

2002

Nevada Test Site Annual Illness and Injury Surveillance Report



Nevada Test Site 2002 Illness and Injury Surveillance Report

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

www.eh.doe.gov/health/epi/surv

ACKNOWLEDGEMENT

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Nevada Test Site 2002 Illness and Injury Surveillance Report

At A Glance

The year 2002 marks the first year of Nevada Test Site (NTS) participation in the Illness and Injury Surveillance Program.

A total of 5,065 NTS employees were included in illness and injury surveillance in 2002. There were 1,507 (30 percent) women and 3,558 (70 percent) men in the work force.

There were 107 absences among 99 women resulting in an absence rate of 7 per 100 workers (107/1,507). Among the 3,558 men, there were 161 absences resulting in an absence rate of 5 per 100 workers (161/3,558).

Security workers had the highest absence rate, 13 per 100 (10/77) among female workers and 12 per 100 (29/243) among men.

Among both men and women, two of the most common diagnoses reported were injuries and respiratory illnesses.

Women lost 2,937 calendar days due to illness and injury. Respiratory diseases (19 percent), unspecified symptoms (14 percent), and injuries (12 percent) accounted for 45 percent of all reported diagnoses among women.

Men lost 4,650 calendar days due to illness and injury. Fifty-two percent of all reported diagnoses among men were due to injuries (18 percent), respiratory diseases (18 percent), and heart/circulatory conditions (16 percent).

OSHA-Recordable Events

Men reported 75 percent of the OSHA events; however, the rate of workers with an OSHA event was the same for men and women (1 per 100 workers).

Occupational illnesses and injuries resulted in a total of 940 lost or restricted workdays reported at NTS in 2002. Among both women and men, the Crafts/Manual Labor group had the highest rate of OSHA events (5 and 3 per 100 workers, respectively).

Injuries accounted for over 80 percent of diagnoses for both men and women, the most common type for both being sprains and strains.

When the rate for OSHA-recordable injuries was considered separately, the highest rate for women was among Security workers, and Crafts/Manual Laborers had the highest rate among men. Workers in these two groups comprised 28 percent of the work force and reported 87 percent of the OSHA events.

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Introduction

The U.S. Department of Energy's (DOE) commitment to assuring the health and safety of its workers includes the conduct of illness and injury surveillance activities that provide an early warning system for health problems among workers. The Illness and Injury Surveillance Program monitors illnesses and health conditions that result in absences, occupational injuries and illnesses, and disabilities and deaths among current workers.



This report provides a summary of illness and injury surveillance data collected from the Nevada Test Site (NTS) from January 1, 2002 through December 31, 2002. The data were collected by a coordinator at NTS and submitted to DOE's Illness and Injury Surveillance Data Center at Oak Ridge Institute for Science and Education where quality control procedures and data analyses were performed. The analyses were interpreted and the final report prepared by the DOE Office of Epidemiology and Health Surveillance. This report presents data compiled from NTS's first year in the Illness and Injury Surveillance Program.

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 Epidemiology and Health Surveillance Web site (www.eh.doe.gov/health/epi/surv) or are available by request. The main sections of the report include: work force characteristics; absences due to illness or injury; 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.

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, so comparisons of NTS with other DOE sites should be made with caution. In addition, many factors can affect the completeness and accuracy of health information reported by the sites, thereby affecting the observed patterns of illness and injury.



Site Overview

Located only 65 miles from the major urban area of Las Vegas, the Nevada Test Site (NTS) is a massive outdoor laboratory and national experimental center adjacent to the Nellis Air Force range complex. The remote site is approximately 1,375 square miles, making it one of the largest restricted access areas in the United States.

Established as the Atomic Energy Commission's on-continent proving ground in 1951, the NTS has seen more than 4 decades of nuclear weapons testing. Since the nuclear weapons testing moratorium in 1992 and under the direction of the Department of Energy (DOE), test site use has diversified into many other programs, including hazardous chemical spill testing, emergency response training, conventional weapons testing, and waste management and environmental technology studies.

Today, more than 1,100 support buildings and laboratories are spread across NTS to provide state-of-the-art scientific experimental testing facilities, these include:

- **Device Assembly Facility (DAF):** DAF's original purpose was to consolidate all nuclear explosive assembly functions, to provide safe structures for high explosive and nuclear explosive assembly operations, and to provide a state-of-the-art safeguards and security environment. Now that America is no longer conducting underground nuclear weapons tests, the DAF is expected to become a centerpiece for innovative alternative uses of the test site, including disassembly of nuclear weapons.
- **Hazardous Materials (HAZMAT) Spill Center:** The HAZMAT Spill Center is a unique, one-of-a-kind facility built to

conduct hazardous materials testing and training under controlled conditions. The HAZMAT Spill Center can accommodate both large- and small-scale testing including live releases of hazardous materials for training purposes, field-test detection, plume dispersion experimentation, and equipment and materials testing.

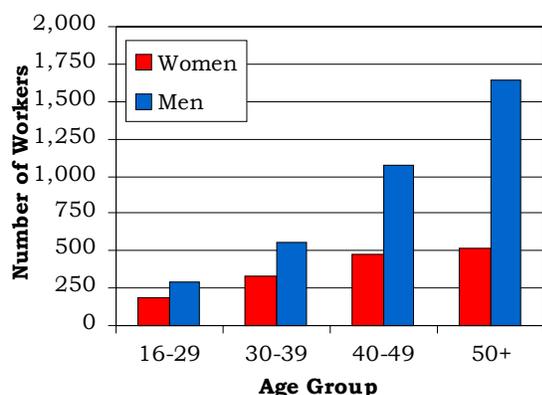
- **Big Explosives Experimental Facility (BEEF):** BEEF is a hydrodynamic testing facility for performing large high-explosive experiments. The facility has conducted conventional high-explosives experiments using a test bed that provides sophisticated diagnostics, such as high-speed optics and x-ray radiography on the firing table, while operating personnel are present in the bunker. In the future, BEEF is expected to play a large role in accumulating data supporting Stockpile Stewardship, along with a variety of new experimental programs that will expand this nation's non-nuclear experiment capabilities.
- **U1a Experimental Facility:** The U1a Facility is an underground experimental complex at NTS. The U1a complex supports routine test site activities in which high explosives are detonated to test the readiness of equipment, communications, procedures, and personnel. Test data will help maintain the reliability of the nuclear weapons stockpile by allowing scientists to gain more knowledge of the dynamic properties of aging nuclear materials. Of particular interest is data on the behavior of plutonium that can be used in computer calculations of nuclear weapon performance and safety in the absence of actual underground nuclear testing.

Bechtel Nevada is the Management and Operating contractor for NTS and its related facilities and laboratories.

The Nevada Test Site Work Force - 2002

A total of 5,065 NTS employees were included in illness and injury surveillance in 2002. The age and gender distribution of the 2002 work force is shown in Figure 1. There were 1,507 (30 percent) women and 3,558 (70 percent) men in the work force. The average age of male NTS workers was 47 years and 44 years for females.

Figure 1. The Work Force by Gender and Age



The distribution of workers by job category and gender is shown in Figure 2. Individual job titles, as reported by NTS, were grouped into 8 job categories. This is because there were either too few workers or health events within a particular job title, thereby limiting the type of analyses that could be conducted. Men and women were not distributed equally among the various occupational groups. Over half

(53 percent) of the men worked in the Professional and Scientific and Crafts/Manual Labor job categories. Fifty-seven percent of female workers were Administrative and Clerical Support or Professional and Scientific workers.

Figure 2. The Work Force by Job Category and Gender

Job Category	Women	Men
Official Manager	24 2%	143 4%
Supervisor	54 4%	186 5%
Administrative & Clerical Support	475 31%	106 3%
Professional & Scientific	385 26%	863 24%
Technical	143 9%	323 9%
Security	77 5%	243 7%
Crafts/Manual Labor	103 7%	1,017 29%
Other Unknown	246 16%	677 19%



Number and Length of Absences

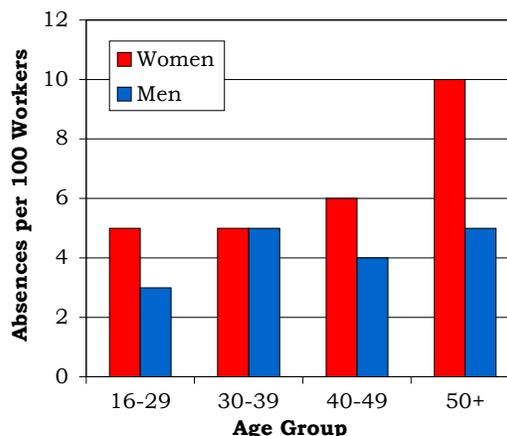
Illness and injury surveillance examines all absences due to illness and injury. Under DOE Order 440.1, contractor management is required to notify Occupational Medicine when a worker has been absent for 5 or more consecutive workdays. If an absence on a Friday continues through Tuesday, the length of that absence includes the weekend. All injuries and illnesses due to a work-related incident must be reported. Non-occupational illnesses and injuries that involve absences of fewer than 5 days do not routinely require a medical clearance for return to work. NTS, however, has chosen to report all absences, regardless of length.

Specific absences that were not the result of an illness or injury were excluded. These include 12 women with 12 reported absences due to pregnancy and 1 woman and 1 man with each reporting an absence due to elective surgical procedures not related to the treatment of an illness or medical procedures to rule out a particular medical condition.

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

As shown in Figure 3, the rate of absences due to illness or injury varied by gender and age. There were 107 absences among 99 women resulting in an absence rate of 7 per 100 workers (107/1,507). Among women, the rate increased with age, starting with the 40-49 age group. Among the 3,558 men, there were 161 absences resulting in an absence rate of 5 per 100 workers (161/3,558).

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 29 days for men and 27 days for women. The duration of absence increased with age among women. Among men, length of absence was not related to age.

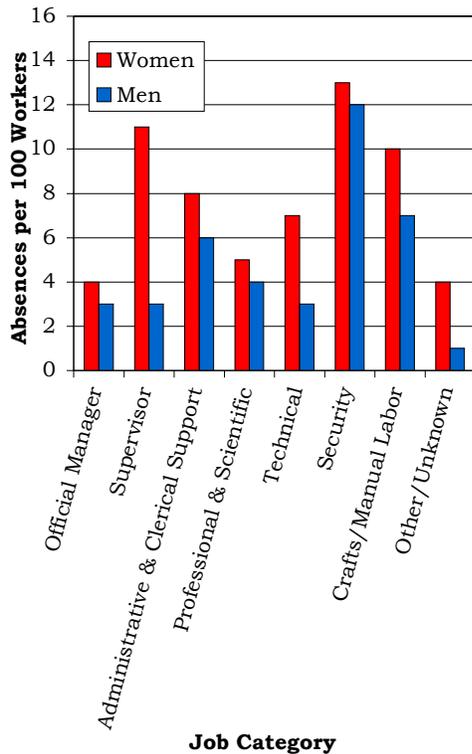
Figure 4. Number of Days Absent by Gender and Age

Gender	Age	Number of Absences	Number of Days Absent	Average Number of Days Absent
Women	16-29	9	167	19
	30-39	17	445	26
	40-49	31	816	26
	50+	50	1,509	30
	Total	107	2,937	27
Men	16-29	9	196	22
	30-39	25	390	16
	40-49	47	870	19
	50+	80	3,194	40
	Total	161	4,650	29

The absence rates due to illness or injury by job category for men and women are shown in Figure 5. Women had a higher rate of absence than men within a similar job category. Security workers had the highest absence rate,

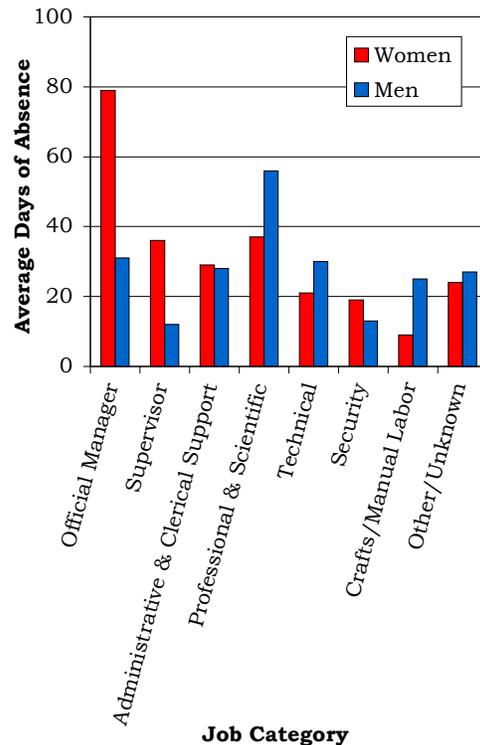
13 per 100 (10/77) among female workers and 12 per 100 (29/243) among men. Official Managers and Other/Unknown categories had the lowest absence rates, 4 per 100 workers (1/24 and 11/246, respectively) for women. The Other/Unknown job category had the lowest absence rate among men, 1 per 100 workers (6/677).

Figure 5. Absence Rate by Job Category and Gender



absent, 56 days. Supervisors averaged the shortest absences, 12 days, among men. Among female workers, Official Managers had the longest average absence, 79 days, which was based on 1 event. Female Crafts/Manual Labor workers averaged the shortest absences, 9 days.

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



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. Although Security workers had the highest rate of absences among men, the average duration of their absences, 13 days, was one of the shortest among the job categories. Professional and Scientific workers had the longest average number of days



Diagnostic Categories

Illness and injury surveillance monitors all illnesses and injuries among active workers because it is not always possible to determine which health effects are due to occupational



exposures and which ones 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 1 diagnosis, and illness and injury surveillance includes all reported diagnoses. In addition, the OSHA 200 Log provides information on recorded occupational illnesses or injuries 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 section of this report.



The number of reported diagnoses categorized according to the ICD-9-CM and the number of lost calendar days are presented in Figure 7a. Women reported 122 diagnoses and men reported 180 diagnoses in 2002. The most frequently reported diagnoses varied little by gender. Among both men and women, two of the most common diagnoses reported were injuries and respiratory illnesses. Among women, unspecified symptoms were also frequently reported, and among men, heart/circulatory conditions were common.

Figure 7a. 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	134	1	3
Blood	1	4	0	0
Cancer	6	558	3	177
Digestive	11	387	22	891
Endocrine/ Metabolic	3	54	3	39
Existing Birth Condition	0	0	1	13
Genitourinary	9	241	8	352
Heart/ Circulatory	11	494	28	1,200
Infections/ Parasites	2	15	4	29
Injury	15	208	33	647
Miscarriage	0	0	NA	NA
Muscles & Skeleton	13	341	19	664
Nervous System	2	19	5	156
Psychological	3	34	3	117
Respiratory	23	333	32	218
Skin	1	14	4	164
Unspecified Symptoms	17	241	14	158

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

Women lost 2,937 calendar days due to illness and injury. Respiratory diseases (19 percent), unspecified symptoms (14 percent), and injuries (12 percent) accounted for 45 percent of all reported diagnoses among women. Major contributors to these diagnostic categories are shown in Figure 7b.

Men lost 4,650 calendar days due to illness and injury. Fifty-two percent of all reported diagnoses among men were due to injuries (18 percent), respiratory diseases (18 percent), and heart/circulatory conditions (16 percent). Figure 7c shows major contributors to these diagnostic categories among men.

The previously mentioned diagnoses varied some by age. Women less than 40 years of age did not report any respiratory disorders, while they were frequently reported by men up to age 50. One heart/circulatory condition (chest pain) was reported by men less than 40 years of age.

Among women and men, injuries were among the most reported diagnoses in all age groups except for women aged 40 to 49. Digestive disorders were frequently reported by men in all but the 40 to 49 age group and by women under the age of 40.

Figure 8 shows the most frequently reported diagnoses by job category for men and women. The types of diagnoses did not vary significantly by job category. Among women, injuries and unspecified symptoms were reported in all job categories except for the Official Manager category. Muscles and skeleton disorders and respiratory conditions appeared also in most job categories among women. Among male workers, digestive disorders, heart/circulatory conditions, and respiratory conditions were frequently reported. We saw no indication that any particular diagnosis occurred disproportionately in a specific job category.



Figure 7b. Common Diagnoses Among Female Workers in 2002

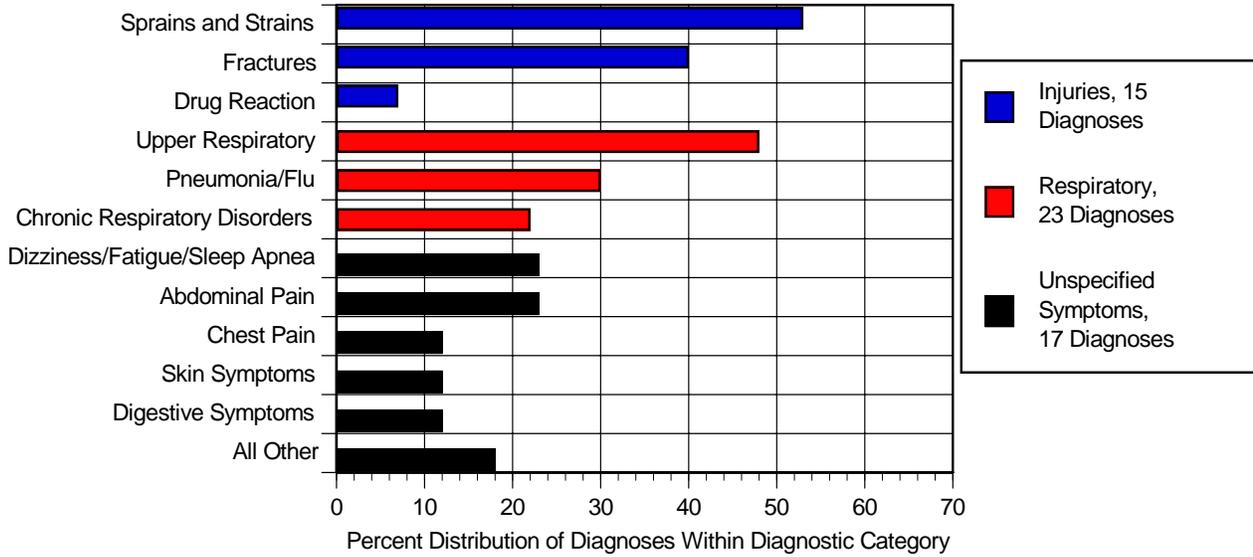


Figure 7c. Common Diagnoses Among Male Workers in 2002

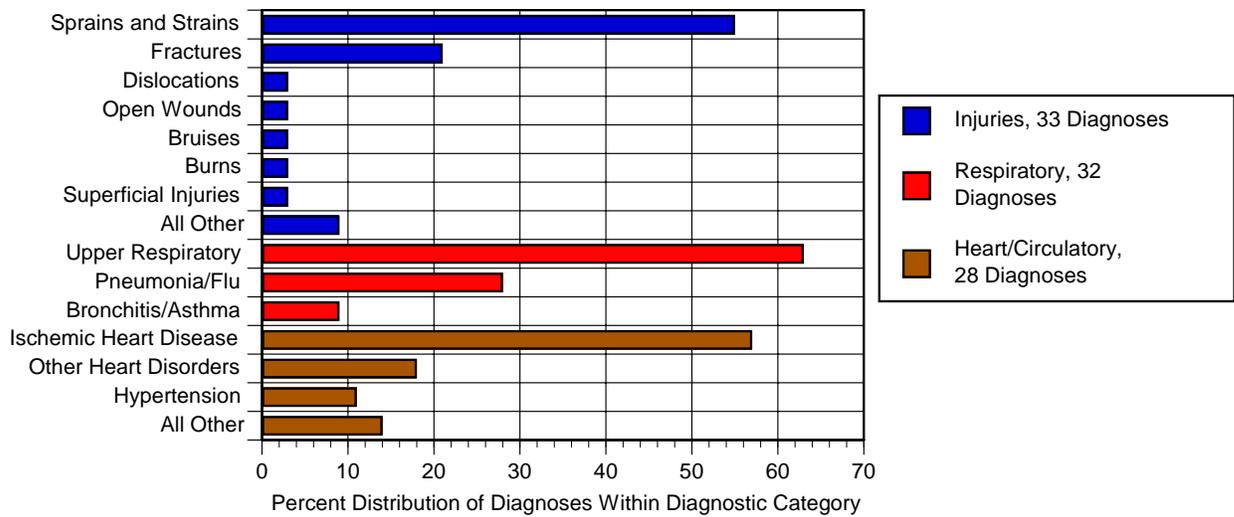


Figure 8. Most Frequently Reported Diagnoses by Job Category and Gender

Job Category	Men	Women
Official Manager	Heart/Circulatory (2) Digestive (1) Genitourinary (1) Respiratory (1)	Digestive (1)
Supervisor	Injury (3) Endocrine/Metabolic (2) Benign Growths (1) Digestive (1) Muscles & Skeleton (1) Respiratory (1)	Cancer (2) Respiratory (2) Injury (1) Muscles & Skeleton (1) Unspecified Symptoms (1)
Administrative & Clerical Support	Muscles & Skeleton (2) Respiratory (2) Unspecified Symptoms (2)	Injury (8) Digestive (6) Muscles & Skeleton (6) Unspecified Symptoms (6)
Professional & Scientific	Heart/Circulatory (9) Digestive (8) Respiratory (4)	Heart/Circulatory (4) Psychological (3) Respiratory (3) Unspecified Symptoms (3)
Technical	Digestive (4) Heart/Circulatory (3) Muscles & Skeleton (3)	Respiratory (4) Heart/Circulatory (2) Cancer (1) Genitourinary (1) Injury (1) Muscles & Skeleton (1) Unspecified Symptoms (1)
Security	Respiratory (11) Digestive (4) Heart/Circulatory (4) Injury (4)	Benign Growths (2) Muscles & Skeleton (2) Respiratory (2)
Crafts/Manual Labor	Injury (22) Respiratory (13) Heart/Circulatory (8)	Respiratory (5) Unspecified Symptoms (4) Digestive (1) Endocrine/Metabolic (1) Injury (1)
Other/Unknown	Injury (2) Heart/Circulatory (1) Muscles & Skeleton (1) Skin (1) Unspecified Symptoms (1)	Digestive (3) Respiratory (3) Injury (2)

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



Rates of Disease Occurrence

A Word about Rates: The previous section considered the number of absences and health conditions among various worker groups. For example, Figure 7a shows that men reported 32 diagnoses and women reported 23 diagnoses involving the respiratory system during 2002. Men, therefore, reported almost 40 percent more respiratory diagnoses as did women. As there were over twice as many men as women at NTS, it seems reasonable to expect more respiratory conditions among men than women. Does this mean that men were at greater risk of respiratory diseases than were women in 2002? 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 respiratory disease rate for each gender. Rates are calculated by dividing the number of 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:

$$32 \text{ respiratory diagnoses} \div 3,558 \text{ men} = .009 \times 1,000 = 9 \text{ respiratory diagnoses per 1,000 men}$$

$$23 \text{ respiratory diagnoses} \div 1,507 \text{ women} = .015 \times 1,000 = 15 \text{ respiratory diagnoses per 1,000 women}$$

Comparing these rates now correctly suggests that the rates of reported respiratory diagnoses among women were over 60 percent greater 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 a respiratory condition. 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, 1 absence lasting 5 days may be associated with multiple diagnoses (e.g., the flu and a sprained wrist) recorded for illness and injury surveillance.

In the following set of analyses, the 4 age groups previously used were collapsed into 2 groups: workers younger than 50 years of age and those 50 or older. The rates for all illnesses and injuries combined are shown in Figure 9. Four groups of diagnoses of particular interest to workers are presented in Figure 10: cancer, heart/circulatory system, respiratory system, and injury. Additional information about 6 other disease groups is also analyzed and can be found in the Supplemental Tables.

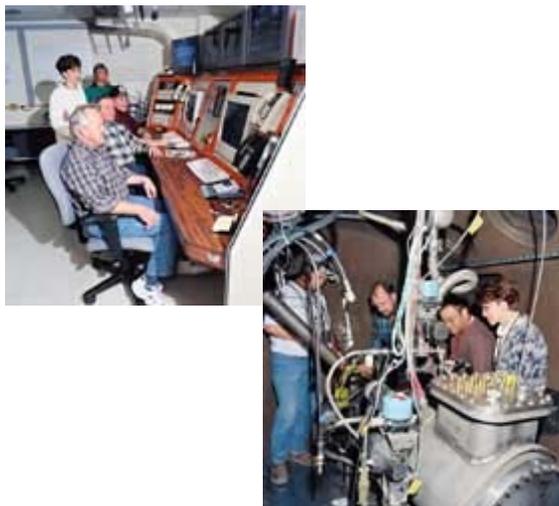
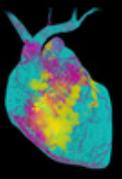


Figure 9. Rates for All Illnesses and Injuries Combined by Job Category, Gender, and Age

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Women	Men
All Illnesses & Injuries Combined	Official Manager	<50	0	0
		50+	91	49
	Supervisor	<50	38	29
		50+	214	60
	Administrative & Clerical Support	<50	89	86
		50+	98	28
	Professional & Scientific	<50	49	32
		50+	93	47
	Technical	<50	54	30
		50+	118	41
	Security	<50	161	141
		50+	67	115
	Crafts/Manual Labor	<50	70	67
		50+	219	85
	Other/Unknown	<50	29	6
		50+	92	13

Figure 10. Rates for Selected Diagnostic Categories by Job Category, Gender, and Age

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Women	Men
Cancer	Official Manager	<50	0	0
		50+	0	0
	Supervisor	<50	38	0
		50+	36	0
	Administrative & Clerical Support	<50	0	0
		50+	5	0
	Professional & Scientific	<50	4	0
		50+	8	5
	Technical	<50	0	0
		50+	20	0
	Security	<50	0	0
		50+	0	0
	Crafts/Manual Labor	<50	0	0
		50+	0	2
	Other/Unknown	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Women	Men
	Official Manager	<50	0	0
		50+	0	19
	Supervisor	<50	0	0
		50+	0	0
	Administrative & Clerical Support	<50	7	14
		50+	5	0
	Professional & Scientific	<50	11	9
		50+	8	12
	Technical	<50	0	0
		50+	39	24
	Security	<50	0	26
		50+	67	0
	Crafts/Manual Labor	<50	0	0
		50+	0	18
Other/Unknown	<50	0	0	
	50+	13	3	

Age was related to the rates for all illnesses and injuries combined across the various job categories for women, with workers aged 50 years and older having higher rates with the exception of the Security workers. This was also true for men, with the added exception of Administrative and Clerical Support workers. Among both men and women, Security workers had the highest rates, followed by female Supervisors and male Crafts/Manual Labor workers. Compared with other job categories, Official Managers had the lowest rate of illnesses and injuries for women. The lowest rate of illness and injury combined for men was the Other/Unknown workers.

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Women	Men
	Official Manager	<50	0	0
		50+	0	10
	Supervisor	<50	0	0
		50+	71	9
	Administrative & Clerical Support	<50	0	29
		50+	22	0
	Professional & Scientific	<50	4	9
		50+	17	0
	Technical	<50	22	0
		50+	39	0
	Security	<50	32	51
		50+	0	34
	Crafts/Manual Labor	<50	28	14
		50+	94	11
Other/Unknown	<50	6	0	
	50+	26	0	

Cancer rates presented in this report are based on any reported absences during the year, regardless of length of absence from work. A worker may experience several periods of absence from 1 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. Cancer incidence rates are based on the number of new cancer cases diagnosed within a given time, usually a year.

Diagnostic Category	Rate per 1,000			
	Job Category	Age	Women	Men
	Official Manager	<50	0	0
		50+	0	0
	Supervisor	<50	0	29
		50+	36	9
	Administrative & Clerical Support	<50	14	0
		50+	22	0
	Professional & Scientific	<50	4	5
		50+	8	0
	Technical	<50	11	0
		50+	0	0
	Security	<50	16	19
		50+	0	11
	Crafts/Manual Labor	<50	14	22
		50+	0	21
Other/Unknown	<50	0	3	
	50+	13	3	

The likelihood that an individual in the U.S. will develop cancer increases with age. Our data reflect this observation for both men and women. In all job categories in which cancer was reported, cancer rates were higher among older workers except for female Supervisors. Cancer was not reported among men under the age of 50. Three men reported 3 absences for cancer: all

were due to prostate cancer. Six women reported cancer in 2002: 3 breast cancers, 1 unspecified, 1 lymphoma, and 1 secondary cancer of unspecified lymph nodes. Among the 6 female workers who reported cancer, all were 40+ years of age with 1 exception. Four of the 9 workers reporting cancer were from the Professional and Scientific job category. Women had higher rates of cancer than did men in all job categories reporting cancer except for the Crafts/Manual Labor workers.

Older workers tended to have higher rates of heart/circulatory problems among men and women. Twenty-five of the 39 diagnoses reported were among



workers aged 50 or older. Workers in the 50+ age group were responsible for 19 of the 28 diagnoses reported by men. Regardless of age, 4 of the 11 diagnoses reported by women and 19 of the 28 diagnoses reported by men involved hypertension (high blood pressure) or ischemic heart disease (restricted blood flow through an artery).

Rates of respiratory disease were higher among older female workers with the exception of Security workers. Conversely, the rates of respiratory disease among men tended to be higher

among younger workers. The highest rates of respiratory disease were among female Crafts/Manual Labor workers and male Security workers. Workers in the Security category were almost 7 times as likely as other workers to report respiratory diseases.

Among workers reporting injuries, older female workers tended to have higher rates as opposed to men in which younger workers tended to have higher rates. The highest rates of injury were among women in the Supervisor group (19 diagnoses per 1,000 workers) and men in the Crafts/Manual Labor group (22 diagnoses per 1,000 workers). Compared with other workers, the Crafts/Manual Labor group was at 4 times the risk of reporting an injury and almost 5 times the risk of a back sprain or strain.

The risk of illness and injury among workers classified in each job category was compared with other workers in the remaining job categories. Workers in the Crafts/Manual Labor and Security groups were at an increased risk of 2 to 3 times of all illnesses and injuries compared with workers in other groups. Security workers were also at 3 times the risk compared with other workers of muscles and skeleton disorders. Unspecified symptoms occurred almost 3 times more often among Crafts/Manual Labor workers.

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 material substitution, engineering control, personal protection, or medical care may be required to reduce the risk of illness or injury among the work



force. Sixty-four medical conditions associated with workplace exposures from studies of many different industries have been identified as sentinel health events. Although sentinel health events may indicate an occupational exposure, many may result from non-occupational exposures. Due to this uncertainty, sentinel health events are assessed in 2 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 in 2002. Four of 302 diagnoses (1 percent) were identified as possible sentinel health events (Figure 11). Three of the 4 possible sentinel health events were identified as carpal tunnel syndrome, reported by 3 workers (1 woman and 2 men), and resulting in 136 lost calendar days. One worker accounted for 83 (61 percent) of the 136 lost calendar days. The carpal tunnel diagnoses were reported by 2 workers in the Professional and Scientific job category and one Crafts/Manual Labor worker. Two (67 percent) occurred among workers in the 40 to 49 age group and 1 worker was aged 50+.

Figure 11. 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	3	1	131	12
Total	3	1	131	12

Disabilities Among Active Workers

At the NTS, 1 male and 1 female were placed on long-term disability in 2002. The disabilities were due to cancer and an aneurysm. Both workers were over 40 years old. One worker was in the Administrative and Clerical Support job category and the other one was an Official Manager.

Deaths Among Active Workers

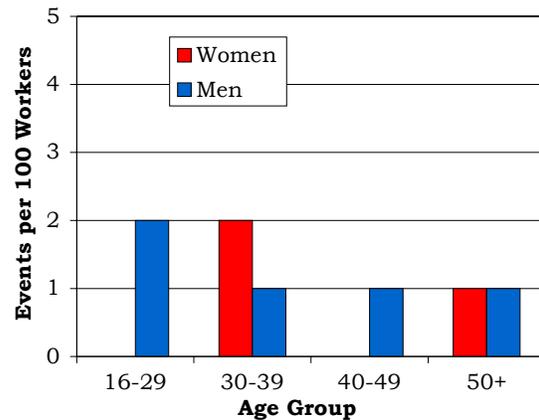
There was 1 death among NTS workers in 2002. A Professional and Scientific worker in the 40 to 49 age group died due to complications from an infectious disease.

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 per 100 workers by age and gender is shown in Figure 12. There were 13 OSHA-recordable events among women and 40 OSHA-recordable events among men. There were 13 women and 38 men who had one OSHA-recordable event and 1 man reported 2 OSHA events. Men reported 75 percent of the OSHA events; however, the rate of workers with an OSHA event was the same for men and women (1 per 100 workers). Women in the 16 to 29 and 40 to 49 age groups did not report any OSHA events. Occupational illnesses and injuries resulted in a total of 940 lost or restricted workdays reported at NTS in 2002. The average number of lost or restricted workdays was at least twice as high for older men (40+ years of age) than younger men. The average number of workdays lost or with restricted activity was the same for women and men (18 days).

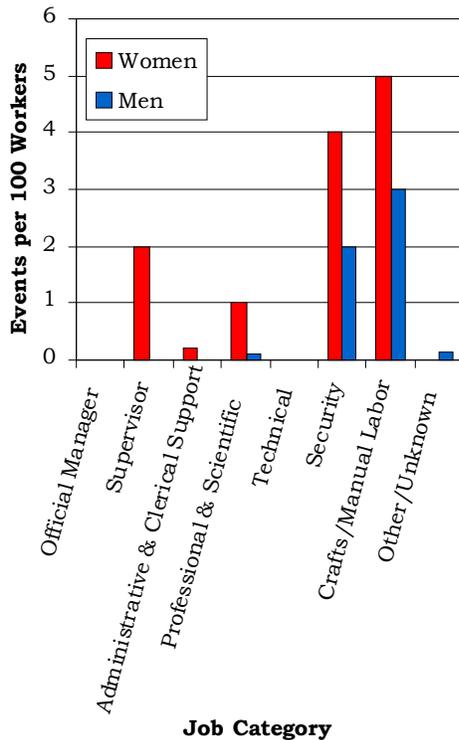
Figure 12. OSHA-Recordable Events by Gender and Age



The distribution of OSHA-recordable events by occupational categories and gender is shown in Figure 13. No OSHA events were reported by male and female workers in the Official Manager and Technical job categories, men in the Supervisor and Administrative and Clerical Support categories, and women in the Other/Unknown category. Women had higher rates of OSHA-recordable events compared with men in all job categories reporting OSHA events except for Other/Unknown workers. Among both women and men, the Crafts/Manual Labor group had the highest rate of OSHA events (5 and 3 per 100 workers, respectively).



Figure 13. OSHA-Recordable Events by Job Category and Gender



Among men, Security workers had the highest average number of lost or restricted workdays (34 days). This was based on 6 events involving 9 diagnoses, including 6 lower limb injuries, 2 hand injuries, and a back disorder. One of the lower limb injuries resulted in 180 lost workdays. There were no lost or restricted workdays for 2 of the 6 events. Women in the Crafts/Manual Labor category averaged the highest number of lost or restricted workdays (37days) compared with other job categories. This was based on 5 events, one of which involved dislocation of the knee and resulted in 39 and 73 lost/restricted workdays, respectively. This event was the result of overexertion and strenuous movement. Two events, which involved heat stress and a skin infection, had no lost or restricted workdays. Two events resulted in 56 and 17 restricted work days due to crushed fingers and sprain and strain of the back, respectively. No lost workdays were reported for these events.

Diagnostic and Accident Categories for OSHA-Recordable Events

There were 53 OSHA events recorded on the OSHA 200 Logs. From these, there were 24 diagnoses among women and 52 diagnoses among men as shown in Figure 14. Injuries accounted for over 80 percent of diagnoses for both men and women, the most common type for both being sprains and strains. Nineteen percent of the reported injuries among women were bruises followed by superficial injuries accounting for 14 percent of injuries. Open wounds (26 percent) and fractures (19 percent) were frequently reported among men.

Figure 14. OSHA-Recordable Diagnoses by Diagnostic Category and Gender

Diagnostic Category	Gender	
	Women	Men
Infections/Parasites	0	1
Muscles & Skeleton	1	4
Respiratory	0	1
Skin	1	2
Unspecified Symptoms	1	1
Injury	21	43
Fractures – Upper Limb	1	6
Fractures – Lower Limb	0	2
Dislocations	1	0
Back Sprains & Strains	3	6
Other Sprains & Strains	3	9
Open Wounds – Head, Neck, Trunk	0	1
Open Wounds – Upper Limb	2	8
Open Wounds – Lower Limb	0	2
Superficial Injuries	3	2
Bruises	4	4
Crushing Injuries	2	0
Foreign Bodies Entering Orifice	1	1
Adverse Reactions to Non-Medical Substances	0	1
Adverse Reactions to External Causes	1	1

Eighty-nine percent (47) of the 53 OSHA events were described as “an accident” in the OSHA logs (Figure 15). The majority of these events were described as “other accidents,” 45 percent among women and 83 percent among men. Overexertion and



strenuous movements were responsible for 40 percent of the “other accidents,” followed by being caught

between objects (23 percent) and struck by an object (20 percent). Falls made up the second most common type of accident (15 percent).

Figure 15. OSHA-Recordable Accidents by Type and Gender

Accident Category	Gender	
	Women	Men
	Number of Accidents	Number of Accidents
Poisoning – Non-Medicinal	0	1
Falls	4	3
Natural/Environmental Factors	1	1
Submersion/Suffocation/Foreign Bodies	1	1
Other Accidents	5	30
Struck by an Object	0	7
Caught Between Objects	2	6
Cutting/Piercing Instrument/Object	1	5
Overexertion/Strenuous Movements	2	12
Total	11	36

Rates of OSHA-Recordable Events

The rates of all OSHA-recordable events by age and job categories and gender are shown in Figures 16 and 17. Women had higher rates than did men in all job categories reporting OSHA-recordable events except for the Other/Unknown category. Women in that group did not report any OSHA-recordable events. Official Managers and Technical workers did not report any events for women or men. The OSHA-recordable rates for men and women were the highest among the Security and Crafts/Manual Labor groups. Most of the OSHA health conditions involved injuries. When the rates for OSHA-recordable injuries were considered separately, the highest rates for women were among Security workers, and Crafts/Manual Laborers had the highest rates among men. Workers in these two groups comprised 28 percent of the work force and reported 87 percent of the OSHA events.

Compared with other occupational groups, illnesses and injuries were more likely among the Crafts/Manual Laborers (11 times) and Security workers (3 times). The Crafts/Manual Laborers were at 14 times the risk of workers in other job categories of an injury. They were also 15 times more likely to have sprains and strains other than the back and 7 times more likely to receive an open wound to the upper limb.

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

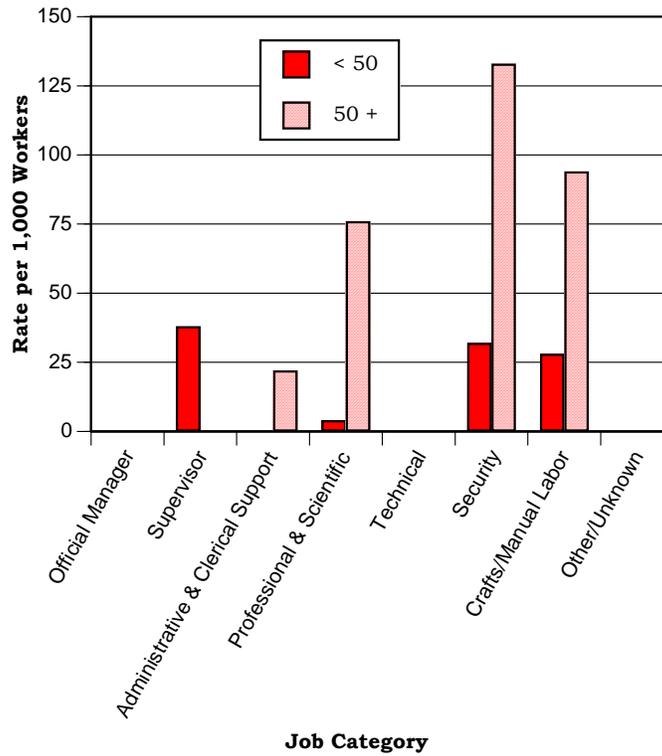
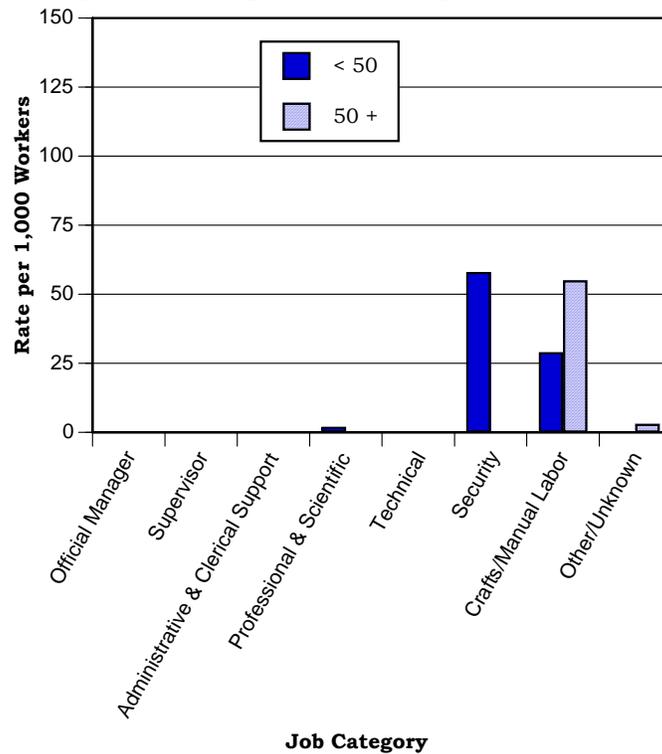


Figure 17. OSHA-Recordable Rates by Age and Job Categories Among Men, All Diagnoses Combined



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 2 or more groups with the effect of the differences for the characteristic removed.

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

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

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

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

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

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

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

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

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

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

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

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

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

Person-Year: A unit of measurement combining the number of people being studied with the time that each was observed equivalent to 1 person followed for 1 year. For example, 5 people followed for 1 year contribute 5 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 1 group compared with 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 disk (“slipped disk”), 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 disk; rheumatoid arthritis of the spine; lumbago; and sciatica
• Rheumatism, excluding the back	725-729	Swelling and degeneration of joints, muscles, tendons; tennis elbow; and bursitis
• Osteopathies, chondropathies, and acquired musculoskeletal deformities	730-739	Fracture caused by bone disease; osteoporosis; curvature of the spine; flat foot; hammer toe; and development of deformities of the nose, toes, feet, legs, arms, and hands
Congenital anomalies	740-759	Spina bifida; cleft palate; harelip; and various chromosomal anomalies, such as Klinefelter’s syndrome
Certain conditions originating in the perinatal period	760-779	Maternal high blood pressure; maternal malnutrition; ectopic pregnancy; breech birth; fetal malnutrition or slow growth; injuries related to birth trauma; and perinatal jaundice
Symptoms, signs, and ill-defined conditions	780-799	Blackout, chills, dizziness, fatigue, pallor, abnormal weight loss, undiagnosed chest pain, and heartburn

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

<ul style="list-style-type: none"> • Other injuries and late effects of external causes 	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

NOTES