

**1997 Fernald
Annual Epidemiologic
Surveillance Report**

FERNALD

1997 Epidemiologic Surveillance Report

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At a Glance

There are 5 years of epidemiologic surveillance data in the Fernald work force. The age-adjusted rates for all diagnoses, respiratory diseases, and injuries have increased for men and women during the past 5 years.

A total of 19,855 calendar days of work were lost due to illness and injury in 1997.

Among men, respiratory conditions, muscles and skeleton conditions, and injuries accounted for 55 percent of all reported diagnoses. Among women, these same conditions accounted for 44 percent of all reported diagnoses.

Workers in the Nuclear Specialties had the highest rate of absence among men and women compared with other occupational groups.

A total of 1,017 days were lost or restricted due to an OSHA-recordable event (i.e., attributable to an occupational event) in 1997. Injuries accounted for the majority of these events, primarily due to sprains and strains.

Service workers had the highest rate of OSHA events compared with workers in other job categories.

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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.

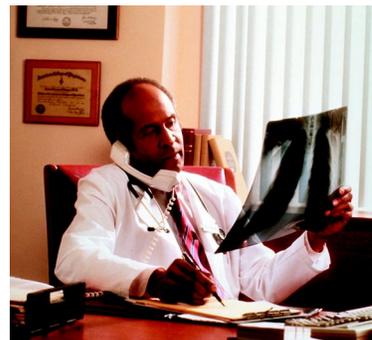


disabilities and deaths among current workers.

This report provides a summary of epidemiologic surveillance data collected from the Fernald Environmental Management Project (FEMP) from January 1, 1997 through December 31, 1997. 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. Epidemiologic surveillance has been ongoing at Fernald since 1993.

The information presented in this report provides highlights of the data analyses conducted. Earlier surveillance reports and additional supporting tables are posted on the Office of Epidemiologic Studies' Web Site (<http://www.eh.doe.gov/epi/surv>), or are available by request. The main 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 information on time trends that provides comparative information on the health of the work force from 1993 to 1997.

Note: In the figures and tables 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 - 1997

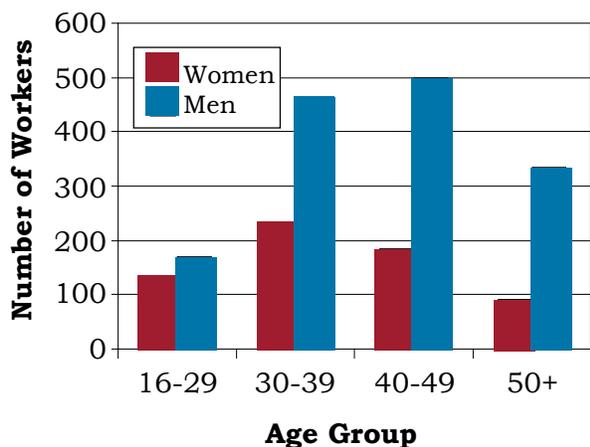
A total of 2,106 Fernald employees were included in epidemiologic surveillance in 1997, 159 fewer workers than were present in 1996. The age and gender distribution of the 1997 work force is shown in Figure 1. There were 642 (30%) women and 1,464 (70%) men in the work force. The average age of male Fernald



workers was 42 years and 38 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.

Individual job titles reported by Fernald were grouped together into job categories. This is because there

Figure 1. The Work Force by Gender and Age



were either too few workers or health events within a particular job title, thereby limiting the type of analyses that could be conducted. The distribution of workers by gender and job category is shown in Figure 2. Men and women were not distributed equally among the various occupational groups. Fifty-nine percent of the men were classified as white collar workers compared with 44 percent of the female work force. We noted the largest gender differences in the Clerical and Craft and Repair groups, with women primarily in the former group and men primarily in the latter group.

Figure 2. The Work Force by Job Category and Gender

Job Category	Women	Men
Management	3 < 1%	48 3%
Administration	18 3%	118 8%
Professional	107 17%	248 17%
Engineering, Scientific, & Health Care	101 16%	314 21%
Technical Support	50 8%	141 10%
Clerical	220 34%	26 2%
Service	94 15%	172 12%
Security	3 < 1%	26 2%
Craft & Repair	7 1%	212 14%
Nuclear Specialties	39 6%	159 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.

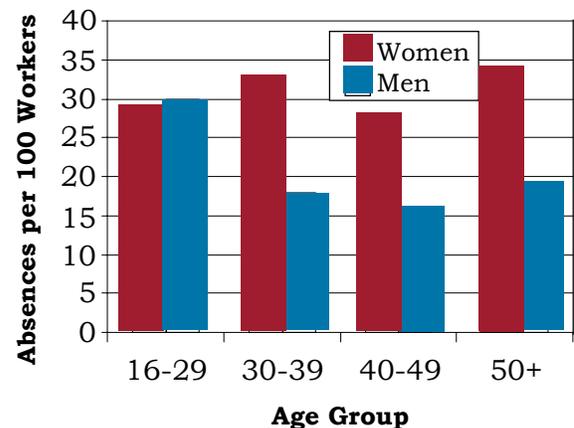
Specific health events resulting in an absence of 5 or more consecutive workdays were excluded. These include 16 women with 17 reported absences due to maternity leave, and 2 men with reported absences due to elective surgical procedures not related to the treatment of an illness or injury.

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

The rate of 5-day absences due to injury or illness varied by gender and age as shown in Figure 3. There were 198 5-day absences among 642 women resulting in an absence rate of 31 per 100 workers (198/642). Among the 1,464 men, there were 278 absences resulting in an absence rate of 19 per 100 workers (278/1,464). 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 19,855 calendar days of work (11,285 days for men and 8,570 days for women) were lost at Fernald in 1997 due to reported illness or injury. The average length of absence was 41 days for men and 43 days for women. Despite the fact that the average length of absence was longer for women than men, men had a longer average length of absence in each age group except the 40-49 group. Among 40-49 year old workers, women had six absences that lasted 6 months or more and men had no absences lasting this long. The average length of absence was not related to age.

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. Women had higher rates of absence across similar job categories compared with men.

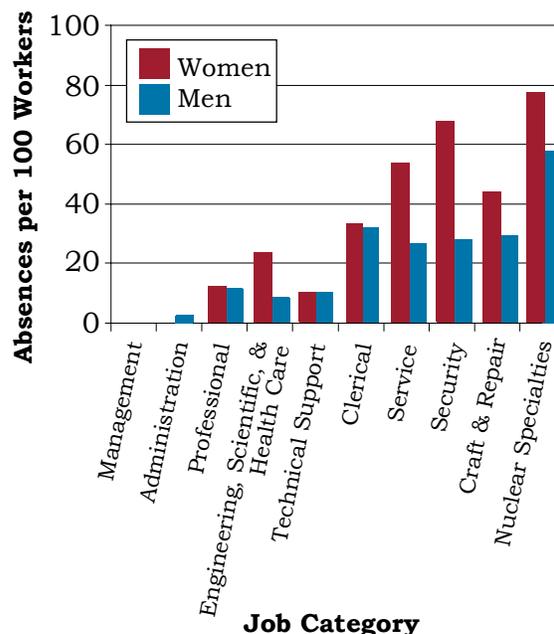
Figure 4. Number of Days Absent by Gender and Age

Gender	Age	Number of Absences	Number of Days Absent	Average Number of Days Absent
Women	16 - 29	38	948	25
	30 - 39	78	3,014	39
	40 - 49	51	3,515	69
	50 +	31	1,093	35
	Total	198	8,570	43
Men	16 - 29	51	1,819	36
	30 - 39	81	3,655	45
	40 - 49	81	3,183	39
	50 +	65	2,628	40
	Total	278	11,285	41

Nuclear Specialties had the highest 5-day absence rate among male workers, 57 per 100 workers. Among women, those in the Nuclear Specialties category again had the highest rate of absence (77 per 100 workers). There were no 5-day absences among males or females in Management during 1997.

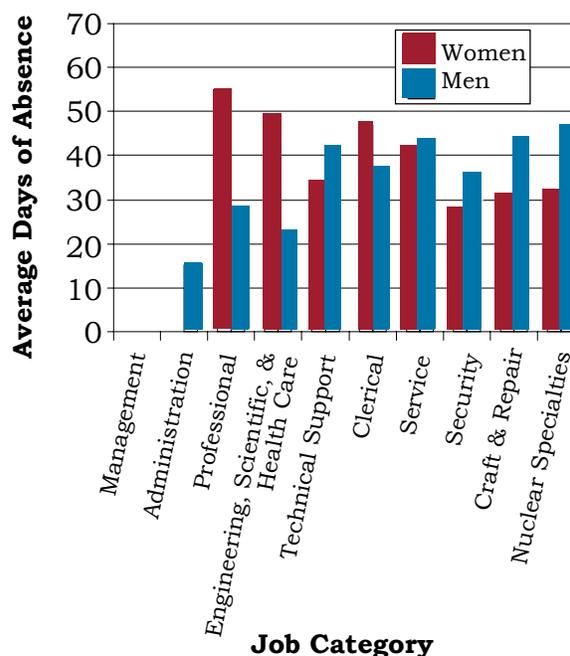
The average duration of absence by occupation and gender is shown in Figure 6. Within an occupational category, men had longer absences than women with three exceptions: Professional; Engineering, Scientific, & Health Care; and Clerical. In each of these groups, women reported absences of 6 months or longer.

Figure 5. Absence Rate by Job Category and Gender



Among men, the Nuclear Specialties group had the highest rate of absence and the longest average length of absence, 47 days. Among females, Professional workers had the longest absence duration, 54 days, but one of the lowest 5-day absentee rates.

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 372 diagnoses reported by female and 451 diagnoses reported by male Fernald employees in 1997. Female employees lost 8,570 workdays due to injury and illness. Among women, respiratory conditions (16 percent), muscles and skeleton conditions (15 percent), and injuries (13 percent) accounted for 44 percent of

all reported diagnoses. The respiratory conditions were due to acute upper respiratory infections (39 percent), bronchitis and asthma (30 percent), and flu and pneumonia (22 percent). Back pain and disk injuries made up 53 percent of muscles and skeleton conditions, followed by rheumatism (26 percent) and arthritis (all joint disorders) (9 percent). Forty-six percent of the injuries were reported as sprains and strains and 14 percent as fractures. Among the 50 diagnoses for injuries, 3 were allergic reactions and 7 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	6	304	6	357
Cancer	11	517	6	456
Digestive	17	446	37	991
Endocrine / Metabolic	2	129	13	495
Existing Birth Condition	1	32	0	0
Genitourinary	47	1,926	11	227
Heart / Circulatory	9	219	24	827
Infections / Parasites	17	1,054	12	308
Injury	50	2,132	92	3,497
Muscles and Skeleton	57	2,408	108	4,357
Nervous System	12	592	23	511
Psychological	47	1,904	39	1,118
Respiratory	59	1,090	51	836
Skin	12	1,154	6	146
Unspecified Symptoms	25	425	23	654

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 11,285 workdays due to injury and illness. The most frequently reported diagnoses varied little by gender. Among male workers, 55 percent of all reported diagnoses were due to muscles and skeleton conditions (24 percent), injuries (20 percent), and respiratory conditions (11 percent). A closer look at diagnoses affecting the muscles and skeleton showed that about 54 percent were back problems, 21 percent were arthritis, and 19 percent were rheumatism. Frequently reported injuries were sprains and strains (53 percent), dislocations (14 percent), fractures (11 percent), and open wounds (10 percent). One diagnosis related to complications of medical care was reported among the 92 diagnoses categorized as injuries. Acute respiratory infections accounted for 45 percent of the respiratory conditions, followed by bronchitis (24 percent), and pneumonia and flu (20 percent).

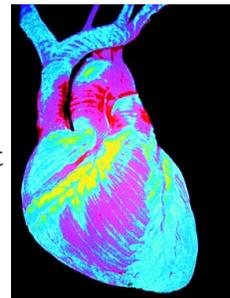
Among men, the above diagnoses did not vary much by age. Psychological conditions were a frequently reported



diagnosis for workers less than 50 years old. Twenty-five workers reported 39 diagnoses; 6 for substance abuse and 33 for anxiety, depression, and stress. Workers 40 years of age and older

reported more digestive diseases. Almost half of the 37 digestive diagnoses reported by 32 men were hernias. The remainder were related to teeth, stomach, and other intestinal/digestive disorders. Among workers aged 50 and older,

diagnoses of the heart/circulatory system were frequently reported. Eighteen men reported 24 diagnoses: 7 diagnoses for hypertension, 11 for ischemic heart disease (restricted blood flow to an artery), and the remainder to other heart diseases and diseases of the veins.



Among women, the most frequently reported diagnoses were consistent among the various age groups. Psychological conditions were among the frequently reported diagnoses for all age groups. Thirty women reported 47 diagnoses, all related to anxiety, depression, and stress. For those 30-49 years old, the most frequently reported diagnoses included the genitourinary system. About three-quarters of these were related to disorders of the reproductive organs.

Figure 8 shows the frequency of reported diagnoses by occupation for men and women. The types of diagnoses varied by job category. Among men, muscles and skeleton conditions, injuries, psychological conditions, and respiratory disorders appeared most often in the occupational groups. Among the Clerical group, two diagnoses of cancer were reported by one person. Five men reported 10 nervous system diagnoses among the Craft and Repair group. All but 2 of the 10 diagnoses were for ear infections and related complications (dizziness, hearing loss, ringing in the ears, etc.). Among women, injuries, conditions affecting the muscles and skeleton, respiratory diagnoses, genitourinary conditions, and psychological disorders were common among the occupational groups. Two women in the Engineering, Scientific, & Health Care group reported 7 cancer diagnoses, all of the reproductive organs.

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

Job Category	Men	Women
Management	None	None
Administration	Digestive (1) Skin (1)	None
Professional	Heart/ Circulatory (9) Muscles and Skeleton (9) Respiratory (7)	Muscles and Skeleton (7) Respiratory (6) Genitourinary (4)
Engineering, Scientific, & Health Care	Muscles and Skeleton (8) Injury (7) Respiratory (5)	Respiratory (8) Cancer (7) Genitourinary (6) Injury (6) Muscles and Skeleton (6)
Technical Support	Muscles and Skeleton (7) Digestive (5) Psychological (3)	Genitourinary (5) Heart/ Circulatory (2) Infections / Parasites (2) Injury (2) Respiratory (2)
Clerical	Muscles and Skeleton (3) Cancer (2) Endocrine / Metabolic (2) Injury (2)	Injury (20) Muscles and Skeleton (15) Respiratory (14) Genitourinary (13) Psychological (12)
Service	Injury (20) Muscles and Skeleton (16) Psychological (10)	Muscles and Skeleton (24) Injury (15) Genitourinary (14) Psychological (14)
Security	Respiratory (4) Psychological (3) Heart / Circulatory (2)	Psychological (5)
Craft & Repair	Muscles and Skeleton (34) Injury (28) Respiratory (10) Nervous System (10)	Genitourinary (3) Nervous System (2) Respiratory (1) Muscles and Skeleton (1)
Nuclear Specialties	Injury (30) Muscles and Skeleton (30) Psychological (20) Respiratory (18)	Respiratory (19) Psychological (15) Unspecified Symptoms (9)

Note: Numbers in parentheses are number of diagnoses reported.

Rates of Disease Occurrence

A Word about Rates: The previous section considered the number of absences and health conditions among various worker groups. For example, Figure 7 shows that men reported 92 diagnoses and women reported 50 diagnoses involving injuries during 1997. Men, therefore, reported almost twice as many injuries as women. As there are more than twice as many men than 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 1997? 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:

92 injury diagnoses
 $\div 1,464 \text{ men} = .063 \times 1,000 =$
 63 injury diagnoses per 1,000 men

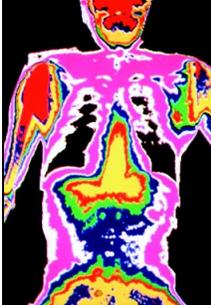
50 injury diagnoses
 $\div 642 \text{ women} = .078 \times 1,000 =$
 78 injury diagnoses per 1,000 women

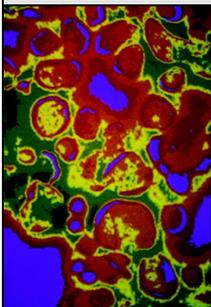
Comparing these rates now correctly suggests that the rate of reported absences due to injuries among women is higher than the rate for men. They are called **crude rates** because they do not account for possible differences between men and women such as age and other factors that might affect the individual's 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.

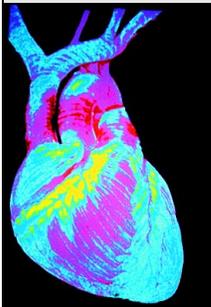
The diagnosis rate, also called the illness and injury rate, is the number of occurrences of a given disease or health condition observed over the course of a year per 1,000 workers at risk of getting that condition (see shaded box). One health condition, arthritis for example, may result in several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

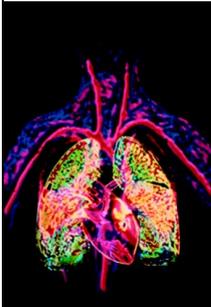
In the following set of analyses, the four age groups were collapsed into two groups, workers less than 50 years of age and those 50 or older. In addition, the 10 occupational categories were combined into 5 larger groups. These groups were collapsed to ensure that the number of diagnoses in each group 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.

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

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Management / Administration / Professional	<50	105	200
		50+	110	77
	Engineering, Scientific & Health Care/Technical	<50	78	396
		50+	301	583
	Clerical	<50	522	506
		50+	333	523
	Service/Security/Craft & Repair	<50	517	1,222
		50+	348	357
	Nuclear Specialties	<50	1,008	1,633
		50+	639	1,111

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Management / Administration / Professional	<50	0	0
		50+	0	0
	Engineering, Scientific & Health Care/Technical	<50	0	50
		50+	24	0
	Clerical	<50	87	23
		50+	0	0
	Service/Security/Craft & Repair	<50	0	0
		50+	18	0
	Nuclear Specialties	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Management / Administration / Professional	<50	16	0
		50+	40	0
	Engineering, Scientific & Health Care/Technical	<50	3	29
		50+	12	83
	Clerical	<50	0	11
		50+	0	0
	Service/Security/Craft & Repair	<50	7	22
		50+	36	0
	Nuclear Specialties	<50	41	0
		50+	56	0

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Management / Administration / Professional	<50	19	52
		50+	10	0
	Engineering, Scientific & Health Care/Technical	<50	5	43
		50+	48	333
	Clerical	<50	43	63
		50+	0	68
	Service/Security/Craft & Repair	<50	54	89
		50+	27	143
	Nuclear Specialties	<50	130	433
		50+	56	667

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Management / Administration / Professional	<50	10	17
		50+	10	77
	Engineering, Scientific & Health Care/Technical	<50	11	50
		50+	48	83
	Clerical	<50	87	80
		50+	0	136
	Service/Security/Craft & Repair	<50	104	156
		50+	152	71
	Nuclear Specialties	<50	211	100
		50+	111	111

There was a slight tendency for rates of all illnesses and injuries combined to be greater for male and female Fernald workers less than 50 years old compared with those greater than 50. The highest illness and injury rates for all employees were those individuals classified as Nuclear Specialties. With two exceptions, rates for female employees were higher than for men in the same job category, regardless of age. Men 50+ years old in the Management/Administration/Professional group and men less than 50 years old in the Clerical group had higher rates than women did in the same age and occupational groups.

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. *Incident* cancer rates are based on the number of new cancer cases diagnosed within a given time, usually a year.

The likelihood that an individual in the U.S. develops cancer increases with age. Our data do not reflect this observation; cancer rates were not always highest among older workers.

Twelve absences related to cancer were noted with 11 diagnoses reported by four women and 6 diagnoses reported by five men. One worker, reporting cancer in 1997, also reported the same



type of cancer during the previous 4 years. One woman reported 6 diagnoses over the past year, 1 for uterine cancer and the remainder for metastatic cancers (cancer that has spread to other organs).

Among men, workers aged 50 and older had the highest rates of heart/circulatory problems, while women under the age of 50 tended to have the highest rates. Eleven of the 24 diagnoses among men involved ischemic heart disease (restricted blood flow through an artery) and 7 diagnoses were for hypertension. Men categorized as Nuclear Specialties had the highest rates of heart/circulatory disorders. Women reported 9 heart/circulatory diagnoses; 8 of these were among women younger than 50. Four of the 9 diagnoses involved hypertension; no ischemic heart disease was reported. Engineering, Scientific, & Health Care/Technical workers had the highest rates of heart/circulatory conditions among women compared with other occupations. The seemingly elevated rate (83 per 1,000 workers) for women 50 years or older in Engineering, Scientific, & Health Care/Technical reflects 1 diagnosis.



Women had higher rates of respiratory disease than men. Among men, workers under age 50 years generally had higher rates compared with older workers. The opposite was true for women, with older women generally having the higher rates. Nuclear Specialties had the highest rates of respiratory diagnoses among men and women compared with other occupational categories. They

were over 3 times more likely to report a respiratory diagnosis than other occupational groups.

Women 50 years and older generally had higher rates of injuries than younger women, while there was no consistent pattern with age among men. Service, Craft and Repair, and Nuclear Specialties workers were 2 to 3 times more likely to report an injury than other groups. They were also 3 times more



likely to report a back sprain or strain. Service and Nuclear Specialties workers were over 2 times more likely to report a sprain or strain other than to the back. Nuclear Specialists were at over 4 times greater risk of a dislocation; 5 of the 16 reported dislocations were among these workers who made up 9 percent of the work force.

In another set of analyses, the risk of illness and injury among workers classified in one occupational group was compared with workers in the other nine job categories. Service, Craft and Repair, and Nuclear Specialties workers had at least twice the risk 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 and genitourinary conditions were almost 3 times greater among Service workers. The risk of nervous system and the muscles and skeleton disorders were at least 3 times greater among Craft and Repair workers. Risk of benign tumors, psychological disorders, and digestive conditions were elevated at least 4-fold among workers in the Nuclear Specialties group compared with 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 1997, some job categories used in 1995, 1996, and 1997 were combined to reflect the broader categories used in earlier years. The accompanying table shows how the categories were combined:

1993 & 1994 Occupational Groups Equal	1995 - 1997 Occupational Group
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 5 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 illness and injury categories are presented in Figure 10. The age-adjusted rates for all diagnoses have steadily increased among men and women over the past 5 years.

The rates for all illnesses and injuries combined among men has also increased across time in two occupational groups (Figure 11): Craft and Repair and Nuclear Specialties. The increase observed in 1997 among men in the Craft and Repair group was accompanied by an increase in reported diagnoses among workers aged 50 and older. Among women, an increase was seen in the Administration group and among Service workers during the past 2 years. The increase in the Administration group was in reported diagnoses among workers aged 50 and older. There were

no increases observed in any particular diagnostic category. The high rates for female Nuclear Specialties workers peaked in 1995 and appeared to decline in 1996 and 1997.

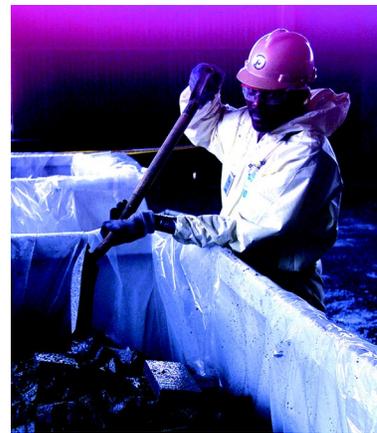


Figure 10. Age-Adjusted Rates for Selected Diagnostic Categories for Men and Women from 1993 to 1997

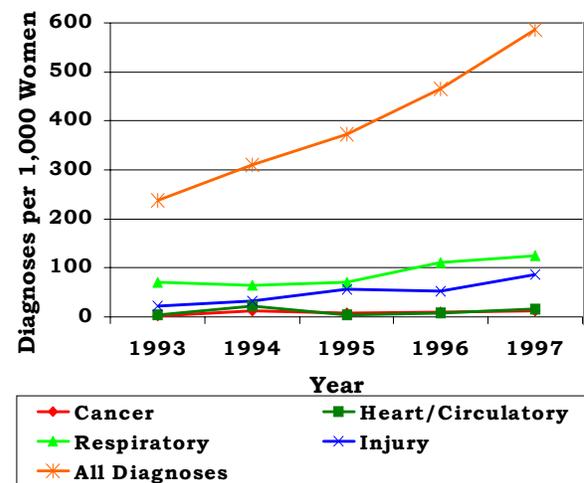
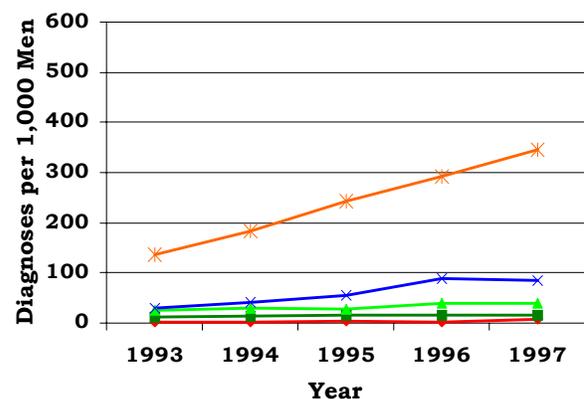
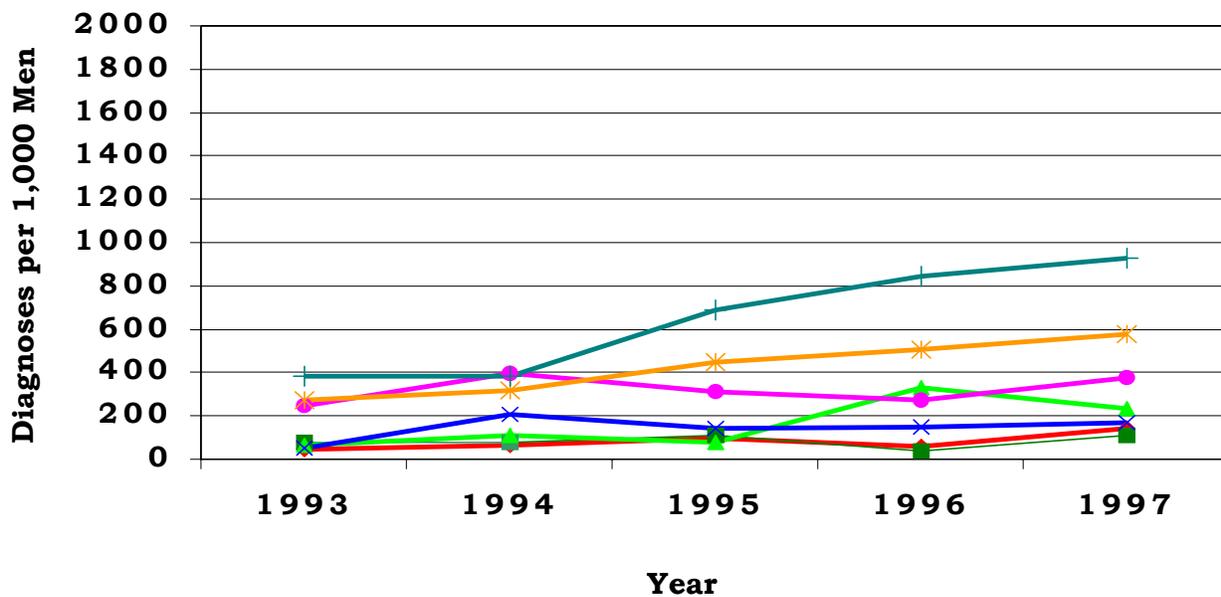
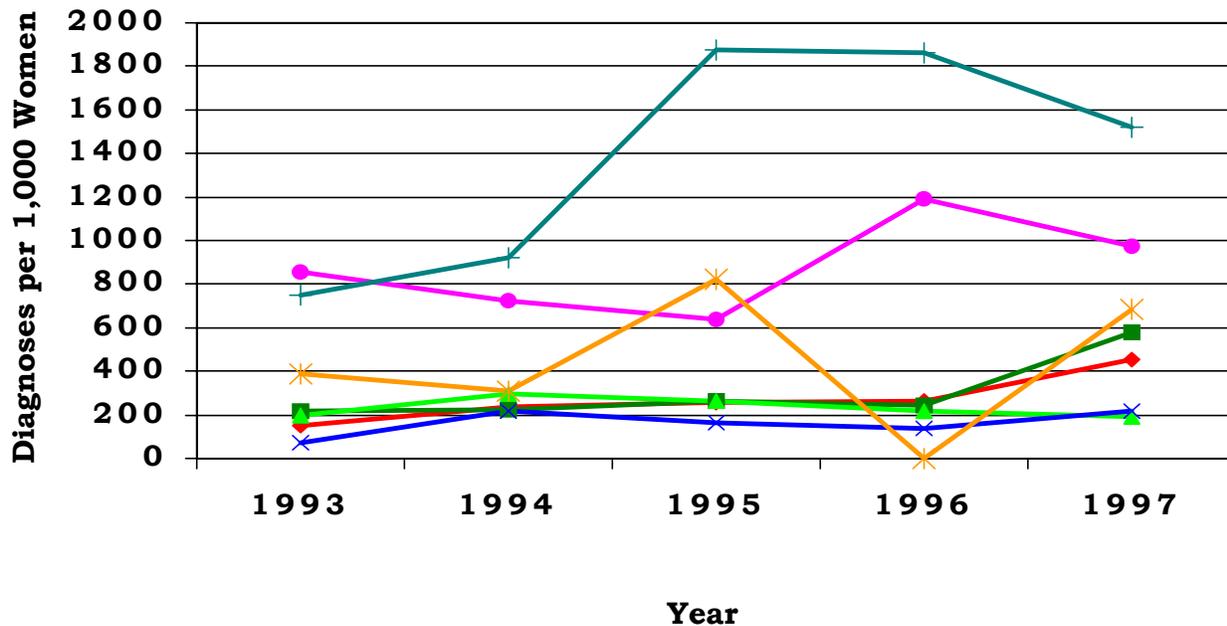


Figure 11. Age-Adjusted Rates for all Diagnoses Combined Among Women and Men by Job Category from 1993 to 1997



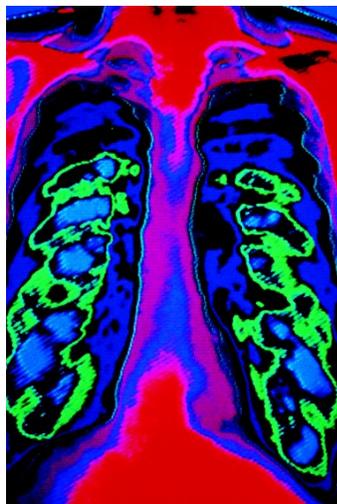
- ◆ Administration
- Engineering, Scientific & Health Care
- ▲ Technical Support
- ✕ Other Management and Administration
- Service
- ✱ Craft & Repair
- ┆ Nuclear Specialties

Sentinel Health Events for Occupations

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

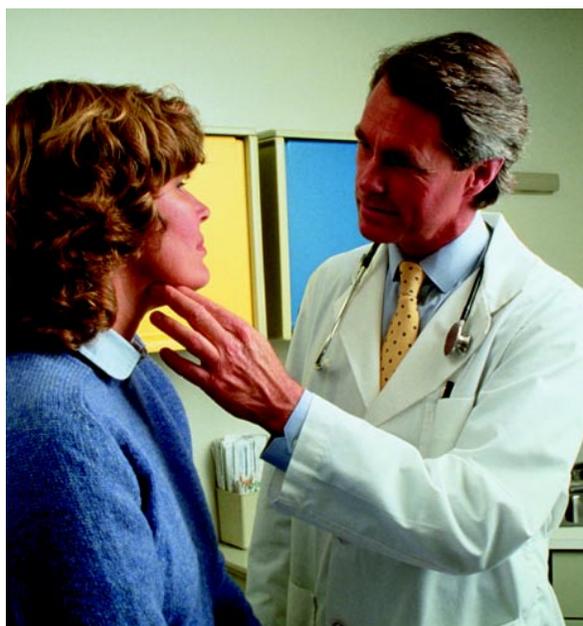
Four *definite* and three *possible* sentinel health diagnoses were identified among the 823 reported diagnoses (Figure 12). One sentinel health event, an injury due to carpal tunnel syndrome, resulted in an absence of 59 days.

Figure 12. Characteristics of SHEOs by Gender

	Total Number of SHEO / Diagnoses		Total Number of Days Absent	
	Men	Women	Men	Women
Definite	2	2	35	27
Possible	1	2	140	66
Total	3	4	175	93

Disabilities Among Active Workers

Two women were on long-term disability in 1997. They reported depression and carpal tunnel syndrome.



Deaths Among Active Workers

There were no deaths reported in 1997.

OSHA-Recordable Events

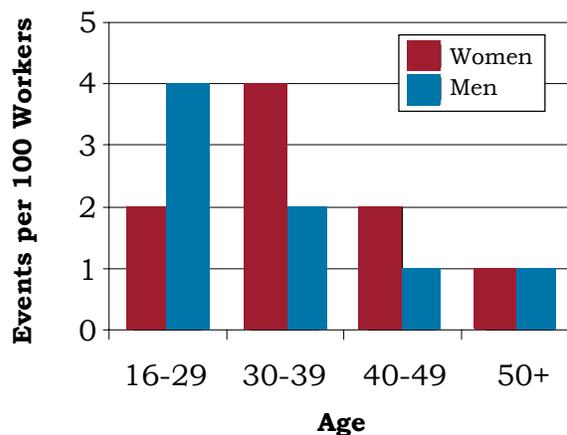
The Occupational Safety and Health Administration (OSHA) requires employers to maintain a record of occupational



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



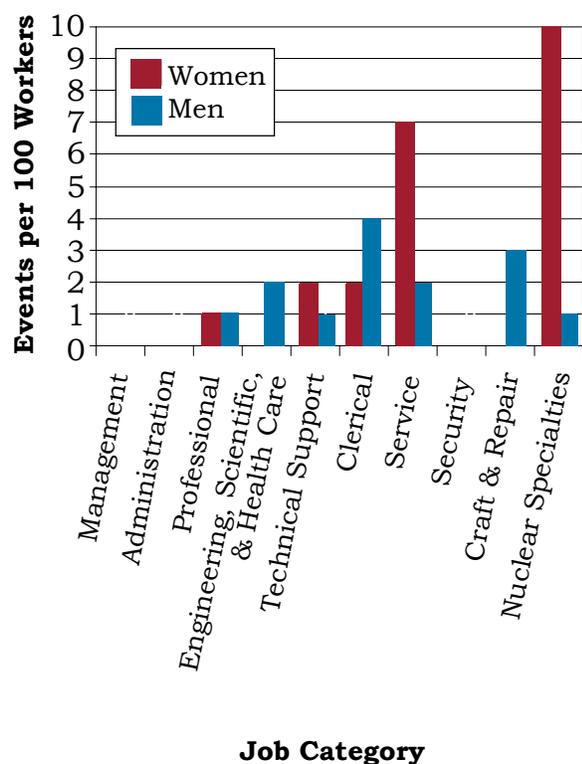
There were 17 women and 22 men with at least one OSHA-recordable event. The rate of OSHA-recordables was similar for men (2 per 100) and women (3 per 100), and was highest among men aged 16-29 (4 per 100) and women aged 30-39 (4 per 100).

The rates of OSHA-recordable events by job category and gender are shown in Figure 14. For men and women combined, the Service group had the highest rate among workers, 4 per 100. Women had a higher percentage of OSHA events compared with men among Technical Support, Service, and Nuclear Specialties categories. Among female Fernald workers, the Nuclear Specialties group had the highest rate of OSHA events, 10 per 100.

The average number of workdays lost or with restricted activity was higher for women, 30 days, than for men, 22 days. There was no apparent relationship between age and the number of lost or restricted workdays. Women aged 40-49 averaged more lost or restricted workdays compared with women of other ages, 82 days (for four OSHA events).

The highest average lost or restricted-workdays for men occurred among workers 50 or older, 48 days (for four OSHA events). The highest average lost or restricted workdays occurred among female Nuclear Specialties workers, 95 days, and men within the Engineering, Scientific, & Health Care group, 52 days. A total of 1,017 days were lost or restricted due to OSHA events in 1997.

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



Diagnostic and Accident Categories for OSHA-Recordable Events

There were 40 OSHA events recorded on the OSHA 200 Logs, 20 diagnoses among women and 23 diagnoses among men as shown in Figure 15.

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

Diagnostic Category	Gender	
	Women	Men
Muscles and Skeleton	3	1
Skin	1	0
Unspecified Symptoms	0	1
Injury	16	21
Fractures-Upper Limb	0	3
Fractures-Lower Limb	4	2
Back Sprains and Strains	4	4
Other Sprains and Strains	5	2
Open Wounds-Head, Neck, Trunk	1	0
Open Wounds-Upper Limb	1	4
Superficial Injuries	1	1
Bruises	0	2
Burns	0	1
Adverse Reactions to Non-Medical Substances	0	1
Adverse Reactions to External Causes	0	1

Injuries accounted for 80 percent of the diagnoses reported by women. The most frequently recorded OSHA injury was sprains and strains, 56 percent. Twenty-five percent of the reported injuries among women were fractures of the lower limb. Among men, injuries accounted for 91 percent of the diagnoses reported, again primarily due to sprains and strains (29 percent). Fractures (24 percent) and open wounds of the upper limb (19 percent) were also frequently reported among men.

Ninety-three percent of the 40 OSHA events were described as “an accident” in the OSHA logs and this distribution is shown in Figure 16. Sixty-five percent (11/17) of the events were described as “other accidents” among women, and 65 percent (13/20) among men. Overexertion and strenuous movements made up the majority of that category. Falls made up the second most common type of accident.

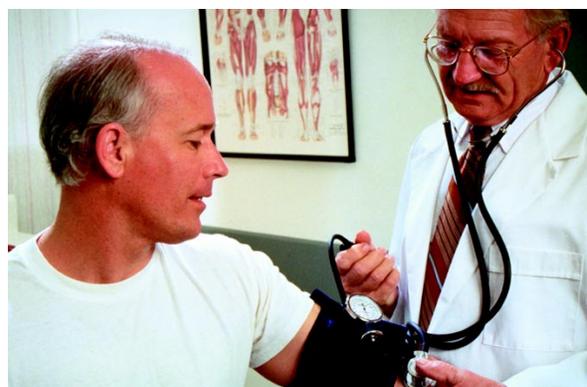
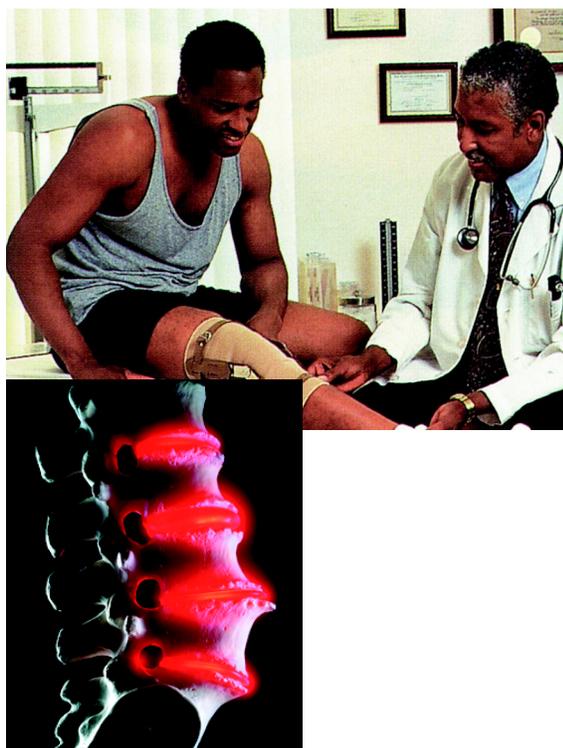


Figure 16. OSHA-Recordable Accidents by Type and Gender

Accident Category	Gender	
	Women	Men
	Number of Accidents	Number of Accidents
Motor Vehicle Traffic	1	0
Falls	5	4
Natural/Environmental Factors	0	3
Other Accidents	11	13
Caught Between Objects	0	4
Cutting/Piercing Instrument/Object	1	1
Hot, Corrosive, or Caustic Material/Steam	0	1
Overexertion and Strenuous Movements	7	5
Repetitive Trauma	1	0
Struck by an Object	2	2



Rates of OSHA-Recordable Events

The rates of all OSHA-recordable events by job category, age, and gender are shown in Figures 17 and 18. The OSHA-recordable rates among women were highest among Service/Security/Craft and Repair and Nuclear Specialties workers younger than 50 years.



OSHA rates among men were highest for Clerical and Service/Security/Craft and Repair workers younger than 50. Most of the OSHA health conditions involved injuries. When the rate for OSHA-recordable injuries was considered separately, the same job categories had the highest rates for both male and female workers. Service/Security/Craft and Repair workers accounted for 24 percent of the work force, but 43 percent of the OSHA-recordable events. Craft and Repair workers were at more than a 3 times higher risk of injury compared with other workers.

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

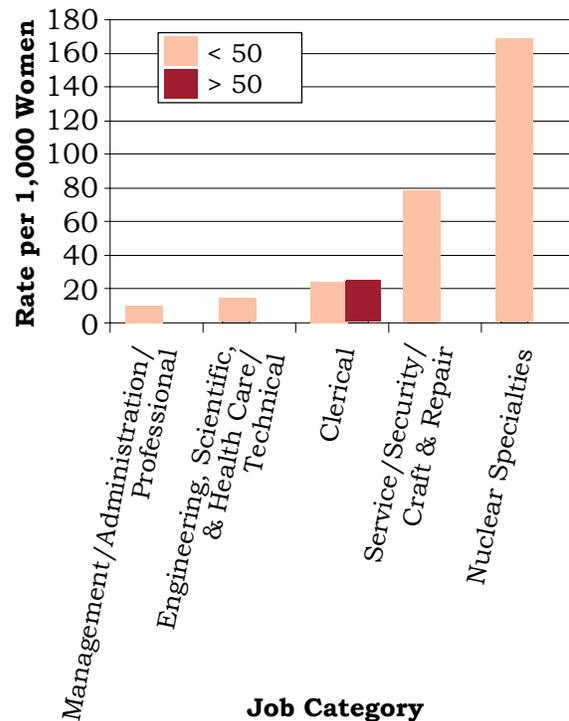
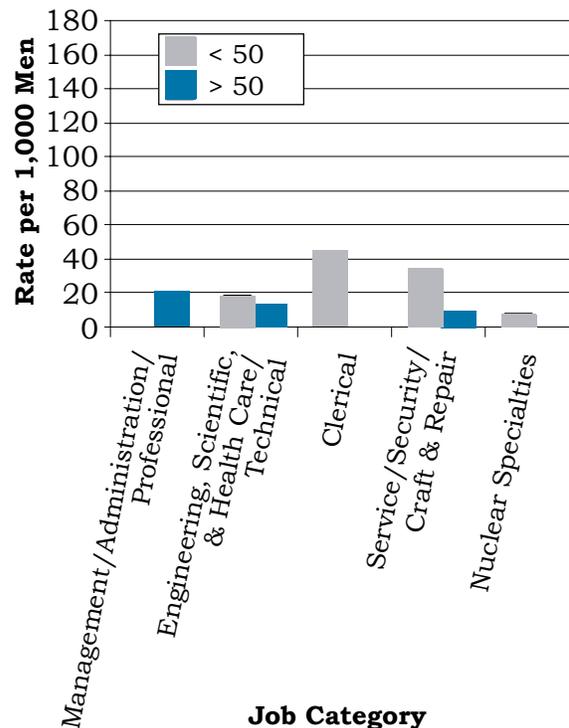


Figure 18. OSHA-Recordable Rates by Age and Job Category Among Men, All Diagnoses Combined



Time Trends for OSHA-Recordable Events

The age-adjusted rates for all OSHA-recordable diagnoses combined from 1993 to 1997 by job category and gender are shown in Figures 19 and 20. During the 5-year period, the overall rates for OSHA-recordable events among men and women did not change greatly for most of the job categories. Rates for men in the Engineering, Scientific, & Health Care group showed a gradual upward trend. There were no significant changes noted in the injury rates among OSHA-recordable events from 1993 to 1997.



Figure 19. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Women by Job Category from 1993 to 1997

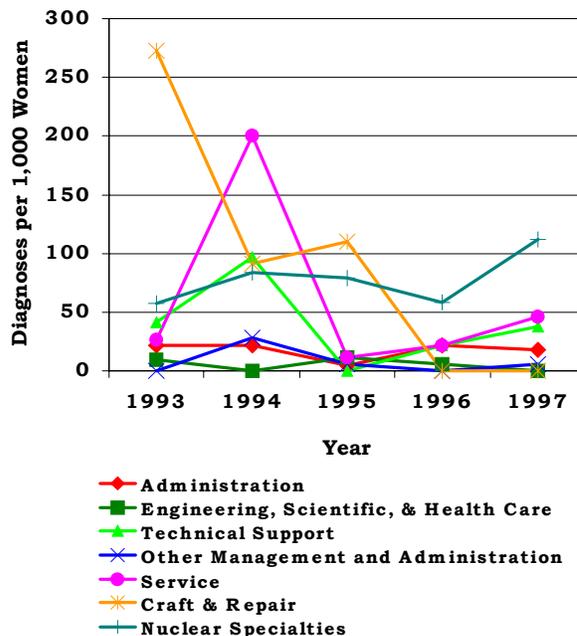
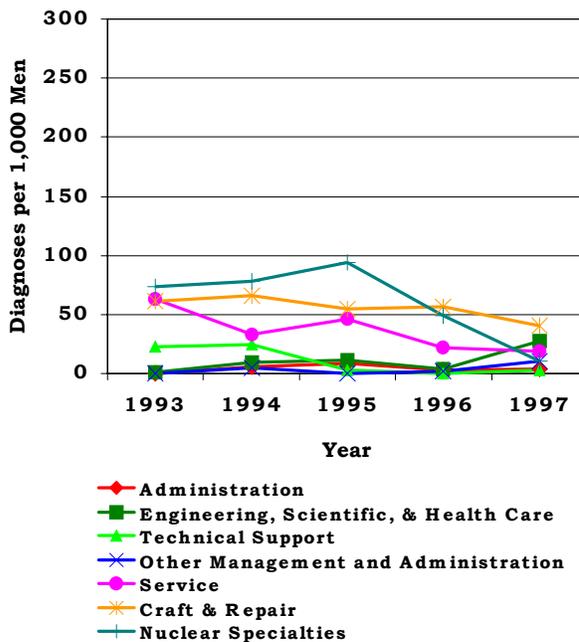


Figure 20. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Men by Job Category from 1993 to 1997



Glossary

Adjustment: A mathematical procedure for rates in which the effects of differences of a characteristic (such as age or gender) between groups have been removed. The purpose of adjustment is to allow comparisons between two or more groups with the effect of the differences for the characteristic removed.

Age-Adjusted Rate: A rate that has been mathematically adjusted to account for the effects of differences in the age composition between groups.

Age-Specific Rate: A rate that is calculated for a specific age group (e.g., 16 to 29 years old). Only people in the specific age group are included in the calculation of the rate.

Confidence Interval: A range of values determined by the degree of random variability in the data. The width of the confidence interval is affected by the size of the group being studied and how often the event whose true value is sought occurs. Generally, as the size of the group or the frequency of the event increases, the width of the confidence interval decreases. The level of confidence, for example a 95 percent confidence level, indicates the percentage (e.g., 95 percent) of time that the true value is expected to fall within the confidence interval if the mathematical procedure is repeated 100 times.

Demographics: Characteristics of human populations related to their size, density, age distribution, and vital status.

Diagnosis (diagnoses): Identification of a disease or health condition from signs and symptoms.

Diagnosis Rate: The number of occurrences of a given disease or health condition observed during a given time period per the number of workers at risk of getting that disease during that time period. It is usually multiplied by 100 or 1,000 to produce a rate expressed as a convenient number.

Diagnostic Category: A particular type of disease, a group of related health conditions, or diseases that all affect the same organ system.

Epidemiologic Surveillance: The ongoing evaluation of the health of a human population which is based on the collection and interpretation of demographic and health information for that population.

Epidemiology: The study of the distribution and determinants of diseases and health conditions in human populations.

ICD-9-CM Code: An abbreviation for the *International Classification of Diseases, 9th Revision, Clinical Modification*. An internationally accepted standardized system for the classification of disease and health data collected from medical records.

OSHA: An acronym for the Occupational Safety and Health Administration.

OSHA Event: An abbreviation used throughout this report for an OSHA-recordable event.

OSHA-Recordable Event: An accident that occurs on the job and involves fatalities (regardless of time between injury and death), time lost from work, transfer of employment, medical treatment other than first aid, loss of consciousness, or restriction of work or motion. Also included is any diagnosed occupational health event reported to the employer that is neither fatal nor results in workdays lost. By law, these events are recordable in the OSHA 200 Log.

Person-Year: A unit of measurement combining the number of people being studied with the time that each was observed equivalent to one person followed for one year. For example, 5 persons followed for one year contribute five person-years, as do 10 people each followed for half a year.

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

Explanation of Diagnostic Categories

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

Abbreviated Categories Used in the Annual Report	ICD-9-CM Codes
Benign Growths	210-229 235-239
Blood	280-289
Cancer	140-208 230-234
Digestive	520-579
Endocrine/Metabolic	240-279
Existing Birth 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

• Other diseases of the urinary system	590-599	Swelling and infection of the kidney and bladder; kidney stones; and difficulty urinating
• Diseases of the male genital organs	600-608	Enlarged prostate; swelling of the scrotum and prostate; and abscess of the prostate
• Disorders of the breast	610-611	Benign tumors, cysts, and infections of the breast
• Inflammatory disease of the female pelvic organs	614-616	Swelling of the uterus, ovary, fallopian tubes, or cervix
• Other diseases of the female genital tract	617-629	Conditions associated with menopause and postmenopause; PMS; infertility; and cramps
Complications of pregnancy, childbirth, and the puerperium	630-676	Miscarriage; complications of pregnancy, such as hemorrhage; pregnancy-related high blood pressure; preeclampsia; and premature labor or other complications of labor
• Ectopic and molar pregnancy	630-633	Development of fetus outside the uterus and growth of cysts
• Other pregnancy with abortive outcome	634-639	Miscarriage and complications associated with miscarriage
• Complications mainly related to pregnancy	640-648	Abnormal bleeding and possible miscarriage; infections; high blood pressure caused by pregnancy; and premature labor
• Normal delivery, and other indications for care in pregnancy, labor, and delivery	650-659	Delivery requiring little or no assistance; multiple births; breech birth; and problems of the fetus or placenta which affect care of mother
• Complications occurring mainly in the course of labor and delivery	660-669	Long labor; unusually fast delivery; and abnormal bleeding after delivery
• Complications of the puerperium	670-676	Infections of the breast; blood clot in lung; and varicose veins
Diseases of the skin and subcutaneous tissue	680-709	Acne, cellulitis, sunburn, psoriasis, and seborrhea

• Infections of the skin and subcutaneous tissue	680-686	Abscesses, boils, hair-containing cysts, and pus-filled blisters
• Other inflammatory conditions of skin and subcutaneous tissue	690-698	Skin rashes caused by detergents, oils, greases, solvents, sun, food, drugs, or medicine
• Other diseases of the skin and subcutaneous tissue	700-709	Corns, calluses, heat rash, swollen hair follicles, acne, and ingrown fingernails and toenails
Diseases of the musculoskeletal system and connective tissue	710-739	Arthritis, systemic lupus erythematosus, ankylosing spondylitis, herniated intervertebral disc (“slipped disc”), lumbago, sciatica, rheumatism, tendonitis, and osteoporosis
• Arthropathies and related disorders	710-719	Arthritis; joint pain and stiffness; and other diseases of the connective tissue which supports and connects internal organs, forms bones and blood vessel walls, and attaches to bones
• Dorsopathies	720-724	Swelling of the spine; herniated, slipped, and ruptured disc; rheumatoid arthritis of the spine; lumbago; and sciatica
• Rheumatism, excluding the back	725-729	Swelling and degeneration of joints, muscles, tendons; tennis elbow; and bursitis
• Osteopathies, chondropathies, and acquired musculoskeletal deformities	730-739	Fracture caused by bone disease; osteoporosis; curvature of the spine; flat foot; hammer toe; and development of deformities of the nose, toes, feet, legs, arms, and hands
Congenital anomalies	740-759	Spina bifida; cleft palate; harelip; and various chromosomal anomalies, such as Klinefelter’s syndrome
Certain conditions originating in the perinatal period	760-779	Maternal high blood pressure; maternal malnutrition; ectopic pregnancy; breech birth; fetal malnutrition or slow growth; injuries related to birth trauma; and perinatal jaundice

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

- Other injuries and late effects of external causes

900-999 Miscellaneous injuries, including injuries to the arteries and veins; problems that occur an extended period of time after the injury has taken place ("late effects"); superficial bruises and abrasions; burns; post-injury shock; poisoning; toxic side effects of chemicals; heatstroke; electrocution; and altitude sickness

Supplementary classifications related to personal or family history of disease

V10-V19 Covers situations in which the person is not ill or injured but has a personal or family history of problems, such as cancer, mental illness, allergies, or arthritis that may affect his or her risk of illness

Supplementary classifications related to health care for reproduction and child development

V20-V28 Problems related to pregnancy, postpartum care, contraception, outcome of delivery, and physical development of child

Contact with health services for reasons other than illness or injury

V50-V59 Care for workers who have been treated previously for an illness or injury that is no longer present but who receive care to complete treatment or prevent recurrence

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