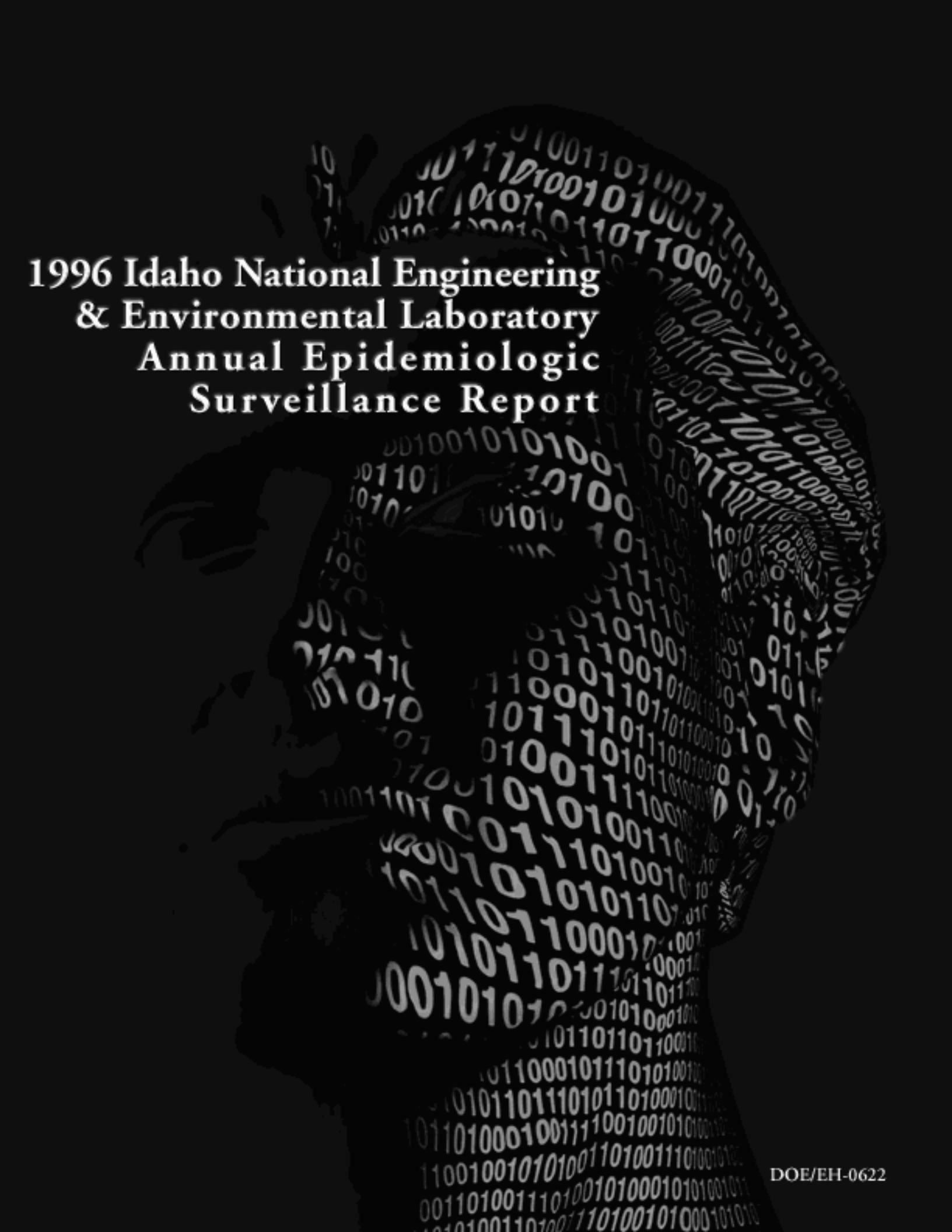

1996 Idaho National Engineering & Environmental Laboratory Annual Epidemiologic Surveillance Report

DOE/EH-0622

IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY

1996 Epidemiologic Surveillance Report

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

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

IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY 1996

At a Glance

The most frequently reported health conditons for men at INEEL in 1996 were muscles and skeleton conditions (primarily arthritis) and respiratory diseases (primarily colds, pneumonia, and flu).

The most commonly reported health conditions among women were genitourinary (disorders of the reproductive organs) and respiratory diseases (colds, pneumonia, and flu).

Seven cancer diagnoses were reported in 1996. The cancers varied by type and there was no indication that one particular group of workers was at high risk.

About 6 percent (516/8,673) of the INEEL work force had at least one absence in 1996.

The highest rate for all illnesses and injuries, combined among men were those categorized as Nuclear workers, and Professional/Technical and Administration workers had the highest rates among women.

From 1993 through 1996, the age-adjusted rates for all diagnoses have decreased for men and women.

Service workers had the highest OSHA-recordable rates among men and women, resulting in 387 days of restricted activity and 170 lost work days.

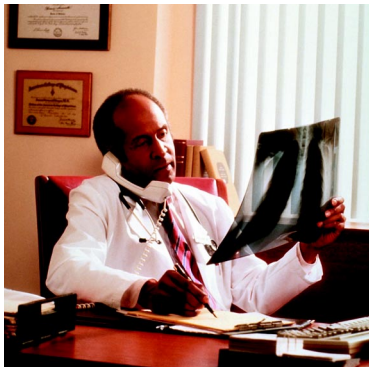
Introduction

The U.S. Department of Energy's (DOE) commitment to assuring the health and safety of its workers includes the conduct of epidemiologic surveillance activities that provide an early warning system for health problems among workers. The Epidemiologic Surveillance

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

This report provides a summary of epidemiologic surveillance data collected from the Idaho Engineering and Environmental Laboratory (INEEL) during the period January 1, 1996 through December 31, 1996. The data were collected by a coordinator at INEEL and submitted to the Epidemiologic Surveillance Data Center, located at Oak Ridge Institute for Science and Education, where quality control procedures and preliminary data analyses were carried out. The Office of Health Programs reviews these data and prepares the final report. Epidemiologic surveillance has been ongoing at INEEL since 1993.

The Epidemiologic Surveillance report for INEEL has been redesigned for 1996. The information presented in this report provides highlights of the data analyses conducted. Surveillance reports and additional supporting tables are posted on the Office of Health Programs 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. Absences related to maternity leave were excluded. This 1996 report includes a section on time trends that provides comparative information on the health of the work force over time.



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 expoures; therefore, comparisons of INEEL 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

INEEL is located in two primary areas in Southeastern Idaho: A remote 570,000 acres (890 square miles) desert site on the Snake River Plain and multiple locations in the city of Idaho Falls. INEEL was established in 1949 as the National Reactor Testing Station to provide an isolated location where various kinds of nuclear reactors and support facilities could be built and tested.

On December 20, 1951, INEEL was the site of a very significant scientific accomplishment: the first use of nuclear fission to generate usable amounts of electricity. This took place at Experimental Breeder Reactor I (EBR-I), now a

National Historic Landmark. Three of the nation's commercial power reactor designs, the pressurized water reactor, the boiling water reactor, and the liquid metal-cooled breeder reactor were first demonstrated at INEEL. Fifty-two test reactors, the largest concentrations of nuclear reactors in the world, were constructed at INEEL over the years. In 1955, BORAX III, a commercial power reactor, was the first in the world to light a city: Arco, Idaho. Most reactors were phased out when their missions were completed.

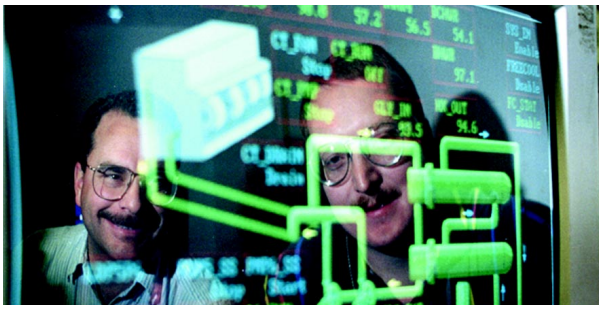
In 1974, the site was named a national engineering laboratory to reflect its expanding application of applied science and engineering capabilities to nonnuclear research. INEEL became the nation's second National Environmental Research Park, one of only five in the nation, in 1995. All lands within INEEL boundaries comprise a protected outdoor laboratory where scientists from the DOE, other federal and state agencies, universities, and private research foundations conduct ecological studies.

Today, the multipurpose laboratory is solving critical problems related to the environment, energy production and use, U.S. economic competitiveness, and national security. The mission of INEEL is to develop, demonstrate, deploy, and transfer advanced engineering technology and systems to private industry to improve U.S. competitiveness and security, the efficient production and use of energy, and the quality of life and the environment. The isotope gadolinium-153 used for medical purposes was produced in 1996, making the facility the only supplier in the country. INEEL leads national efforts in environmental management, spent fuel management, low-level waste management, mixed waste technologies, the plutonium focus area, and systems engineering.

Management and operation of INEEL is the responsibility of private contractors working under the direction of the DOE Idaho Operations Office. INEEL was managed by various contractors until 1994, when Lockheed Martin Idaho Technologies Company became the prime contractor. Two other companies, Argonne National Laboratory-West and Westinghouse Electric Corporation, are also under contract to conduct research, waste processing, and support functions for DOE at INEEL.

The INEEL Work Force - 1996

A total of 8,673 INEEL employees were included in epidemiologic surveillance in 1996, 3,142 fewer than were present in 1995. The age and gender distribution of the 1996 work force is shown in Figure 1. There were 6,587 (76 percent) men and 2,086 (24 percent) women in the work force. The average age of male INEEL



workers was 43 years and 41 years for females. Race information is not available on 31 percent of the workforce. For those workers whose race was reported, the majority of the INEEL workers was White. Hispanics, African Americans, Asians, and Native Americans made up the remainder of the work force.

Individual job titles reported by INEEL were grouped together into job categories. This is because there were either too few workers or health events within a particular job title, thereby limiting the type of analyses that could be conducted. 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. We noted the largest gender differences in the Administration, Professional, and Unknown groups. More than half (55 percent) of the women were employed in the Administration and Professional groups while only 5 percent worked in Security, Crafts and Manual Labor, and Nuclear occupations. More detailed information of the work force by gender, age, and occupational group is in the Supporting Tables (available on the Web or by request).

Figure 1. The Work Force by Gender and Age

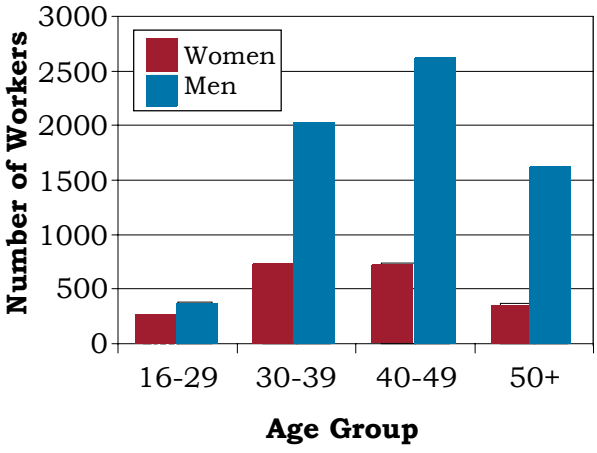


Figure 2. The Work Force by Job Category and Gender

Job Category	Women	Men
Administration	864 41%	1,297 20%
Professional	290 14%	1,385 21%
Technical	202 10%	541 8%
Service	57 3%	149 2%
Security	38 2%	271 4%
Crafts & Manual Labor	36 2%	351 5%
Nuclear	22 1%	241 4%
Unknown	577 27%	2,352 36%

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 regardless of the length of absence. 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. One change from earlier surveillance reports is the exclusion of specific health events resulting in an absence of 5 or more consecutive workdays, but did not result from injury or illness. These include 44 women with reported absences due to maternity leave and 4 men with reported absences due to elective surgical procedures not related to the treatment of an illness or injury.

The rate of 5-day absences among male and female workers is shown in Figure 3. There were 186 5-day absences among 2,086 female employees resulting in an absence rate of 9 per 100 workers (186/2,086). The 5-day absence rate among men was 6 per 100 workers (391/6,587). The distribution of reported absences of 5 or more days did not vary much by age category for either women or men.

The average number of days absent by age and gender is shown in Figure 4. Overall, women were absent for more days than men (29 days versus 27 days). This is particularly apparent in the 30-39 year age group with women absent about 33 days compared with 20 days for men. The shortest length of absence was among those aged 16 to 29. For men and women combined, there was an increase in the length of absence with increasing age. Female workers accrued 5,442 lost calendar days due to injury and illness. Male workers lost 10,660 calendar days.

Figure 3. Absence Rate by Gender and Age

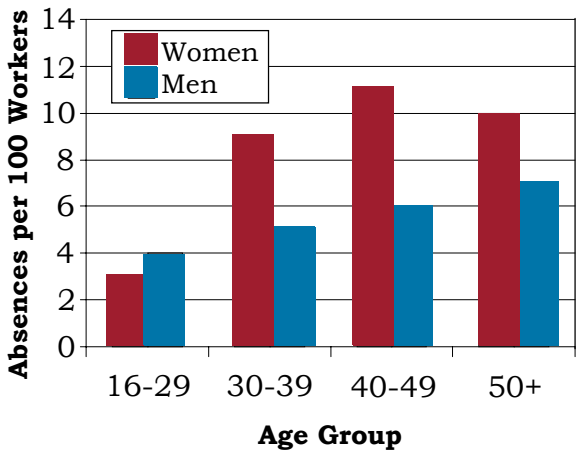
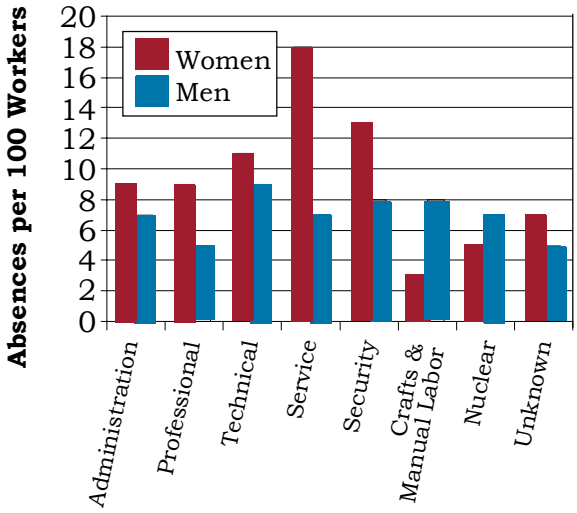


Figure 4. Number of Days Absent by Gender and Age

Gender	Age	Number of Absences	Number of Days Absent	Average Number of Days Absent
Women	16 - 29	8	130	16
	30 - 39	62	2,070	33
	40 - 49	80	2,278	28
	50 +	36	964	27
	Total	186	5,442	29
Men	16 - 29	16	269	17
	30 - 39	100	1,996	20
	40 - 49	166	5,142	31
	50 +	109	3,253	30
	Total	391	10,660	27

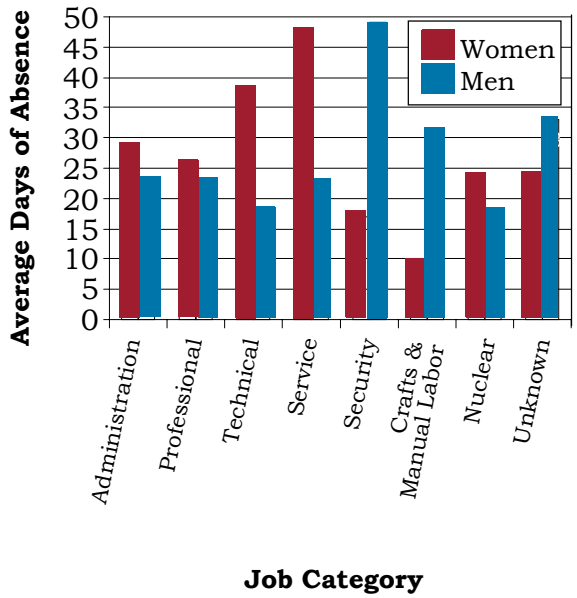
The rate of 5-day absences due to illness or injury varied by job category as shown in Figure 5. Among females, Service workers had the greatest percentage of absences, 18 percent (10/57) compared with other work groups. Women had higher absence rates than men for all job categories except Crafts and Manual Labor and Nuclear, two groups that had relatively few females (36 and 22, respectively). Among men, Technical workers had the greatest percentage of absences of 5 or more days, about 9 percent (46/541).

Figure 5. Absence Rate by Job Category and Gender



The average duration of absence by job category and gender is shown in Figure 6. Among men and women, several of the occupational groups that had the highest rates of absence also had the longest duration of absence. These were men in the Security and Crafts and Manual Labor groups and women in the Technical and Service groups.

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 requiring return-to-work clearances. An absence due to illness or injury may involve more than one diagnosis. Epidemiologic surveillance includes all reported diagnoses. In addition, the OSHA 200 Log provides information on 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 information for statistical purposes. You can find specific health conditions for every Diagnostic Category at the end of this report 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 or holidays) are presented in Figure 7. There were 214 diagnoses reported by female and 428 diagnoses reported by male INEEL workers in 1996. Among women, genitourinary conditions (21 percent), respiratory diseases (19 percent), muscles and skeleton conditions (15 percent), and digestive problems (14 percent) accounted for 69 percent of all reported diagnoses. These conditions varied slightly among the different age groups, although respiratory conditions were common for all women over 29 years old. The respiratory disease category includes acute infectious diseases such as colds, influenza, and pneumonia; allergies, sinusitis, and bronchitis; and chronic diseases such as asthma and emphysema. The majority (49 percent) of respiratory conditions was due to acute upper respiratory infections (colds, sinusitis, etc), pneumonia and flu (24 percent), and chronic obstructive pulmonary disease (22 percent). Disorders of the reproductive organs accounted for 89 percent of the genitourinary problems. Arthritis accounted for 56 percent of the diagnoses involving muscles and skeleton conditions, followed by back problems (25 percent) and rheumatism (12 percent). Gallbladder disorders made up 47 percent of the digestive problems and hernias 10 percent. Women reported 38 percent of the injuries as fractures and 25 percent as sprains and strains.

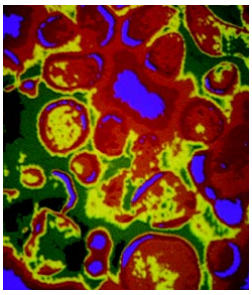
Figure 7. Number of Diagnoses and Lost Calendar Days by Diagnostic Category (Categorized by ICD-9-CM) and Gender

Diagnostic Category	Women		Men	
	Number of Diagnoses	Number of Lost Calendar Days	Number of Diagnoses	Number of Lost Calendar Days
Benign Growths	5	170	6	200
Blood	0	0	0	0
Cancer	3	278	4	147
Digestive	30	708	60	1,289
Endocrine / Metabolic	4	122	7	168
Existing Birth Condition	0	0	1	14
Genitourinary	44	1,359	19	368
Heart / Circulatory	2	93	24	787
Infections / Parasites	8	198	10	279
Injury	24	1,032	59	1,685
Respiratory	41	638	88	1,233
Miscarriage	2	32	NA	NA
Muscles & Skeleton	32	971	89	3,333
Nervous System	8	112	19	679
Psychlogical	6	139	12	655
Skin	1	7	6	103
Unspecified Symptoms	4	60	24	445

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

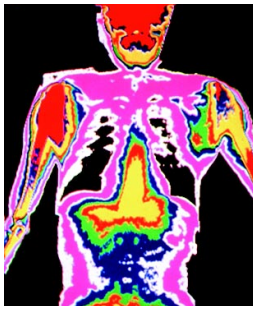
The reported diagnoses among men were similar. Among male workers, about 70 percent of the reported diagnoses were due to muscles and skeleton conditions (21 percent), respiratory conditions (21 percent), digestive problems (14 percent), and injuries (14 percent). A closer look at diagnoses affecting the muscles and skeleton showed that about 56 percent were for arthritis, 34 percent were due to back problems, and 8 percent due to rheumatism. Acute respiratory infections (colds, sinusitis, etc.) accounted for 50 percent of the respiratory conditions, followed by pneumonia and flu (33 percent), and chronic obstructive disease (16 percent). Common digestive problems included hernia (35 percent) and gallbladder disease (28 percent). Frequently reported injuries among men were fractures (44 percent), sprains and strains (29 percent), and bruises (8 percent).

There were a total of seven cancer diagnoses reported among six workers during 1996, including four diagnoses for three men and three diagnoses among three women. The diagnoses



reported among women included one breast cancer, one connective tissue cancer, and one Hodgkin's lymphoma. Among men, the diagnoses included one skin cancer, one malignant melanoma, and two diagnoses of brain cancer in one individual. One man who reported cancer in 1996 reported the same cancer in 1994.

There were 24 diagnoses among men involving the heart/circulatory system; 17 occurred in workers aged 50 and older. Seventeen diagnoses involved restricted blood flow through an artery (ischemic heart disease). There were 2 diagnoses of the heart/circulatory system among women. Both were under 50 years old and were for restricted blood flow to the heart and varicose veins.



The number of days absent coincided with the most frequently reported diagnoses for women. There were 1,359 calendar days lost to genitourinary disorders. Injuries resulted in the second most frequently reported lost calendar days, even though they ranked fifth in the number of diagnoses reported. Men lost 3,333 calendar days to muscles and skeleton problems, the most frequently reported diagnoses, followed by 1,685days lost to injuries.

Figure 8 shows the frequency of reported diagnoses by job category for men and women. Genitourinary conditions were one of the most common diagnoses among women across all occupational groups, except Nuclear workers. Respiratory conditions, the second most frequently reported diagnostic category were most frequently reported among women in the Administration and Unknown groups. Women in the Administration, Professional, Technical, Security and Unknown groups frequently reported muscules and skeleton conditions.

Respiratory conditions were frequently reported diagnoses among men across all job categories. Muscles and skeleton conditions, the second most frequently reported diagnostic category were frequently reported by Administration, Professional, Technical, Security, Crafts and Manual Labor, and Unknown groups. Men in the Technical, Service, Security, Crafts and Manual Labor, and Unknown job categories frequently reported injuries.

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

Job Category	Men	Women
Administration	Digestive (20) Muscles & Skeleton (17) Respiratory (13)	Digestive (17) Genitourinary (17) Respiratory (17) Muscles & Skeleton (13)
Professional	Respiratory (23) Muscles & Skeleton (20) Digestive (7)	Genitourinary (7) Muscles & Skeleton (5) Digestive (3)
Technical	Muscles & Skeleton (13) Injury (10) Respiratory (8)	Genitourinary (7) Muscles & Skeleton (5)
Service	Digestive (4) Injury (3) Respiratory (2)	Injury Respiratory (4) Genitourinary (2)
Security	Muscles & Skeleton (6) Injury (4) Respiratory (4) Digestive (3)	Genitourinary (1) Infections / Parasites (1) Respiratory (1) Psychological (1) Muscles & Skeleton (1)
Crafts & Manual Labor	Muscles & Skeleton (8) Digestive (4) Injury (4) Respiratory (4)	Benign Growths (1) Genitourinary (1)
Nuclear	Respiratory (7)	Digestive (1)
Unknown	Respiratory (27) Muscles & Skeleton (23) Injury (20)	Respiratory (14) Genitourinary (9) Muscles & Skeleton (8)

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 59 and women reported 24 diagnoses involving injuries during 1996. Men, therefore, reported over twice as many injuries as women. As there were more than three times as many men than women at INEEL, 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 1996? To correctly answer the question, the total number of men and women in the work force must be considered. A more accurate way to compare risk among men and women is to calculate the injury rate for each gender. Rates are calculated by dividing the number of injuries 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:

59 injuries ÷ 6,587 men = .009 x 1,000 = 9 injuries per 1,000 men

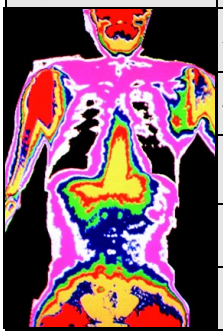
24 injuries ÷ 2,086 women = .012 x 1,000 = 12 injuries per 1,000 women

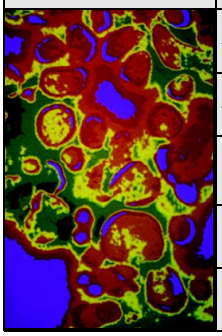
A comparison of these rates now correctly suggests that injuries among women were higher than among men. They are called **crude rates** because they do not account for possible differences between men and women, such as age and other factors that might affect the individual's risk of becoming injured. Because age is so strongly related to the risk of illness 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.

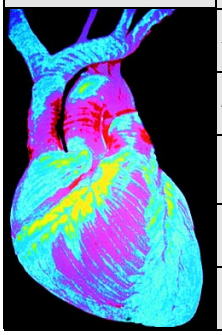
The diagnosis rate, also called the illness and injury rate, is the number of occurrences of a given disease or health condition observed over the course of a year per 1,000 workers at risk of getting that condition (see shaded box). One health condition, cancer for example, may result in several 5-day 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.

For the following set of analyses, the five age groups were collapsed into two groups, workers less than 50 years and those 50 years and older. In addition, the eight occupational categories were combined into five larger groups. These groups were collapsed to ensure that the number of diagnoses in each group was large enough for analyses. 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. Additional information about 12 other disease groups are also analyzed and can be found in the Supplemental Tables.

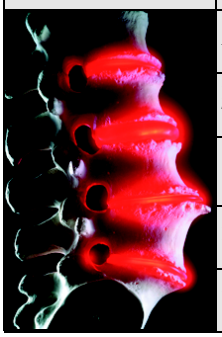
Figure 9. Illness and Injury Rates by Job Category, Gender, and Age

Diagnostic Category	Rate per 1,000			
All Illnesses & Injuries Combined	Job Category	Age	Men	Women
	Administration	<50	72	108
		50+	84	107
	Professional/ Technical	<50	58	105
		50+	84	174
	Service/Security/ Crafts & Manual Labor	<50	86	177
		50+	46	0
	Nuclear	<50	71	48
		50+	121	0
	Unknown	<50	50	73
		50+	63	98

Diagnostic Category	Rate per 1,000			
Cancer	Job Category	Age	Men	Women
	Administration	<50	2	0
		50+	0	0
	Professional/ Technical	<50	0	2
		50+	5	0
	Service/Security/ Crafts & Manual Labor	<50	0	9
		50+	0	0
	Nuclear	<50	0	0
		50+	0	0
	Unknown	<50	0	2
		50+	0	0

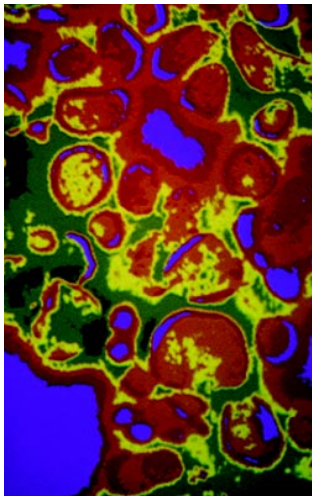
Diagnostic Category	Rate per 1,000			
Heart/ Circulatory	Job Category	Age	Men	Women
	Administration	<50	2	1
		50+	24	0
	Professional/ Technical	<50	3	2
		50+	9	0
	Service/Security/ Crafts & Manual Labor	<50	0	0
		50+	0	0
	Nuclear	<50	5	0
		50+	0	0
	Unknown	<50	0	0
		50+	7	0

Diagnostic Category	Rate per 1,000			
Respiratory	Job Category	Age	Men	Women
	Administration	<50	12	18
		50+	5	27
	Professional/ Technical	<50	14	9
		50+	23	22
	Service/Security/ Crafts & Manual Labor	<50	14	44
		50+	8	0
	Nuclear	<50	27	0
		50+	34	0
	Unknown	<50	12	15
		50+	10	57

Diagnostic Category	Rate per 1,000			
Injury	Job Category	Age	Men	Women
	Administration	<50	4	12
		50+	16	21
	Professional/ Technical	<50	8	11
		50+	9	0
	Service/Security/ Crafts & Manual Labor	<50	16	35
		50+	8	0
	Nuclear	<50	11	0
		50+	0	0
	Unknown	<50	9	2
		50+	8	16

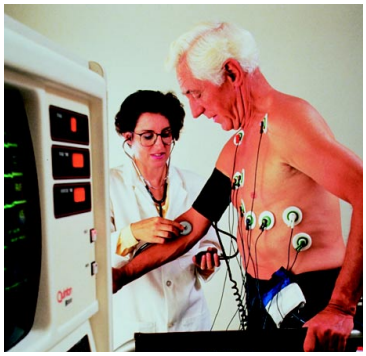
In general, the rates for all illnesses and injuries, combined are about 1.5 times greater for women compared with men across all occupational groups, with the exception of Nuclear and Service/ Security/Craft and Manual Labor workers (groups with very few women employed). The rates were highest for women categorized as Professional/ Technical and Administration workers. The age of the employees is not related to the disease rate. The highest diagnostic rates among men were those categorized as Nuclear workers. Older employees, 50 years or older, tended to have higher rates of disease compared with employees less than 50 years old.

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



The cancer diagnosis rates were highest in women under 50 years of age (a total of three reported diagnoses). Service/Security/Crafts and Manual Labor workers had the highest rates among the job categories, but this reflects only one reported diagnosis. The only elevated cancer rate among men was in the Professional/Technical group, reflecting a total of two cancers reported in 1996.

As expected, the highest rates of heart disease occurred in men aged 50 or greater. Men in the Administration group showed the highest rate of disease affecting the heart/ circulatory system. Nine of the 11 diagnoses in this job category involved restricted blood flow to the heart. Women in Administration and in the Professional/Technical job categories also showed increased rates of heart/circulatory conditions.



Women had higher rates of respiratory disease, 20 per 1,000 compared with men, 13 per 1000. Women 50 years or older generally had higher rates than younger women. The rates for respiratory problems among men did not vary greatly by occupation, although men in the Nuclear group had higher rates than other occupational groups. Also, it appears that male workers younger than age 50 were at slightly increased risk of respiratory disease.

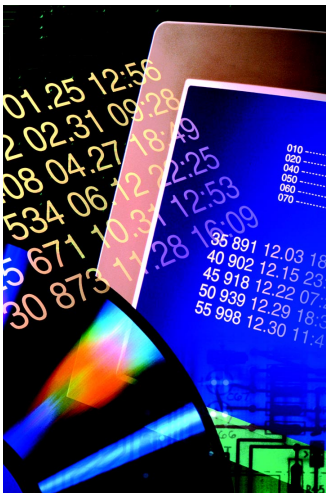
Injury rates did not vary consistently with age for men or women. Injury rates were slightly higher for women under 50 years compared with men the same age. The types of injuries reported were similar for both men and women. The highest rates for men and women were those categorized as Service/Security/Crafts and Manual Labor workers. Service workers were 2.9 times more likely to report an injury diagnosis than were other occupational groups. They were also 6.3 times more likely to report sprains and strains other than the back than other occupational groups.

Time Trends

Why Are Rates Age-Adjusted?

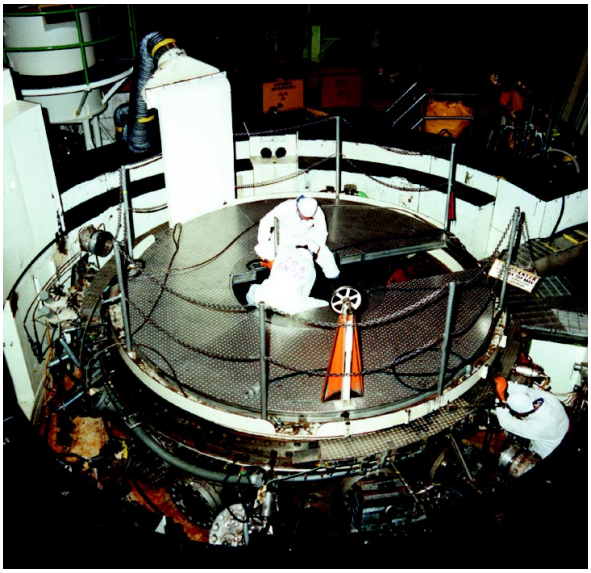
The injury and illness rates in this section of the report are **age-adjusted**. Differences in the age composition among groups of workers are taken into consideration in the analyses and one rate is calculated for an entire group. This allows us to make comparisons between groups with different age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

There are 4 years of epidemiologic surveillance data for INEEL workers, and we can examine illness and injury trends over time in the work force. A major change from previous years is the exclusion of pregnancy and childbirth-related conditions (with the exception of those that may be associated with work activities) as a diagnostic category in the 1996 report. In order to compare 1996 rates with data from previous years (1993-1995), pregnancy and childbirth events were excluded from the data that had been previously published and illness and injury rates were then recalculated.



Age-adjusted rates for selected diagnostic categories are shown in Figure 10. From 1993 to 1996, the age-adjusted rates for all diagnostic categories combined have

decreased over time for both men and women. Rates are consistently higher among women for all diagnoses combined and respiratory diagnoses. Injury diagnosis rates are generally similar among men and women. Men, not unexpectedly, had higher rates of heart/circulatory diagnoses. Over the period 1993 through 1996, the cancer rate has steadily declined as reflected in the number of absences for cancer.



Over the 4-year period, the rates for all diagnostic categories combined remained fairly constant within most occupational groups (Figure 11). Decreases were noted for women and men in Service and Crafts and Manual Labor groups, and for women in the Nuclear group. In each case, there was a dramatic decline in the number of diagnoses reported without a corresponding decline in the number of workers in the group.

The declining rate trends among certain occupations may reflect true decreases in illness, changes in absence reporting requirements, administration of sick leave, or declining awareness of existing reporting requirements.

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

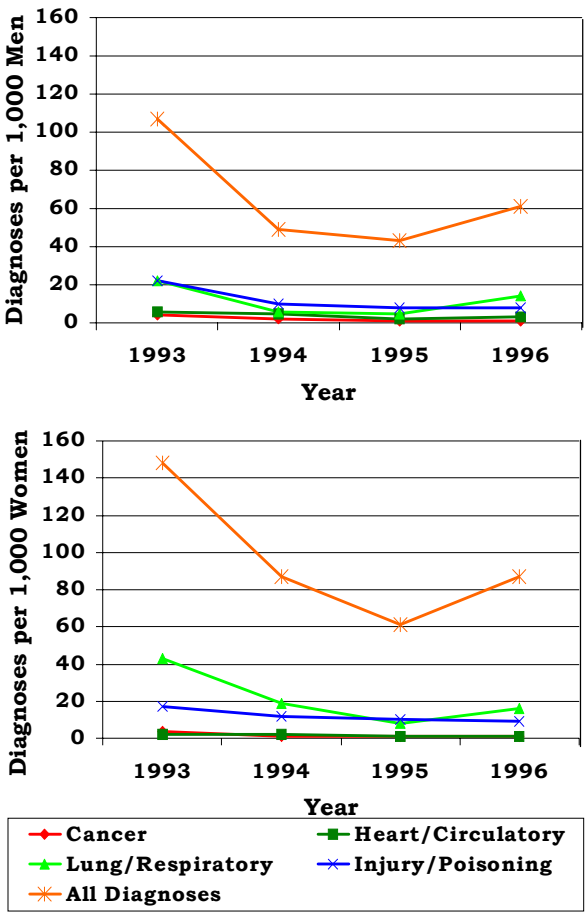
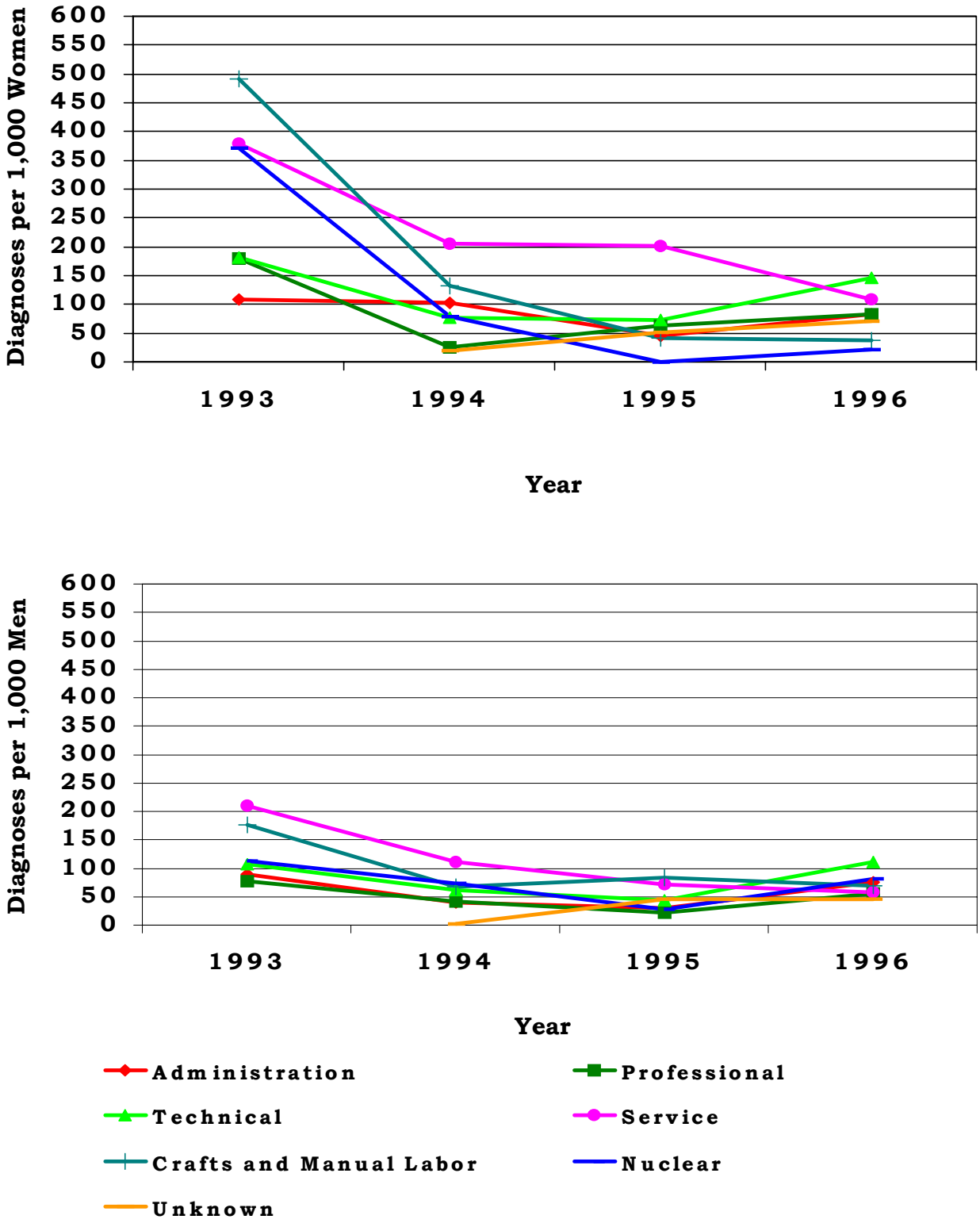


Figure 11. Age-Adjusted Rates for all Diagnoses Combined Among Women and Men by Job Category from 1993 to 1996



Sentinel Health Events for Occupations

A sentinel health event for occupations (SHEO) is a disease, disability, or death which is 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 from smoking. Carpal tunnel syndrome may result from a job requiring typing or from a hobby such as playing the piano.

No definite sentinel health events were identified in 1996. Three of 642 (0.5 percent) diagnoses were identified as possible sentinel health events (Figure 12). The three diagnoses, all identified as carpal tunnel syndrome were reported by three workers and resulted in 353 lost calendar days. Two were reported by Administration workers; one case was a worker in the Unknown category. Two of the three workers were less than 50 years of age.

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	1	2	320	33
Total	1	2	320	33

Disabilities Among Active Workers

The site did not report disability data for the 1996 INEEL work force.

Deaths Among Active Workers

The site did not report death data for the 1996 INEEL work force.

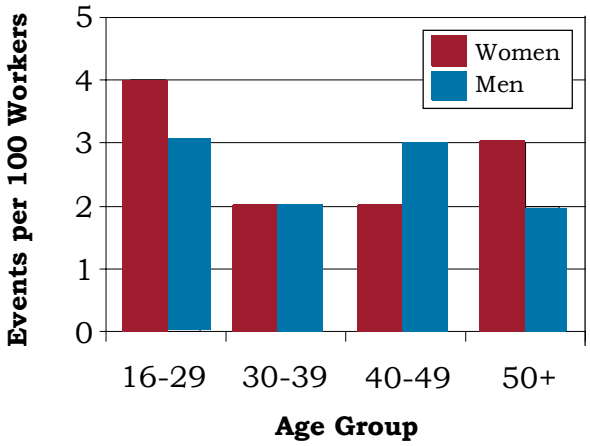
OSHA-Recordable Events

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 age and gender is shown in Figure 13. There were a total of 207 OSHA events recorded on the OSHA 200 Logs for men and women in 1996. Men reported almost three times as many OSHA events as women, but the rate among workers with an OSHA event was about the same for both men (2 per 100) and women (3 per 100). In 1995, about 1 percent of both men and women reported an OSHA-recordable event. The occurrence of OSHA-recordable injuries did not appear related to age.

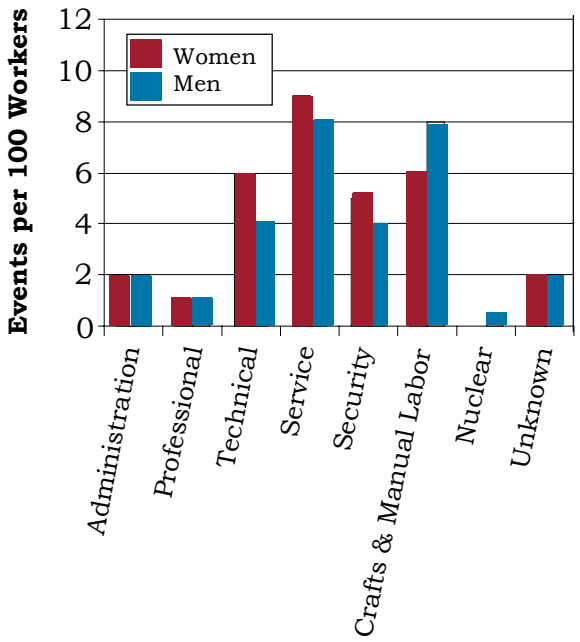
Service workers had the highest OSHA rates for men (8 per 100) and women (9 per 100) among INEEL workers. Among women, rates were also high for Technical and Crafts and Manual Labor workers. Among men, the Crafts and Manual Labor group also had elevated OSHA rates compared to other groups.

Figure 13. OSHA-Recordable Events by Gender and Age



Occupational injuries were responsible for substantial numbers of restricted and lost workdays. The average number of workdays lost or with restricted activity was higher for men (30 days) than women (18 days). Among women Service workers also had the highest average number of workdays lost or with restricted activity for OSHA events (55 days). Those in the Unknown Group had the highest average number of lost or restricted workdays (36 days) among men. Administartion and Crafts and Manual Labor workers also had a high average number of lost or restricted workdays (34 days). Crafts and Manual Labor workers comprised 4 percent of the work force but had 4 percent of the days lost and 25 percent of the days restricted. Service workers (2 percent of the work force) also contributed significantly to lost (9 percent) and restricted (10 percent) workdays. The 47 OSHA events among these two groups of workers resulted in 1,317 days of restricted activity and 240 lost workdays, a substantial loss of productivity. These two groups had an overall occupational injury risk at least 3.4 times greater than the other occupational groups.

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



Diagnostic and Accident Categories for OSHA-Recordable Events

From the 207 recordable OSHA events there were 57 diagnoses among women and 164 diagnoses among men as shown in Figure 15.

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

Diagnostic Category	Gender	
	Women	Men
Digestive	0	1
Muscles and Skeleton	4	5
Nervous System	13	14
Respiratory	0	1
Skin	2	2
Unspecified Symptoms	3	1
Injury	35	140
Fractures-Upper Limb	0	3
Fractures-Lower Limb	0	3
Dislocations	0	1
Back Sprains and Strains	9	33
Other Sprains and Strains	11	35
Internal Injuries - Thorax, Abdomen, Pelvis	0	1
Open Wounds-Head, Neck, Trunk	0	15
Open Wounds-Upper Limb	1	14
Superficial Injuries	2	5
Bruises	8	23
Burns	1	6
Unspecified Injuries	3	0
Adverse Reactions to External Causes	0	1

Among women, injuries accounted for 61 percent of the diagnoses reported; the most common (57 percent) type of OSHA-recordable injury was sprains and strains. Twenty-three percent of the reported injuries among women were bruises. Among men, injuries accounted for 85 percent of the diagnoses reported, again primarily due to sprains and strains (49 percent). Open wounds (21 percent) and bruises (16 percent) were also frequently reported among men. There were 27 cases of carpal tunnel syndrome among men and women.

Seventy-nine percent (163) of the 207 OSHA events resulted from an accident; however, the type of accident was reported for only 2 of these events. One accident was due to natural/ environmental factors and resulted in superficial injuries to one man. The second accident was reported by a male worker injured by an electric current and suffered bruises and burns, resulting in 120 lost workdays. These workers were both in the Unknown job category .

Rates of OSHA-Recordable Events

The rates for all diagnostic categories combined for OSHA-recordable events by job category and age group are shown in Figures 16 and 17. Workers in the Service/Security/Crafts and Manual Labor group had the highest rates for all OSHA-recordable health

Figure 16. OSHA-Recordable Rates by Age and Job Category Among Women, All Diagnoses Combined

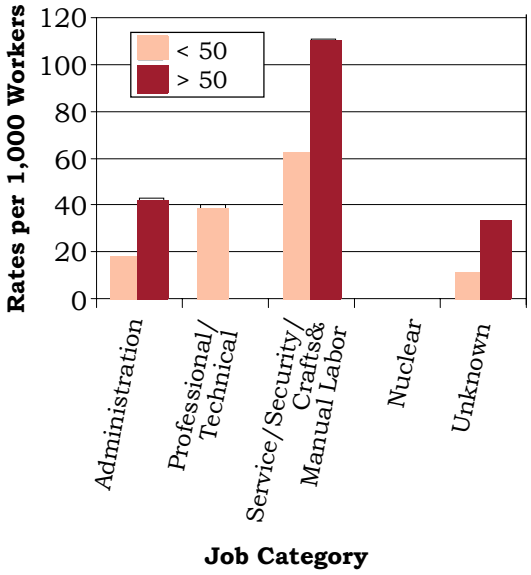
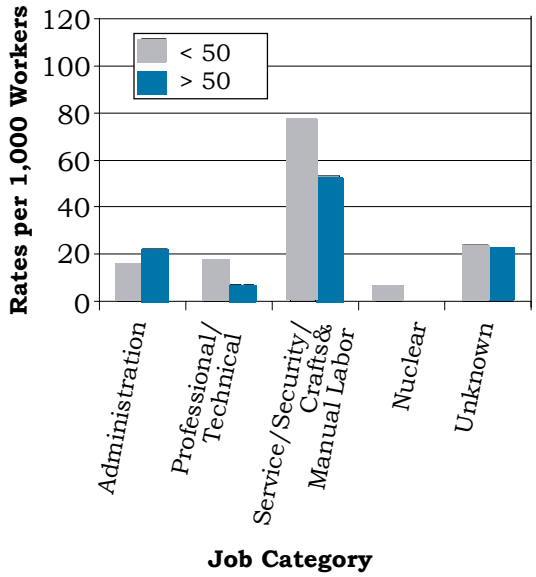


Figure 17. OSHA-Recordable Rates by Age and Job Category Among Men, All Diagnoses Combined



conditions combined compared with other job categories. Older women tended to have higher rates of occupational health conditions. Men younger than age 50 had higher rates, with the exception of Administration workers, compared with other men. Most of the OSHA health conditions involved an occupational injury. When the injury category was considered separately, high rates were noted among both men

and women in the Service/Security/ Crafts and Manual Labor group. In workers aged 50 and older, women showed higher injury rates in all job categories except Professional/Technical and Nuclear; in men, this was true only among Administration workers. Some of this variation in injury rates for older versus younger workers may reflect the need to combine several occupational groups for analysis due to small numbers of health events in a given occupational category. It is also possible that within a given occupational group, men and women may be performing duties with different injury risks. There does not appear to be a consistent relationship between the age of the worker and the risk of occupational injury at INEEL.

Compared with other workers, Service workers were almost 5 times more likely to suffer back sprains and strains and over 8 times more likely to report bruises. Crafts and Manual Labor workers were more than 4 times as likely to sustain a sprain or strain; an open wound to the head, neck, trunk, or upper limb; or bruises. The magnitude of these risks suggests the need for additional attention concerning injuries among Service workers and Crafts and Manual Laborers.

Time Trends for OSHA-Recordable Events

OSHA- recordable data is available for 3 years, 1994 through 1996. The age-adjusted rates for all diagnostic categories combined by job category and gender are shown in Figures 18 and 19. The overall rates for OSHA-recordable injuries among men did not change greatly within each occupational group. The rates for women showed no significant changes for this period. Workers in the Service and Crafts and Manual Labor groups tended to have a rate that was greater than the rate for workers in the other occupational groups. The rates for occupational injury did not change significantly over the 3 year period; however, there is a suggestion that rates could be increasing. Usually 5 years of data are needed to determine the direction of a trend, therefore we will continue to examine these data annually to determine if they level off at a stable rate or continue to increase.

Figure 18. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Women by Job Category from 1994 to 1996

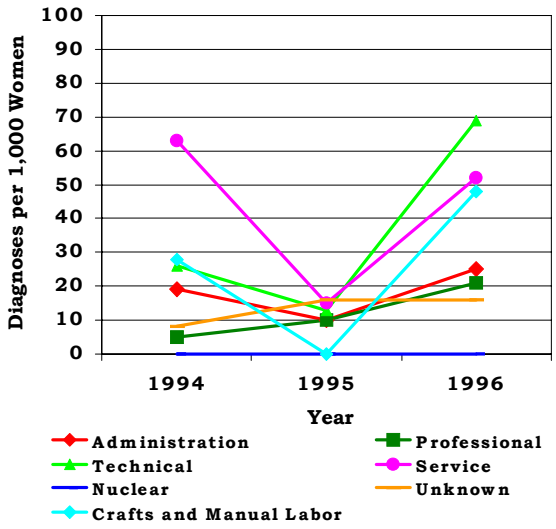
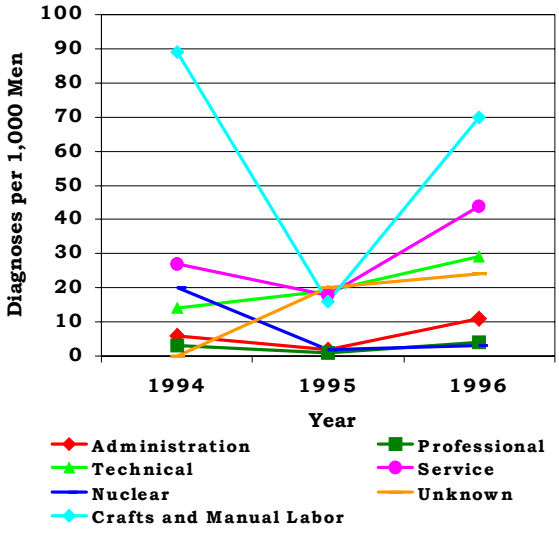


Figure 19. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Men by Job Category from 1994 to 1996



Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Explanation of Diagnostic Categories

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

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

ICD-9-CM Codes

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

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

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

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

• Other diseases of the respiratory system	510-519	Pleurisy (swelling of the lining of the lungs), collapsed lung, and respiratory failure
Diseases of the digestive system	520-579	Diseases affecting the teeth and mouth, salivary glands, digestive tract, and the abdominal cavity. Examples include dental abscess, ulcers, appendicitis, hepatitis (excluding viral hepatitis), cirrhosis of the liver, gallstones, pancreatitis, abdominal hernia, and intestinal polyps
• Diseases of the oral cavity, salivary glands, and jaw	520-529	Tooth problems (too many, too few, abnormal shape or size, cavities, bleeding gums, toothaches), and infections and swelling of the mouth, jaw, and tongue
• Diseases of the esophagus, stomach, and duodenum	530-537	Ulcers of the esophagus (tube that transports food to the stomach), stomach, and small intestine; indigestion; and uncontrollable vomiting
• Appendicitis	540-543	Swelling of the appendix (rupture, surgery, or both may result)
• Hernia of the abdominal cavity	550-553	Ruptures of the groin and diaphragm (muscle which separates the chest area from the lower part of the trunk)
• Non-infectious enteritis and colitis	555-558	Crohn's disease and swelling of the intestine and colon
• Other diseases of the intestines and peritoneum	560-569	Irritable bowel syndrome, blockage of the intestine, constipation, and diarrhea
• Other diseases of the digestive system	570-579	Diseases of the liver, gallbladder, and pancreas; hepatitis; blood in stool; and bleeding in the stomach and intestine
Diseases of the genitourinary system	580-629	Diseases affecting the kidneys, the prostate, and testes; benign breast diseases; infertility (male and female); diseases of the ovary; pelvic inflammatory disease; and menstrual disorders
• Nephritis, nephrotic syndrome, and nephrosis	580-589	Swelling of the kidney; swelling of the small blood vessels in the kidney; and kidney failure

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

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

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

• 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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