

1999 Pantex Plant Annual Epidemiologic Surveillance Report

PANTEX 1999
Epidemiologic Surveillance Report

Questions or comments about this report or the Epidemiologic Surveillance Program may be directed to:

Dr. Cliff Strader at **cliff.strader@eh.doe.gov**
or Dr. Bonnie Richter at **bonnie.richter@eh.doe.gov**
United States Department of Energy
Office of Health Studies
Mail Stop: 270CC/EH-6
19901 Germantown Road
Germantown, MD 20874-1290

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

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PANTEX 1999

At a Glance

Male workers lost 2,205 calendar days of work due to illness and injury in 1999. The leading causes of absence were due to muscles and skeleton conditions (20 percent), injuries (17 percent), and respiratory conditions (13 percent).

Female workers lost 1,279 calendar days of work due to respiratory disorders (20 percent), muscles and skeleton conditions (19 percent), and genitourinary conditions (14 percent).

The decline in the rates of illness and injury between 1996 and 1998 tapered off in 1999. Part of that decline was due to changes in health insurance companies during that time period.

The risk of injury and illness was highest among men in the Nuclear Specialties/Production Technicians/Material Handlers group and men in the Service/Security/Crafts & Repair/Fire Department group. Among women, the highest risk of illness and injury was among the Service/Security/Craft & Repair/Fire Department group.

Injuries were the most common OSHA-recordable diagnoses (directly attributable to work) among men and women. The highest rates were among the same worker groups noted above.

Introduction	1	Most Frequently Reported Diagnoses by Job Category and Gender	8
Site Overview	2		
The Pantex Work Force - 1999	3	Rates of Disease Occurrence	9
The Work Force by Gender and Age.....	3	Illness and Injury Rates by Job Category, Gender, and Age	10
The Work Force by Job Category and Gender.....	3	Time Trends	12
Number and Length of Absences	4	Age-Adjusted Rates for Selected Diagnostic Categories for Women and Men from 1994 to 1999.....	13
Absence Rate by Gender and Age.....	4	Age-Adjusted Rates for All Diagnoses Combined Among Women and Men by Job Category from 1994 to 1999.....	14
Number of Days Absent by Gender and Age.....	5	Sentinel Health Events for Occupations	15
Absence Rate by Job Category and Gender.....	5	Characteristics of SHEOs by Gender.....	15
Average Duration of Absence by Job Category and Gender	6	Disabilities Among Active Workers	16
Diagnostic Categories	6	Deaths Among Active Workers	16
Number of Diagnoses and Lost Calendar Days by Diagnostic Category (Categorized by ICD-9-CM) and Gender	7		

OSHA-Recordable Events	16	Age-Adjusted Rates for All OSHA-Recordable Diagnoses Among Women by Job Category from 1994 to 1999.....	19
OSHA-Recordable Events by Gender and Age.....	16		
OSHA-Recordable Events by Job Category and Gender	17	Age-Adjusted Rates for All OSHA-Recordable Diagnoses Among Men by Job Category from 1994 to 1999.....	19
Diagnostic and Accident Categories for OSHA- Recordable Events	17	Glossary	20
OSHA-Recordable Diagnoses by Diagnostic Category and Gender	17	Explanation of Diagnostic Categories	21
OSHA-Recordable Accidents by Type and Gender	18	ICD-9-CM Codes	22
Rates of OSHA- Recordable Events	18		
OSHA-Recordable Rates by Age and Job Categories Among Women	18		
OSHA-Recordable Rates by Age and Job Categories Among Men.....	19		
Time Trends for OSHA- Recordable Events	19		

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

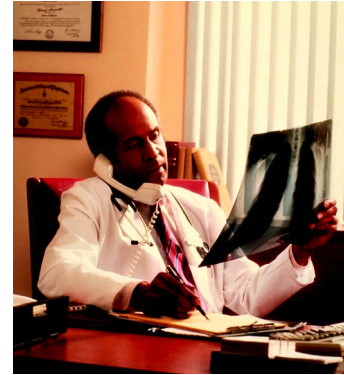


conditions that result in an absence of 5 or more consecutive workdays, occupational injuries and illnesses, and disabilities and deaths among current workers.

Epidemiologic surveillance has been ongoing at Pantex since 1994. This report provides a summary of epidemiologic surveillance data collected from the Pantex Plant from January 1, 1999 through December 31, 1999. The data were collected by a coordinator at Pantex 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 Studies.

The information presented in this report provides highlights of the data analyses conducted on the 1999 data collected from Pantex. Earlier surveillance reports and additional supporting tables are posted on the Office of Health 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. The 1999 report includes sections on time trends that provide comparative information on the health of the work force from 1994 to 1999.



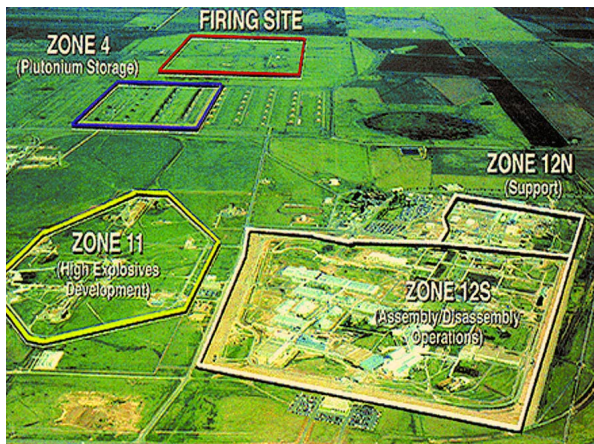
Note: In the figures and calculations that follow, percentages have been rounded to the nearest whole number.

DOE sites vary by mission, function, job classification, and worker exposures. Therefore, comparisons of Pantex with other DOE sites should be made with caution. In addition, many factors can affect the completeness and accuracy of health information reported at the sites, thereby affecting the observed patterns of illness and injury.



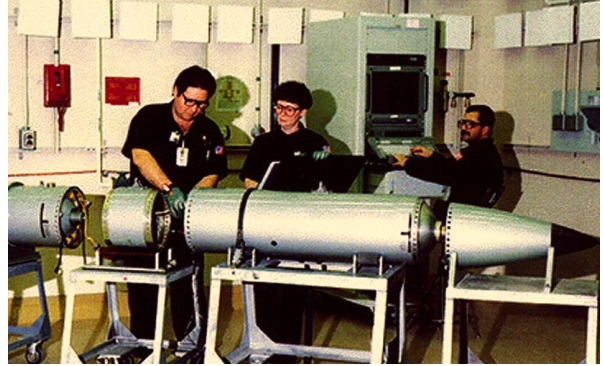
Site Overview

The Pantex Plant, located on the Texas Panhandle 17 miles northeast of Amarillo, was constructed in 1942 to serve as a conventional bomb plant for the U.S. Army. The plant was deactivated when World War II ended and remained vacant until 1949 when Texas Technological University purchased the site for \$1 for experimental cattle-feeding operations. The land was sold subject to recall under the National Security Clause, and the Atomic Energy Commission requested the Army to reclaim and reopen the site in 1951 in order to expand nuclear weapons assembly facilities. By 1975, the Pantex Plant became the only nuclear weapons assembly and



disassembly plant in the U.S. With the downsizing of the DOE complex, the site assumed new responsibilities. Interim storage of plutonium pits was transferred to the plant in 1989 when a plutonium processing center was deactivated. With the easing of political tensions between the United States and the former Soviet Union in the 1990s, efforts began to reduce nuclear stockpiles. The disassembly of nuclear weapons at the Pantex Plant became a vital part of this operation.

Currently, the Pantex Plant has five primary operational missions: weapons assembly, weapons disassembly, evaluation of weapons, high explosive research



and development, and interim plutonium pit storage. The *Final Environmental Impact Statement for the Continued Operations of the Pantex Plant and Associated Storage of Nuclear Weapons Components* was approved in January 1997 by the Secretary of Energy Hazel O'Leary. The Environmental Impact Statement authorized the Pantex Plant to maintain the plant's current dismantlement mission and increase onsite interim storage of plutonium components. It is anticipated that the plant will downsize as weapons dismantlement work decreases over the next 10 years.



The current contractor, Mason and Hanger, took over the management and operating functions on October 1, 1956.

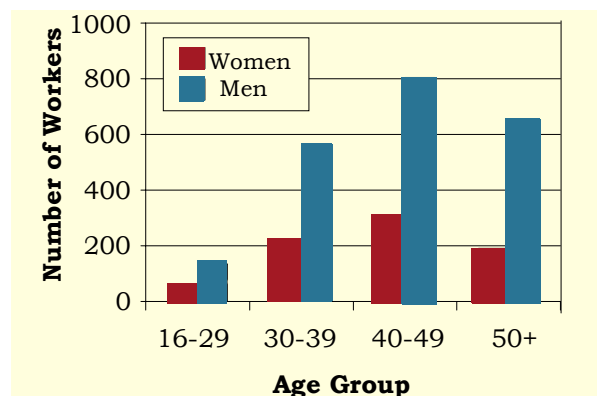
The Pantex Work Force - 1999

A total of 2,913 Pantex employees were included in epidemiologic surveillance in 1999, 21 fewer workers than were present in 1998. The gender and age distribution of the 1999 work force is shown in Figure 1. There were 771



(26 percent) women and 2,142 (74 percent) men in the work force. The average age of male Pantex workers was 44 years of age and 43 years for females.

Figure 1. The Work Force by Gender and Age



The majority of the workers was White (80 percent). Hispanics comprised 12 percent and African Americans about 6 percent of the work force; Asians and Native Americans made up the remaining 2 percent.

The distribution of workers by job category and gender is shown in Figure 2. Individual job titles, as reported by Pantex, were grouped together into 11 job categories because there were either too few workers or health events within a particular job title that limited the

analyses that could be conducted. Two new job title categories were defined in the 1998 report; Heavy Computer User and workers assigned to the Fire Department. A Heavy Computer User is defined as a worker who types 8 hours or more per day. Men and women were not distributed equally among the various job categories. Over half of the women were in the Office Management and Administration group, while less than one-fourth of the men were part of this job category. Forty-seven percent of the men were Security, Technical Support, or Engineering, Scientific, and Health Care workers. Seventeen temporary workers (summer students, fellowships) were excluded from the 1999 report analyses. These workers reported no absences or OSHA events.

Figure 2. The Work Force by Job Category and Gender

Job Category	Women	Men
Office Management & Administration	411 53%	467 22%
Engineering, Scientific, & Health Care	53 7%	281 13%
Technical Support	106 14%	339 16%
Heavy Computer Users	35 4%	46 2%
Service	24 3%	24 1%
Security	50 6%	379 18%
Craft & Repair	6 1%	247 11%
Fire Department	5 1%	37 2%
Nuclear Specialties	15 2%	25 1%
Production Technicians	44 6%	208 10%
Material Handlers	22 3%	89 4%

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 also 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.

Certain types of health events resulting in an absence of 5 or more consecutive workdays were excluded from the analyses. These include eight absences due to maternity leave and reported absences due to elective surgical procedures not related to the treatment of an illness or injury by one man.

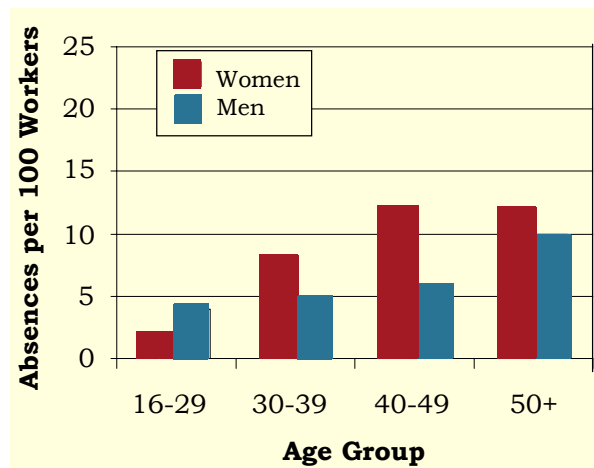
Throughout this report, analyses take gender, age, and occupation into account because the risk of illness and injury varies by these factors.

The rate of 5-day absences due to injury or illness varied by gender and age as shown in Figure 3. There were 79 5-day absences among 771 women

resulting in an absence rate of 10 per 100 workers (79/771). There were 146 absences among 2,142 men resulting in an absence rate of 7 per 100 workers (146/2,142). The rate of 5-day absences among men increased with age. Among women, the absence rate peaked in the 40-49 year age group. Less than 1 percent of men and women reported more than one 5-day absence in 1999.

The 43 percent decline in the number of absences reported between 1997 (391) and 1998 (223) did not continue in 1999. The 225 absences reported in 1999 is similar to the number reported in 1998.

Figure 3. Absence Rate by Gender and Age



The average length of absence by gender and age is shown in Figure 4. The average length of absence was 15 days for men and 16 days for women. The average duration of absence was not related to age among men or women.

The rate of 5-day absences due to illness or injury varied by job category for men and women as shown in Figure 5. The absence rate was generally higher among women than men within the same job category. Among men, Craft and Repair workers had the highest absence rate, 12 per 100 (29/247), while the 37 workers in the Fire Department reported no absences.

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	1	10	10
	30 - 39	18	359	20
	40 - 49	37	541	15
	50 +	23	369	16
	Total	79	1,279	16
Men	16 - 29	5	39	8
	30 - 39	29	376	13
	40 - 49	45	871	19
	50 +	67	919	14
	Total	146	2,205	15

Among women, Technical Support workers had the highest absence rate, 15 per 100 workers (16/106). Female Heavy Computer Users, Craft and Repair, and Fire Department workers had no 5-day absences in 1999. The women in the Craft and Repair group have not reported any 5-day absences since 1996, however, there are few female workers in that category.

The average duration of absence by job category and gender is shown in Figure 6. There was no consistent pattern for average absence duration among

men and women within a job category. The Technical Support group had the longest average length of absence, 19 days, among men. Male Nuclear Specialties workers with one absence reported had the shortest average absence duration (7 days). Among female workers, Nuclear Specialties workers had the longest average absence, 88 days; however, only one absence was reported in this group. Female Production Technicians (21 days) and Engineering, Scientific, and Health Care workers (21 days) had the next longest absence duration. Women in Technical Support (13 days) and Office Management and Administration (14 days) groups averaged the shortest absences.

Figure 5. Absence Rate by Job Category and Gender

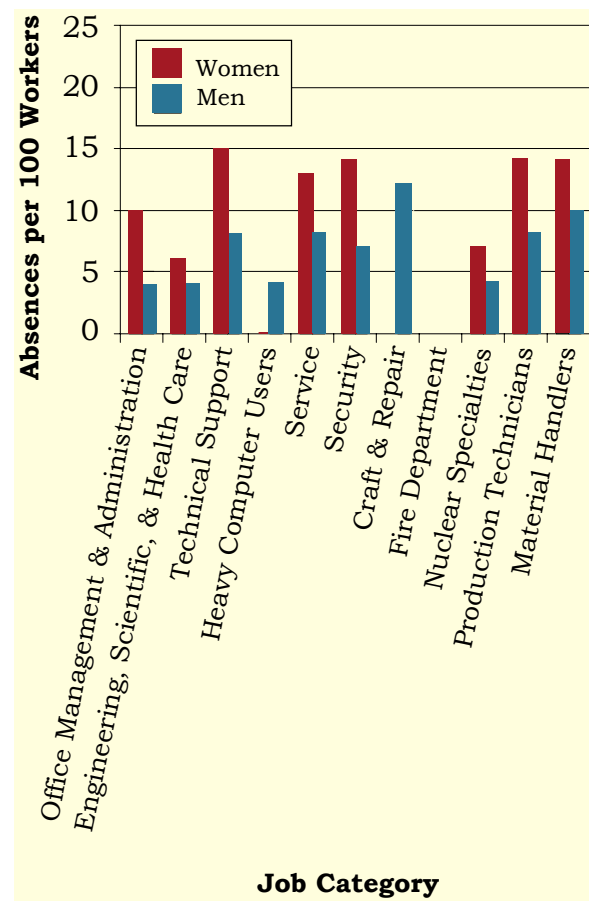
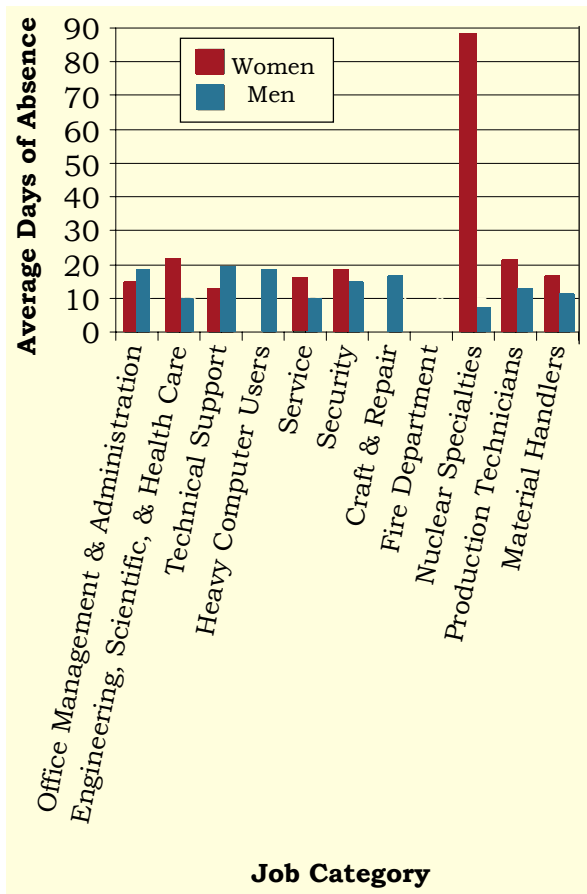


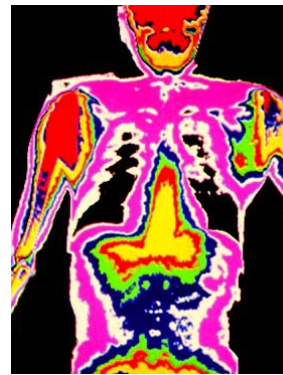
Figure 6. Average Duration of Absence by Job Category and Gender



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 at the back of this report.

The number of reported diagnoses categorized

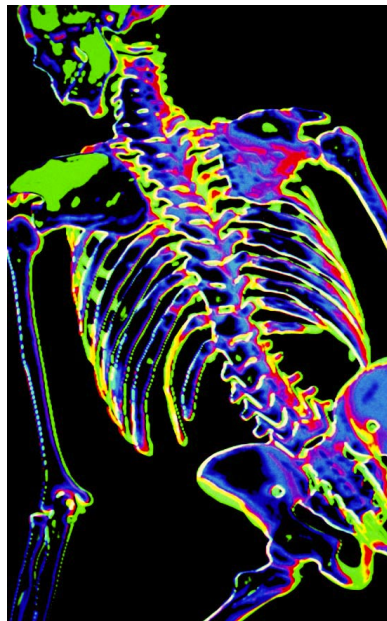
according to the ICD-9-CM and number of lost calendar days are presented in Figure 7. Please note that the number of lost calendar days for each absence are counted more than once when multiple diagnoses occur in different diagnostic categories for the same absence. There were 114 diagnoses reported by female workers and 202 diagnoses reported by male Pantex workers in 1999. The most frequently reported diagnoses varied slightly by gender.

Female employees lost a total of 1,279 calendar days due to injury and illness. Among women, respiratory conditions (20 percent), muscles and skeleton conditions (19 percent), and genitourinary diseases (14 percent) accounted for 53 percent of all reported diagnoses. The majority of the respiratory conditions were due to acute respiratory infections (52 percent), followed by bronchitis (26 percent) and flu and pneumonia (22 percent). Rheumatism made up 55 percent of muscles and skeleton conditions, followed by arthritis (23 percent) and disk injuries and back problems (18 percent). Eighty-eight percent of the genitourinary conditions were related to female reproductive disorders.

Men lost 2,205 workdays due to injury and illness. Among male workers, 50 percent of all reported diagnoses were



due to muscles and skeleton conditions (20 percent), injuries (17 percent), and respiratory conditions (13 per-



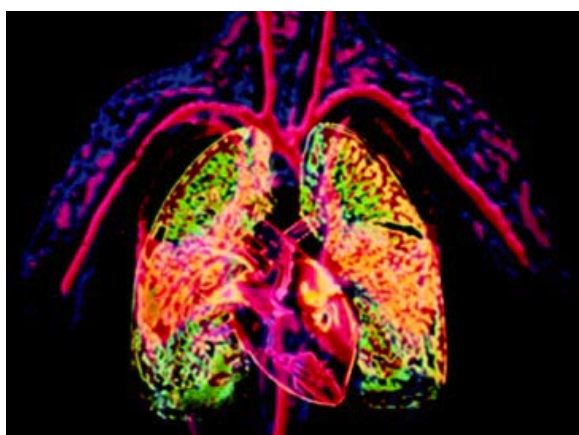
cent). A closer look at diagnoses affecting the muscles and skeleton showed that about 45 percent were disc disorders and back problems, 30 percent were arthritis, and 18 percent were rheumatism. Frequently reported injuries were sprains and strains (50 percent), fractures (15 percent), and dislocations (9 percent). The most commonly reported respiratory condition was acute respiratory conditions (44 percent), followed by bronchitis (37 percent).

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	3	54	5	65
Blood	1	11	0	0
Cancer	0	0	6	68
Digestive	13	150	18	219
Endocrine / Metabolic	1	11	4	55
Existing Birth Condition	0	0	0	0
Genitourinary	16	203	9	120
Heart / Circulatory	5	96	20	410
Infections / Parasites	5	39	7	131
Injury	12	178	34	457
Miscarriage	0	0	NA	NA
Muscles and Skeleton	22	384	40	695
Nervous System	4	92	8	94
Psychological	0	0	7	37
Respiratory	23	216	27	205
Skin	1	11	1	9
Unspecified Symptoms	8	51	16	166

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

The above diagnoses did not vary much by age for men or women. Respiratory conditions, diagnoses affecting the muscles and skeleton, and disorders of the digestive system were among the more frequently reported conditions for men and women. Among male workers 50 years and older, conditions of the heart/circulatory system were among the most frequently reported diagnoses. Nine men in this age group reported 12 diagnoses, all for hypertension and ischemic heart disease (restricted blood



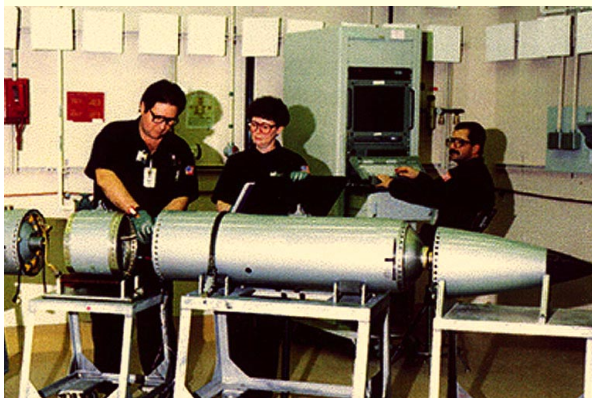
flow to an artery). Among female workers 30 to 49 years old, genitourinary conditions were commonly reported.

Figure 8 shows the frequency of reported diagnoses by job category for men and women. The types of diagnoses did not vary significantly by job category. Among women, muscles and skeleton conditions, respiratory diagnoses, injuries, and genitourinary disorders were common. Among men, muscles and skeleton conditions, injuries, respiratory diagnoses, and heart/circulatory conditions frequently appeared in most occupational groups. Psychological conditions were most frequently reported among men in the Security group. Six diagnoses were reported by two men; five diagnoses were related to stress, anxiety, and depression and one to substance abuse.

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

Job Category	Men	Women
Office Management & Administration	Muscles and Skeleton (10) Heart/Circulatory (4) Unspecified Symptoms (4) Injury (3) Respiratory (3)	Muscles and Skeleton (11) Respiratory (10) Genitourinary (6) Digestive (5) Injury (5)
Engineering, Scientific, & Health Care	Muscles and Skeleton (5) Cancer (2) Digestive (2) Genitourinary (2) Injury (2)	Heart/Circulatory (2) Muscles and Skeleton (2)
Technical Support	Muscles and Skeleton (8) Respiratory (7) Injury (5) Heart/Circulatory (4)	Genitourinary (7) Respiratory (6) Digestive (4) Unspecified Symptoms (4)
Heavy Computer Users	Digestive (1) Nervous System (1)	None
Service	Injury (2) Respiratory (1)	Digestive (2) Respiratory (2) Heart/Circulatory (1) Muscles and Skeleton (1)
Security	Muscles and Skeleton (6) Psychological (6) Respiratory (5)	Injury (3) Benign Growths (2) Genitourinary (2) Respiratory (2)
Craft & Repair	Injury (9) Heart/Circulatory (6) Muscles and Skeleton (6) Respiratory (5)	None
Fire Department	None	None
Nuclear Specialties	Benign Growths (1)	Muscles and Skeleton (1)
Production Technicians	Injury (5) Heart/Circulatory (4) Respiratory (4) Unspecified Symptoms (4)	Muscles and Skeleton (4) Injury (3) Respiratory (3)
Material Handlers	Injury (4) Heart/Circulatory (2) Muscles and Skeleton (2) Respiratory (2)	Digestive (1) Genitourinary (1) Injury (1)

Note: Numbers in parentheses represent the 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 40 and women reported 22 diagnoses involving muscles and skeleton conditions during 1999. Men, therefore, reported almost twice as many muscles and skeleton problems as women. As there are more than 2 1/2 times as many men than women at Pantex, it seems reasonable to expect more muscles and skeleton diagnoses among men than women. Does this mean that men were at greater risk of muscles and skeleton disorders compared with women in 1999? To correctly answer that 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 rate of muscles and skeleton diagnoses for each gender. Rates are calculated by dividing the number of muscle and skeletal 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:

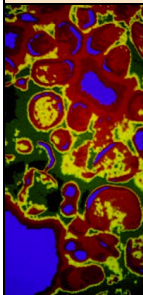
$$\begin{aligned} 40 \text{ muscles and skeleton diagnoses} \\ \div 2,142 \text{ men} &= .019 \times 1,000 = \\ 19 \text{ muscles and skeleton diagnoses} \\ \text{per 1,000 men} \end{aligned}$$

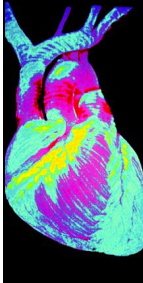
$$\begin{aligned} 22 \text{ muscles and skeleton diagnoses} \\ \div 771 \text{ women} &= .029 \times 1,000 = \\ 29 \text{ muscles and skeleton diagnoses} \\ \text{per 1,000 women} \end{aligned}$$

Comparing these rates now correctly suggests that the rate of reported muscles and skeleton conditions among women is over 50 percent 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 for epidemiologic surveillance.

In the following set of analyses, the four age groups previously used were collapsed into two groups; workers less than 50 years of age and those 50 or older. In addition, the 11 job categories were combined into 4 larger groups. 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 injuries.

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Office Management & Administration/Heavy Computer Users	<50	0	0
		50+	0	0
	Engineering, Scientific, & Health Care/Technical Support	<50	0	0
		50+	20	0
	Service/Security/Craft & Repair/Fire Department	<50	2	0
		50+	6	0
	Nuclear Specialties/Production Technicians/Material Handlers	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Office Management & Administration/Heavy Computer Users	<50	6	3
		50+	11	0
	Engineering, Scientific, & Health Care/Technical Support	<50	7	0
		50+	5	69
	Service/Security/Craft & Repair/Fire Department	<50	4	14
		50+	24	0
	Nuclear Specialties/Production Technicians/Material Handlers	<50	4	0
		50+	52	56

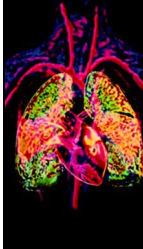
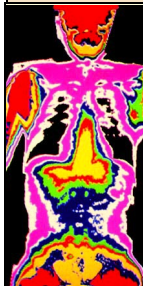
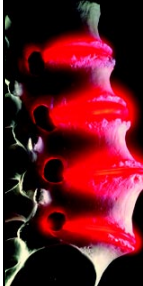
Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Office Management & Administration/Heavy Computer Users	<50	0	22
		50+	16	23
	Engineering, Scientific, & Health Care/Technical Support	<50	17	23
		50+	0	103
	Service/Security/Craft & Repair/Fire Department	<50	12	57
		50+	30	0
	Nuclear Specialties/Production Technicians/Material Handlers	<50	18	16
		50+	21	111

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

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Office Management & Administration/Heavy Computer Users	<50	34	101
		50+	114	146
	Engineering, Scientific, & Health Care/Technical Support	<50	73	162
		50+	117	310
	Service/Security/Craft & Repair/Fire Department	<50	98	214
		50+	169	200
	Nuclear Specialties/Production Technicians/Material Handlers	<50	84	190
		50+	186	167

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Men	Women
	Office Management & Administration/Heavy Computer Users	<50	6	6
		50+	5	23
	Engineering, Scientific, & Health Care/Technical Support	<50	9	0
		50+	15	0
	Service/Security/Craft & Repair/Fire Department	<50	27	43
		50+	6	0
	Nuclear Specialties/Production Technicians/Material Handlers	<50	27	63
		50+	31	0

The rates for all illnesses and injuries combined were higher for male Pantex workers aged 50 and older compared with males younger than 50. Among females, rates were not related to the workers' age. With one exception, women had higher rates than men in all age groups and job categories. The highest rates for men were workers classified as Service/Security/Craft and Repair/Fire Department and Nuclear Specialties/Production Technicians/Material Handlers. Among women, the lowest rates were among Office Management and Administration/Heavy Computer Users workers.

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

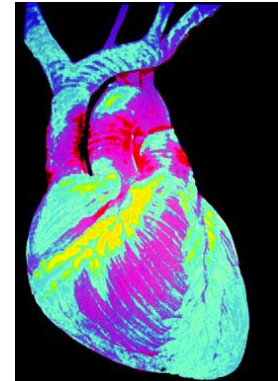


The likelihood that an individual in

the U.S. develops cancer increases with age. Our data reflect this observation for men; cancer rates in all occupational categories were highest among older workers. Four men reported six 5-day absences due to cancer; two men reported one absence and two men reported two absences each. Each man reported only one type of cancer: cancers of the thymus, rectum, prostate, and skin. None of the men had reported cancer prior to 1999. No women reported cancer in 1999.

Among men, workers aged 50 or more generally had the highest rates of heart/circulatory

problems. Men categorized as Nuclear Specialties/Production Technicians/Material Handlers had the highest rate of heart/circulatory disorders. Men in this job category also had the highest rates in 1998. Nine of the 16 men reporting heart/circulatory disorders were aged 50 and older; all 12 of the diagnoses among these older workers involved hypertension or ischemic heart disease (restricted blood flow through an artery). There were 5 diagnoses for heart/circulatory problems among women; 2 for ischemic heart disease, 2 for abnormal heart beat, and 1 for disease of the sac surrounding the heart.



Generally, workers aged 50 and older reported higher rates of respiratory disease. Exceptions were women under 50 in the Service/Security/Craft and Repair/Fire Department category and men under 50 in the Engineering, Scientific, and Health Care/Technical Support category. Women 50 years and older in

the Nuclear Specialties/Production Technicians/Material Handlers group had the highest rates, 111 per 1,000. Service/Security/Craft and Repair/Fire



Department workers had the highest rates, 30 per 1,000, among male workers. Service workers had almost 4 times the risk of respiratory disease compared to workers in other job categories.

There was no consistent pattern with age and the rate of injury diagnoses among men or women. The highest rates of injury for men and women were in the Nuclear Specialties/Production Technicians/Material Handlers category.

In a different set of analyses, the risk of illness and injury among workers classified in 1 job category was compared with the risk to workers in the other 10 job categories. The risk of reporting a diagnosis for a genitourinary disorder was 3 times greater among Technical Support workers compared to workers in other job categories. Six of the seven absences reported by these workers were for disorders of the reproductive organs.



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 different groups of different ages. Age-adjusted rates are calculated using the age distribution of the 1970 U.S. population as a reference.

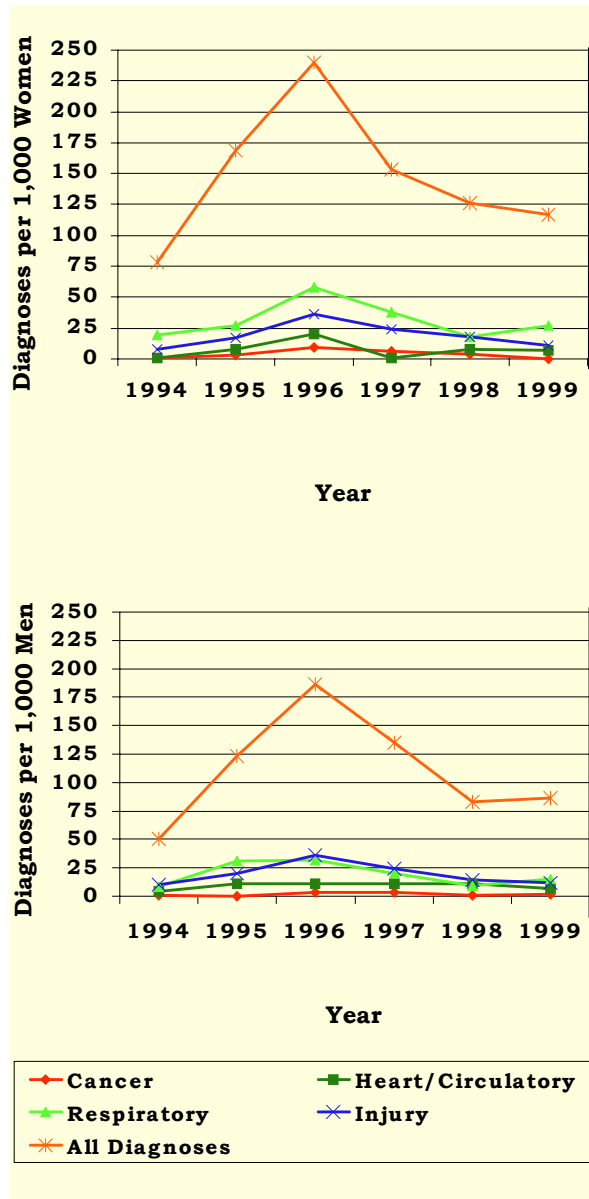
Age-adjusted rates for selected diagnosis categories from 1994 to 1999 are presented in Figure 10. It is important to note that the age-adjusted rates for the year 1994 presented in this report differ from the *1994 Annual Epidemiologic Surveillance Report* due to the elimination of health conditions resulting from maternity leave.

The decline in absences that began in 1997 and persisted into 1998 did not continue into 1999. The underreporting of 5-day absences that began in 1997 and continued into 1998 was the result of a change in health insurance companies and its impact seems to have leveled off in 1999.

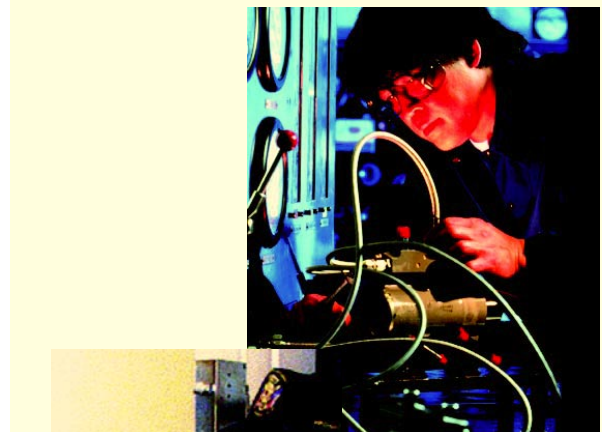
The decrease in age-adjusted rates for all illness and injury categories was also noted for injuri. The decline in the injury rates, according to Pantex health personnel, may be due to an increased focus on safety at Pantex. The rates for

heart/circulatory conditions and cancer among men and women have remained low from 1994 to 1999.

Figure 10. Age-Adjusted Rates for Selected Diagnostic Categories for Women and Men from 1994 to 1999

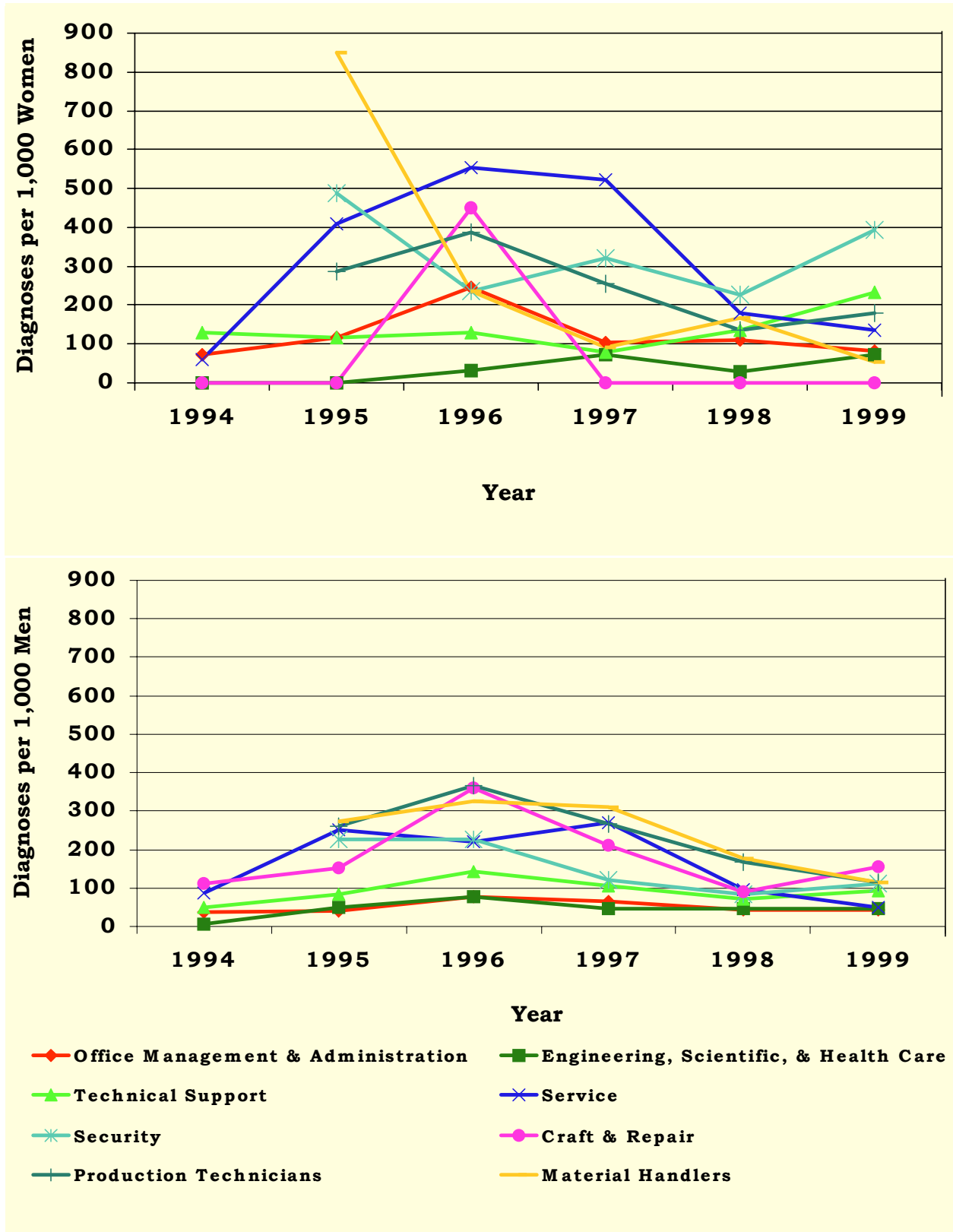


The rates for men in most job categories peaked in 1996 and have declined steadily since. Exceptions are the Technical Support, Security, and Craft and Repair workers where the rates in 1999 increased after a steady decline in rates since 1996. There is no consistent decline in the rates across the job categories among women; however, women in most job categories reported few diagnoses in 1999. With the exception of the Office Management and Administration and Technical Support groups, there were 12 or fewer diagnoses reported by women within a job category.



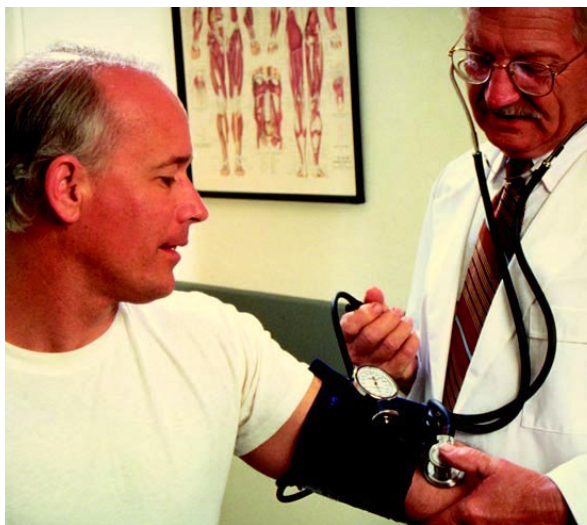
The age-adjusted rates of illness and injury by job category for the past 6 years are shown in Figure 11. The Heavy Computer Users and Fire Department groups do not appear in this figure because they were added in 1998.

Figure 11. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men by Job Category from 1994 to 1999



Sentinel Health Events for Occupations

A sentinel health event for occupation (SHEO) is a disease, disability, or death that is likely to be occupationally related. Its occurrence may serve as a warning signal that materials substitution, engineering control, personal protection, or medical care may be required to reduce the risk of injury or illness among the work force. Sixty-four medical conditions associated with workplace exposures from studies of many different industries have been identified as sentinel health events (refer to the supporting tables).



Although sentinel health events may indicate an occupational exposure, many may result from 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.

No definite sentinel health events were identified among Pantex workers in 1999. Four of 316 diagnoses (1 percent) were identified as possible sentinel health events (Figure 12). All of the possible sentinel health events were identified as carpal tunnel syndrome, reported by four workers (two women and two men), resulting in 102 lost calendar days. The two women were in the Office Management and Administration job category. One man was a Technical Support worker and the other was classified as a Heavy Computer User.

Figure 12. Characteristics of SHEOs by Gender

	Total Number of SHEO Diagnoses		Total Number of Days Absent	
	Men	Women	Men	Women
Definite	0	0	0	0
Possible	2	2	34	68
Total	2	2	34	68

Disabilities Among Active Workers

None were reported in 1999.

Deaths Among Active Workers

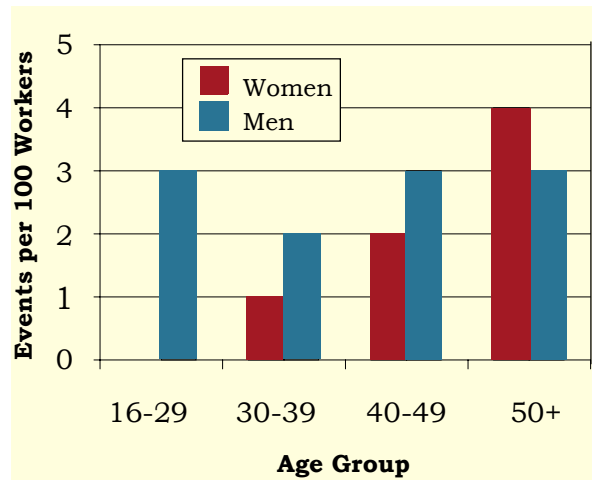
During 1999, three deaths occurred among Pantex workers (one woman and two men). The deaths were due to lung cancer, heart disease, and a respiratory disorder.

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 on request. Employers maintain the information from these OSHA-recordable events in the OSHA 200 Log. OSHA-recordable events differ from health events captured through return-to-work clearances in at least two important respects: 1) they do not necessarily result in days lost from work, and 2) they are usually accompanied by a specific determination that they are work-related.

The distribution of OSHA events by gender and age is shown in Figure 13. There were 16 OSHA-recordable events among women and 55 OSHA-recordable events among men. The rate of OSHA-recordable events was similar for men (3 per 100 workers) and women (2 per 100 workers). There was no apparent relationship between age and the number of lost or restricted workdays among women. Among men, lost and restricted workdays increased with age among workers aged 30 and over.

Figure 13. OSHA-Recordable Events by Gender and Age



The rate of OSHA-recordable events by job category and gender is shown in Figure 14. Women in the Office Management and Administration and Production Technicians job categories had higher rates of OSHA-recordable events compared with men. Among female workers, the Production Technicians group had the highest rate of OSHA events (5 per 100 workers). Material Handlers had the highest rate of OSHA events among men (6 per 100).

The average number of workdays lost or with restricted activity due to an OSHA event was 79 percent higher for women (43 days) than for men (24 days). Among all workers, Service workers and Production Technicians had the highest average number of lost and restricted workdays (50 days). In the Service group, one man aged 30-39, reported 10 lost workdays and 40 restricted workdays due to a back sprain/strain. The highest average number among women occurred in the Office Management and Administration category (50 days); Production Technicians had the highest average number among men (60 days).

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

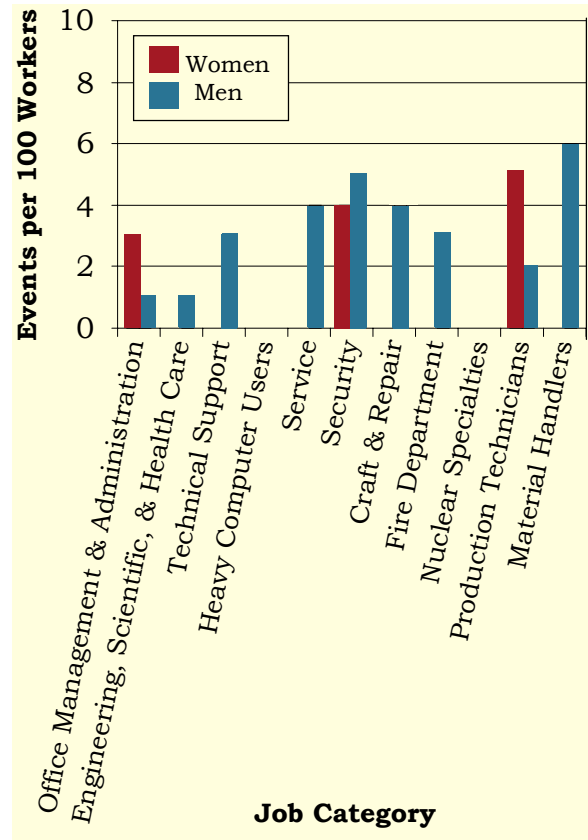


Figure 15. OSHA-Recordable Diagnoses by Diagnostic Category and Gender

Diagnostic Category	Gender	
	Women	Men
Digestive	0	1
Muscles & Skeleton	4	8
Nervous System	4	1
Respiratory	0	1
Skin	0	1
Injury	10	49
Fractures - Skull	0	1
Fractures - Upper Limb	0	1
Fractures - Lower Limb	1	2
Dislocations	0	2
Back Sprains & Strains	2	8
Other Sprains & Strains	2	10
Open Wounds - Head, Neck, Trunk	0	4
Open Wounds - Upper Limb	1	8
Superficial Injuries	1	1
Bruises	2	10
Burns	0	1
Unspecified Injuries	1	1

Diagnostic and Accident Categories for OSHA-Recordable Events

Seventy-one OSHA events were recorded on the OSHA 200 Logs, with 18 diagnoses among women and 61 diagnoses among men as shown in Figure 15. Injuries accounted for 56 percent of the diagnoses reported by women, the most common (40 percent) being sprains and strains. Twenty percent of the reported injuries among women were bruises. Among men, injuries accounted for 80 percent of the diagnoses reported, again primarily sprains and strains (37 percent). Open wounds (24 percent) and bruises (20 percent) were frequently reported OSHA-recordable events among men.

One of the 71 OSHA events was described as “an accident” in the OSHA logs (Figure 16). This accident was reported by a male Craft and Repair worker, aged 50+, and involved accidental poisoning by a gas/vapor. The worker suffered bronchitis/pneumonitis, resulting in 1 restricted workday.

Figure 16. OSHA-Recordable Accidents by Type and Gender

Accident Category	Gender	
	Women	Men
	Number of Accidents	Number of Accidents
Poisoning - Non-Medicinal	0	1

Rates of OSHA-Recordable Events

The rates of all OSHA-recordable events for all diagnoses by age category, job category, and gender are shown in Figures 17 and 18. The OSHA-recordable rates among women were highest among Office Management and Administration/Heavy Computer Users. This group of workers, especially those aged 50 years and older, also had higher OSHA-recordable rates compared with men in the same job categories. Service/Security/Craft and Repair/Fire Department workers had the highest rates among men. Most of the OSHA health conditions involved injuries. When the rate for OSHA-recordable injuries was considered separately, the same group had the highest rate for men. Men in the Service/Security/Craft and Repair/Fire Department group accounted for 32 percent of the male work force and 56 percent of the OSHA events among men. Among women, the highest rate of injuries occurred in the Nuclear Specialties/Production Technicians/Material Handlers group.

Security workers were 3 times more likely to suffer an injury than other



workers and 5 times more likely to report a sprain or strain other than the back. Sprains and strains of the back were more likely among Service workers (13 times) and Material Handlers (11 times).

Figure 17. OSHA-Recordable Rates by Age and Job Categories Among Women

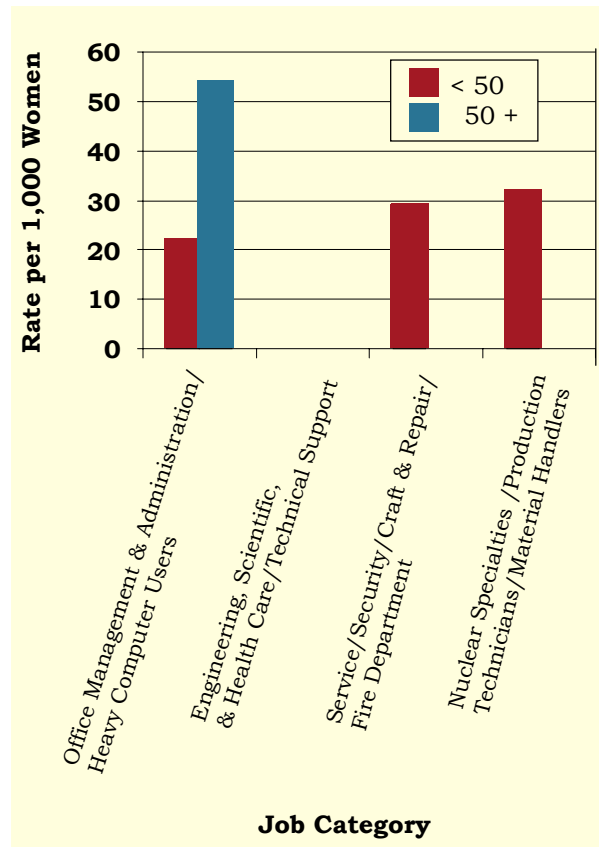
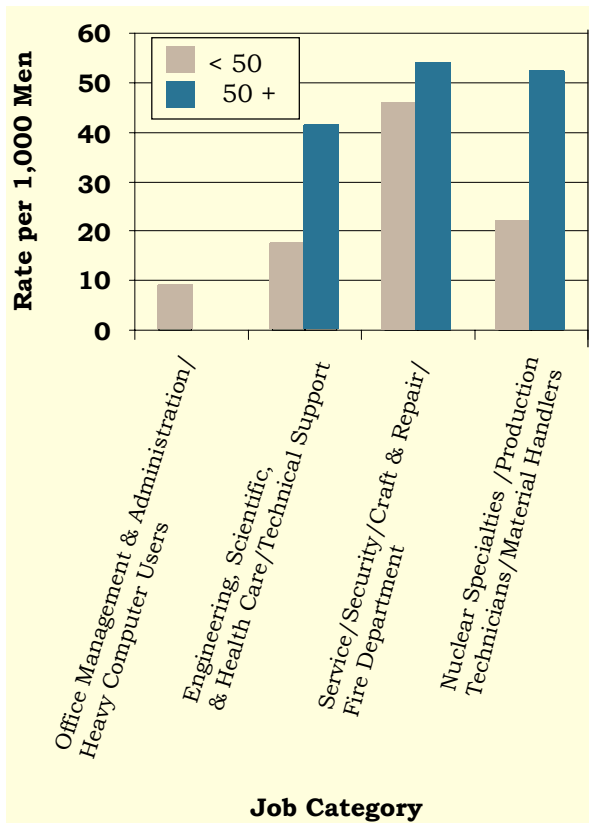


Figure 18. OSHA-Recordable Rates by Age and Job Categories Among Men



Time Trends for OSHA-Recordable Events

The age-adjusted rates for OSHA-recordable events from 1994 to 1999 by job category among men and women are shown in Figures 19 and 20. Security workers, Production Technicians, and Material Handlers were categorized as part of other occupational groups prior to 1995, therefore, rates for these groups were not available. During the 6-year period, the overall rates for OSHA-recordable events among men and women remained stable for the majority of the occupational groups. We will continue to examine these trends as

more years of data are gathered. There were no significant changes in injury rates for men and women during this time period.

Figure 19. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Among Women by Job Category from 1994 to 1999

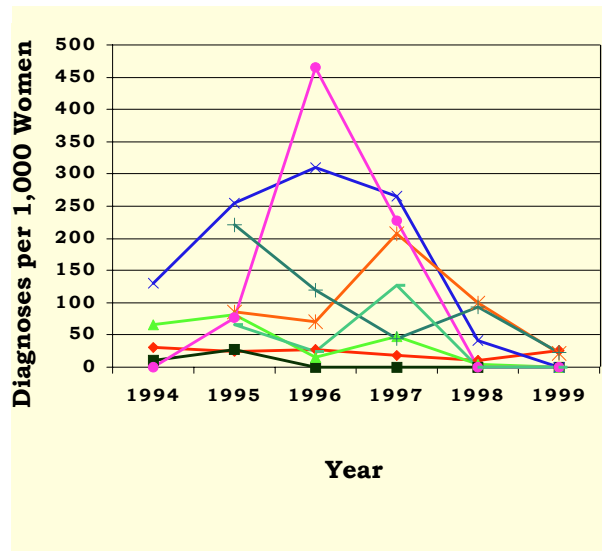
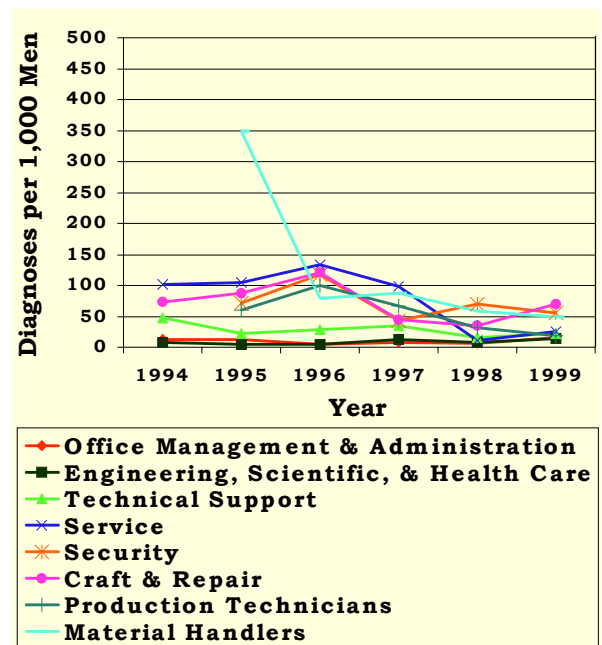


Figure 20. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Among Men by Job Category from 1994 to 1999



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
Infection/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; drugdependence;and eating disorders, such as anorexia; Psychoticdisorders: 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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