnostic Category and Gender

Diagnostic Category	Gender	
	Women	Men
Muscles & Skeleton	1	2
Skin	0	1
Injury	8	17
Fractures – Neck, Trunk	0	1
Fractures – Upper Limb	1	2
Fractures – Lower Limb	0	1
Dislocations	1	0
Back Sprains & Strains	2	3
Other Sprains & Strains	3	3
Open Wounds – Head, Neck, Trunk	0	1
Open Wounds – Upper Limb	0	3
Superficial Injuries	0	1
Bruises	1	2

Eighteen OSHA events were described as “an accident” in the OSHA logs. The distribution of accidents by category is shown in Figure 17. Sixty-



seven percent of the events were due to falls among women (4 / 6); the remaining accidents among women were described as “other accidents.” Among men, falls and “other accidents” each accounted for 42 percent of the accidents. Two accidents among men were due to motor vehicle accidents. Among men and women, overexertion and strenuous movements (2 / 7) and being “struck by an object” (2 / 7) were the most frequently reported “other accidents.”

Figure 17. OSHA-Recordable Accidents by Type and Gender

Accident Category	Gender	
	Women	Men
	Number of Accidents	Number of Accidents
Motor Vehicle Traffic	0	2
Falls	4	5
Other Accidents	2	5
Caught Between Objects	0	1
Cutting/Piercing Instrument/Object	0	1
Overexertion/Strenuous Movements	1	1
Repetitive Trauma	1	0
Struck by an Object	0	2
Total	6	12

Rates of OSHA-Recordable Events

The rates of all OSHA-recordable events by age and job categories and gender are shown in Figures 18 and 19.



The OSHA-recordable rates for women were highest among Service / Security / Craft and Repair workers; the highest rates for men were among Nuclear Specialties workers. Most of the OSHA health conditions involved injuries.

When the rates for OSHA-recordable injuries were considered separately, the same occupational groups for men and women mentioned previously showed the highest injury rates. Service / Security / Craft and Repair workers made up 27 percent of the work force, but accounted for 47 percent of the OSHA-recordable events. Nuclear Specialties workers made up 9 percent of the work force and reported 26 percent of the OSHA events. Nuclear Specialties workers were at a 4 times greater risk of injury than other workers.

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

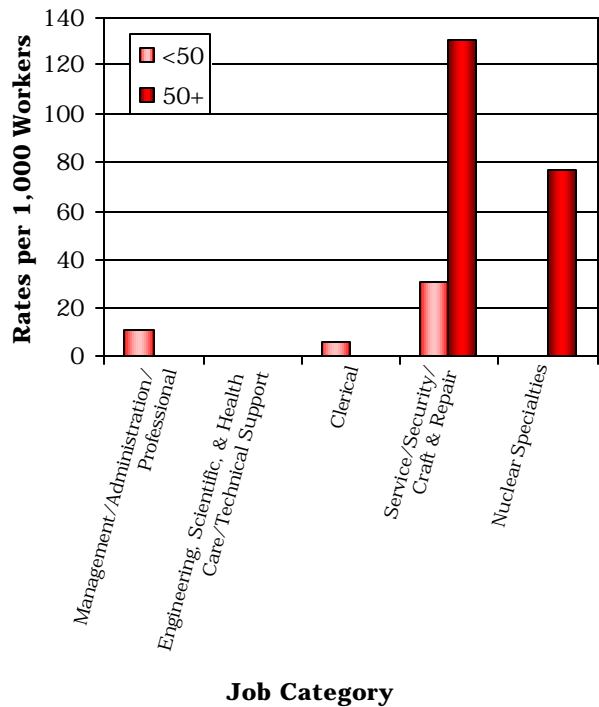
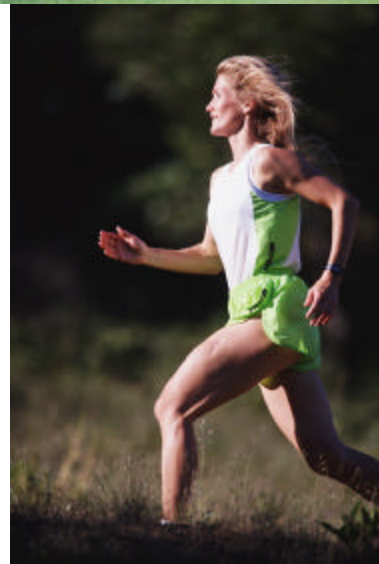
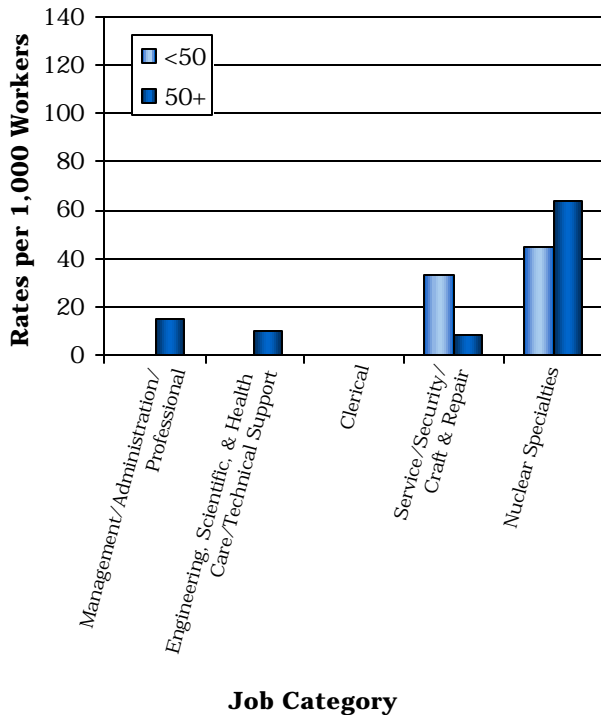


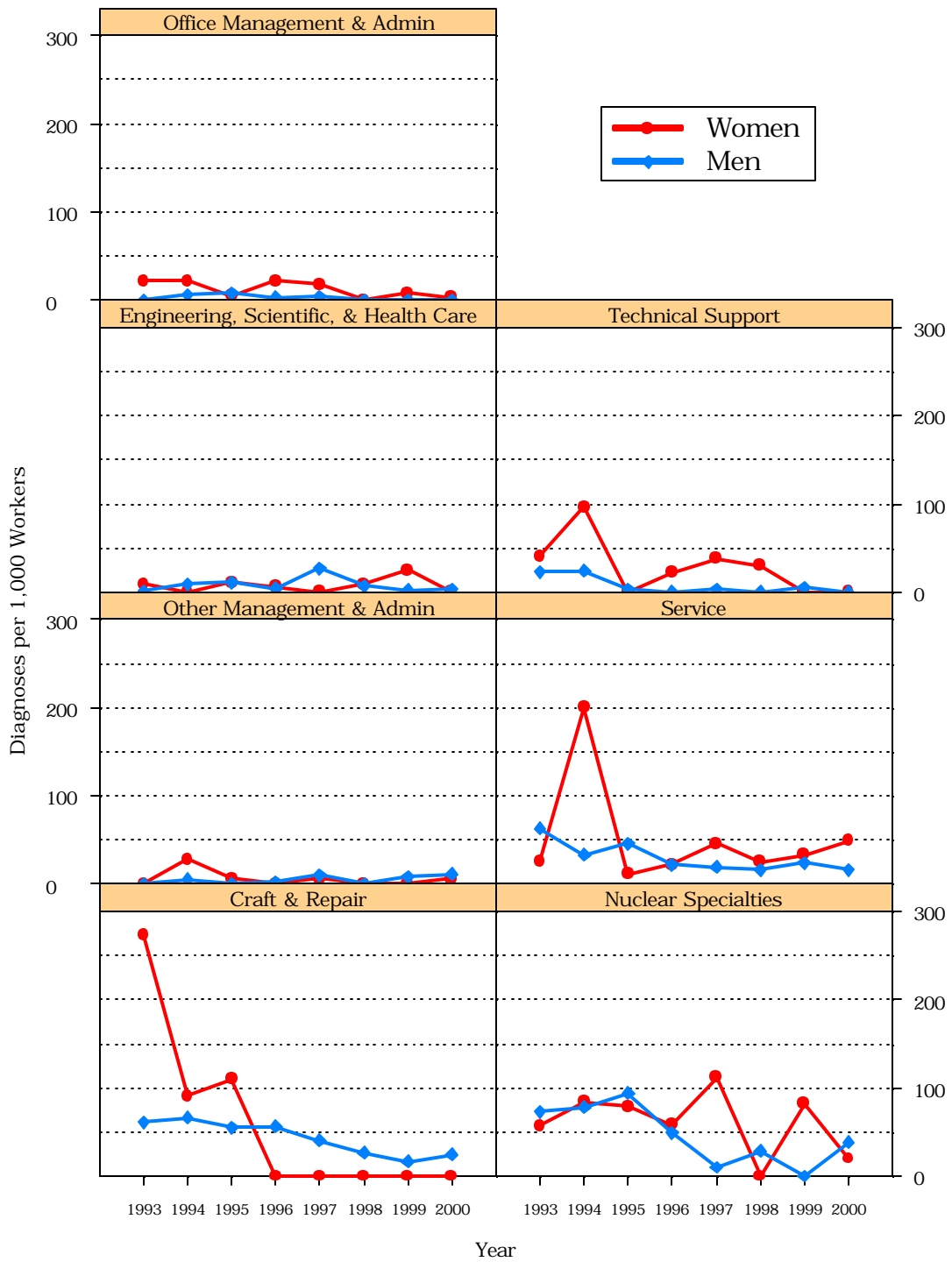
Figure 19. OSHA-Recordable Rates by Age and Job Categories Among Men, All Diagnoses Combined



Time Trends for OSHA-Recordable Events

The age-adjusted rates for all OSHA-recordable diagnoses combined from 1993 to 2000 by job category and gender are shown in Figure 20. During the 8-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 2000.

Figure 20. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Women and Men by Job Category from 1993 to 2000



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 1 person followed for 1 year. For example, 5 people followed for 1 year contribute five person-years, as do 10 people each followed for half a year.

Relative Risk: The ratio of the occurrence of a disease or health condition in one group compared to the rate of occurrence of that same disease or health condition in another group.

Explanation of Diagnostic Categories

Throughout this report, health conditions have been grouped into a number of diagnostic categories which come from the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). For the text of this report the categories are abbreviated to make the report easier to read. The following table lists the abbreviated categories used throughout the annual report and the corresponding ICD-9-CM codes found in the supporting tables.

Abbreviated Categories Used in the Annual Report	ICD-9-CM Codes
Benign Growths	210-229 235-239
Blood	280-289
Cancer	140-208 230-234
Digestive	520-579
Endocrine / Metabolic	240-279
Existing Birth Conditions	740-759
Genitourinary	580-629
Heart / Circulatory	390-459
Infections / Parasites	001-139
Injury	800-999
Miscarriage	630-676
Muscles and Skeleton	710-739
Nervous System	320-389
Psychological	290-319
Respiratory	460-519
Skin	680-709
Unspecified Symptoms	780-799

ICD-9-CM Codes

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

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

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

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

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

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

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

Diseases of the musculoskeletal system and connective tissue	710-739	Arthritis, systemic lupus erythematosus, ankylosing spondylitis, herniated intervertebral disc (“slipped disc”), lumbago, sciatica, rheumatism, tendonitis, and osteoporosis
• Arthropathies and related disorders	710-719	Arthritis; joint pain and stiffness; and other diseases of the connective tissue which supports and connects internal organs, forms bones and blood vessel walls, and attaches to bones
• Dorsopathies	720-724	Swelling of the spine; herniated, slipped, and ruptured disc; rheumatoid arthritis of the spine; lumbago; and sciatica
• Rheumatism, excluding the back	725-729	Swelling and degeneration of joints, muscles, tendons; tennis elbow; and bursitis
• Osteopathies, chondropathies, and acquired musculoskeletal deformities	730-739	Fracture caused by bone disease; osteoporosis; curvature of the spine; flat foot; hammer toe; and development of deformities of the nose, toes, feet, legs, arms, and hands
Congenital anomalies	740-759	Spina bifida; cleft palate; harelip; and various chromosomal anomalies, such as Klinefelter’s syndrome
Certain conditions originating in the perinatal period	760-779	Maternal high blood pressure; maternal malnutrition; ectopic pregnancy; breech birth; fetal malnutrition or slow growth; injuries related to birth trauma; and perinatal jaundice
Symptoms, signs, and ill-defined conditions	780-799	Blackout, chills, dizziness, fatigue, pallor, abnormal weight loss, undiagnosed chest pain, and heartburn

• Symptoms	780-789	Hallucinations, fainting, convulsions, dizziness, fatigue, fever, sleep disturbance, rash, headache, sore throat, chest pain, nausea, vomiting, and heartburn
• Non-specific abnormal findings	790-796	Abnormal x-ray, blood, stool, and urine test results
• Ill-defined and unknown causes of morbidity and mortality	797-799	Senility; asphyxia; respiratory arrest; nervousness; and unexplained death within 24 hours of onset of symptoms
Injury and poisoning	800-999	Dislocation of joints; sprains and strains of associated muscles; concussions; bruises; cuts; internal injuries from crushing, puncture, tearing, or blunt impact; burns; blisters; poisoning; frostbite; heatstroke; and complications of medical or surgical care
• Fractures, all sites	800-829	Cracks or breaks of any bone
• Dislocations	830-839	Separation of a bone from its normal socket or joint
• Sprains and strains of joints and adjacent muscles	840-848	Strains are injuries to muscle from overuse or stretching the muscle beyond its normal limit; sprains are injuries involving tearing or overextending the ligaments of a joint
• Intracranial injuries excluding those with skull fractures	850-854	Concussions; internal bruises; and bleeding within the head without a fracture of the bones of the skull
• Internal injuries of the thorax, abdomen, and pelvis	860-869	Bruising, crushing, tearing, or rupturing the chest, abdomen, and pelvis and the organs within these areas of the body
• Open wounds	870-897	Animal bites; cuts; lacerations; punctures; and amputations, excluding the arteries and veins

<ul style="list-style-type: none"> • Other injuries and late effects of external causes 	<p>900-999</p>	<p>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</p>
<p>Supplementary classifications related to personal or family history of disease</p>	<p>V10-V19</p>	<p>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</p>
<p>Supplementary classifications related to health care for reproduction and child development</p>	<p>V20-V28</p>	<p>Problems related to pregnancy, postpartum care, contraception, outcome of delivery, and physical development of child</p>
<p>Contact with health services for reasons other than illness or injury</p>	<p>V50-V59</p>	<p>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</p>

NOTES