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# Sandia National Laboratories

# 1993

Epidemiologic  
Surveillance

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## Foreword

The U.S. Department of Energy (DOE) is committed to assuring the health and safety of its workers through the development of epidemiologic surveillance activities. A pilot epidemiologic surveillance program has been implemented at selected DOE sites during the past several years. This approach has been expanded to include surveillance of all medical conditions that result in an absence of 5 or more consecutive workdays, occupational injuries and accidents, and deaths among active employees. This annual epidemiologic surveillance report provides the final summary for Sandia National Laboratories for the 12-month period, January 1, 1993, through December 31, 1993.

Caution is required when comparing this information with that of other DOE facilities. Interpretation of these data must take into account the occupational medicine program, health and safety practices, the composition of the work force, and potential occupational exposures unique to this facility; therefore, the data presented are pertinent only to Sandia National Laboratories. Continuing surveillance and data examination may suggest emerging trends that change the preliminary interpretation of the data.

Plans for future annual reports include a discussion of important new findings and changes occurring since previous reports and the incorporation of information from the National Center for Health Statistics and the National Cancer Institute's Surveillance, Epidemiology, and End Results Program. This information will

allow early recognition and investigation of possible work-related problems, as well as an analysis of trends over time. In addition, the results of epidemiologic surveillance will be combined with those of medical and exposure surveillance to form an integrated approach to worker health protection.

### Sandia National Laboratories at a Glance

- This report marks the first annual epidemiologic surveillance report for Sandia National Laboratories.
- About 9% of the Sandia work force experienced at least one absence of 5 or more days due to illness or injury during 1993.
- The highest diagnosis rate for both men and women involved respiratory diseases. Respiratory diagnosis rates were about twice as high for women as for men.
- Overall, diagnosis rates were almost three times higher for hourly than for salaried workers. Diagnosis rates were consistently higher among hourly occupational groups, but the difference may reflect underreporting of health events by salaried workers.
- In 1993, 252 events were reported to the Occupational Safety and Health Administration (OSHA). The diagnosis rate for OSHA-recordable events was very similar for women and men, with the rates for sprains and strains highest among the various other OSHA-recordable injuries.
- Three cases of toxic effects of exposures were reported in 1993: one case of mercury poisoning and two others involving unspecified gases, fumes, or vapors.

## Introduction

Epidemiologic surveillance at DOE facilities consists of regular and systematic collection, analysis, and interpretation of data on absences due to illness and injury in the work force. Its purpose is to provide an early warning system about health problems occurring among employees at participating sites. Data are collected by coordinators at each site and submitted to the Epidemiologic Surveillance Data Center, located at the Oak Ridge Institute for Science and Education, where quality control procedures and analyses are carried out. Rates of absences and rates of diagnoses associated with absences are analyzed by occupation and other relevant variables. They may be compared with the disease experience of different groups within the DOE work force and with populations that do not work for DOE to identify disease patterns or clusters that may be associated with work activities.

In this annual report, the 1993 morbidity data for the Sandia National Laboratories are summarized. These analyses focus on absences of 5 or more consecutive workdays occurring among workers aged 15-75 years. They are arranged in five sets of tables that present: 1) the distribution of the labor force by occupational category and pay status; 2) the absences per person, diagnoses per absence, and diagnosis rates for the whole work force; 3) diagnosis rates by type of disease or injury; 4) diagnosis rates by occupational category; and 5) relative risks

for specific types of disease or injury by occupational category. In addition to this information, the report contains health events that are considered reportable by the Occupational Safety and Health Administration (OSHA). The analyses of the OSHA data are arranged like the absences of 5 or more consecutive workdays. OSHA-recordable events are those that occurred on the job and involve fatalities (regardless of the time between the injury and death); lost workday cases other than fatalities; and nonfatal cases without lost workdays resulting in transfer to another job, termination of employment, medical treatment other than first aid, loss of consciousness, or restriction of work or motion. Also reportable are any diagnosed occupational health events reported to the employer that are neither fatal nor result in lost workdays. Deaths occurring among active workers are listed separately; they are not included in any tables. All rates presented in this report are age-adjusted (see glossary) and represent the number of diagnoses reported per 1,000 persons in 1 year.

Throughout this report, the symbol "NA" means "not available" or "not applicable." An empty cell in a table indicates that the value of the cell is zero or that the value cannot be computed.

The tables show the results of analyses of diagnoses resulting from *absences*. An absence is defined as a period of 5 or more consecutive workdays away from work due to some health problem,

such as an illness or injury. In tables presenting analyses of *diagnoses*, each diagnosis is counted because a diagnosis is for a specific illness or injury. A worker can have more than one diagnosis related to one absence from work. For example, a worker's single absence might involve both a back injury and pneumonia. Unlike analyses of absences, analyses of diagnoses focus on the rates of occurrence of specific types of disease and injury. Thus the worker with one absence in which he had a back injury and pneumonia would be counted twice in the analysis of diagnoses because two separate diagnoses are recorded for this one absence.

The data included in this report are supplemental to, but do not replace, those reported in other safety, industrial hygiene, and health physics reports prepared by DOE. There has been no attempt to validate diagnoses with medical records, pathology, or other laboratory reports. Also, there has been no attempt to validate occupational information reported by the site. For reporting purposes, occupational titles have been grouped into broad categories within which a great deal of diversity in tasks and exposures is likely to exist. Additional material outlining the methods used and explaining the diagnostic categories and frequently used terms can be found on the inside back cover.

## Facility Overview

The original mission of Sandia National Laboratories was research and development of nuclear weapons. However, the scope of its mission has expanded to include work on other advanced military technologies, energy programs, arms verification and control technology, and applied research.

Sandia National Laboratories' headquarters and main laboratory are located near Albuquerque, New Mexico, at Kirtland Air Force Base. Until October 1, 1993, the multiprogram research and development facility was managed and operated by American Telephone and Telegraph for DOE.

The facility, which is now managed and operated by Martin Marietta Energy Systems, Inc., has state-of-the-art equipment for environmental testing, radiation research, combustion research, computing, and microelectronics research and production. In addition to a primary standards laboratory, the facility also includes transonic, supersonic, and hypersonic wind tunnels, as well as design, fabrication, and process development laboratories.

Another Sandia laboratory is located in Livermore, California, across the street from Lawrence Livermore Laboratory, with which they share some facilities. This epidemiologic surveillance report pertains only to workers at the Sandia Albuquerque facility.

## Labor Force by Occupational Category, 1993

During 1993, there were 8,472 employees (aged 15-75) identified by Sandia National Laboratories as participants in epidemiologic surveillance. Seventy percent (5,934 workers) were men, and 30% (2,538 workers) were women. Seventy-one percent (6,041 workers) were Caucasian and 21% (1,767 workers) were Hispanic. The remaining 8% (664 workers) included African Americans, Asians, and Native Americans.

The composition of the work force by occupational category and salary status is given in Table 1. The occupational categories used in the table are based on the occupation and industry codes created by the Bureau

of the Census in 1980. Because a worker's occupational category can change over the course of a year, workers were counted in the occupational category in which they spent most of their time.

A small number of workers (8.8%) were placed in the "non-regular" hourly category.

Seventy-four percent of the workers were salaried, whereas 17% were hourly. The occupational categories with the largest number of employees were professional staff (50%) and support staff (24%).

	Occupational Category	Number of Workers in 1993	Number of Workers in 1992	% Change from Last Year
Salaried	Professional Staff	4,247	NA	NA
	Support Staff	1,999	NA	NA
	<b>Subtotal</b>	<b>6,246</b>	<b>NA</b>	<b>NA</b>
Hourly	Clerical	666	NA	NA
	Craftsmen & Manual Laborers	670	NA	NA
	Security	146	NA	NA
	<b>Subtotal</b>	<b>1,482</b>	<b>NA</b>	<b>NA</b>
	Non-Regular*	744	NA	NA
	<b>Total</b>	<b>8,472</b>	<b>NA</b>	<b>NA</b>

**Table 1.**  
**Labor Force by Occupational Category, 1993**

\*Non-regular workers include both salaried and hourly workers who work part-time or at regularly scheduled intervals (for example, the first two weeks of each month).

## Absences Among Work Force, 1993

**Absences per Person.** In 1993, 783 Sandia employees reported an absence of 5 or more consecutive workdays because of illness or injury. Of these workers, 110 (14%) had two or more absences. A total of 929 absences were reported by the employees (Table 2.A).

**Diagnoses per Absence.** A total of 1,564 diagnoses were associated with the 929 absences of 5 or more consecutive workdays. Multiple diagnoses were reported for 434 (47%) absences (Table 2.B).

**Diagnoses Rates.** In 1993, 1,564 diagnoses noted for absences of 5 or more consecutive workdays

yielded an age-adjusted rate of 176.8 diagnoses per 1,000 persons. The diagnosis rate for women (278.6 per 1,000) was more than double the rate for men (127.3 per 1,000) (Table 2.C).

Employee Category	Number of Workers	Number of Absences					Total Persons Absent at Least Once	Total Number of Absences
		0	1	2	3	4 or more		
Male	5,934	5,509	367	48	6	4	425	509
Female	2,538	2,180	306	44	6	2	358	420
<b>TOTAL</b>	<b>8,472</b>	<b>7,689</b>	<b>673</b>	<b>92</b>	<b>12</b>	<b>6</b>	<b>783</b>	<b>929</b>

**Table 2.A.**  
*Absences per Person*

Employee Category	Number of Diagnoses per Absence				Total Number of Absences	Total Number of Diagnoses†
	1	2	3	4 or more		
Male	288	149	52	20	509	841
Female	207	155	35	23	420	723
<b>TOTAL</b>	<b>495</b>	<b>304</b>	<b>87</b>	<b>43</b>	<b>929</b>	<b>1,564</b>

**Table 2.B.**  
*Diagnoses per Absence*

Employee Category	Number of Workers	Number of Diagnoses†	Crude Rate per 1,000	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Male	5,934	841	141.7	127.3	118.5	136.7
Female	2,538	723	284.9	278.6	257.6	301.2
<b>TOTAL</b>	<b>8,472</b>	<b>1,564</b>	<b>184.6</b>	<b>176.8</b>	<b>167.6</b>	<b>186.4</b>

**Table 2.C.**  
*Diagnosis Rates*

† Includes all diagnoses reported with an absence of 5 or more days, including absences for pregnancy and delivery.  
\* Standardized to age distribution of 1970 U.S. population.

## **Diseases and Injuries by Diagnostic Category, 1993**

The age-adjusted diagnosis rate for each diagnostic category is given for all workers in Table 3. Because the patterns of diagnoses reported among men and women differ, Tables 4 and 5 show the diagnosis rates by gender to further describe the disease and injury patterns in the work force. Diagnoses associated with pregnancy, labor, and delivery are described in Table 6.

For all workers, the three diagnostic categories with the highest rates were pregnancy and childbirth (34.5 per 1,000), diseases of the respiratory system (33.4 per 1,000), and diseases of the musculoskeletal system (21.5 per 1,000). Together, these three categories accounted for 36% of all diagnoses.

The diagnostic category with the highest rate among men was diseases of the respiratory system (25.5 per 1,000), with 168 diagnoses reported among 114 men. This accounted for 20% of all diagnoses among men. Seventy-eight diagnoses were related to upper respiratory diagnoses, and 40 each to pneumonia/bronchitis and chronic respiratory conditions. The second highest rate, accounting for 15% of the total diagnoses, was injury and poisoning (19.0 per 1,000), with 130 diagnoses reported for 100 men.

Forty men had sprains and strains: 19 to the back, 11 to the lower body, 8 to the upper body, and 2 were ill-defined. Six of these men had multiple diagnoses. Twenty-eight men had fractures: 19 to the lower appendages, 11 to the trunk, 2 to the upper appendages, and 1 to the head. Eight of these men had multiple diagnoses. Twelve men had dislocations: 10 to the lower body and 2 to the shoulder. One man each had a cerebral contusion, an internal injury of the chest, and an open wound to the hand. Twenty-eight men had "other" injuries. These included nine unspecified injuries, eight complications, five contusions, four toxic or adverse effects, one post-operative infection, and one burn to the hand of unspecified degree. The category of musculoskeletal disorders (16.8 per 1,000) ranked third, with 109 diagnoses reported for 74 men. Of these diagnoses, 45% were related to dorsopathies (spinal disorders). Additionally, 84 digestive system disorders (11.9 per 1,000) were reported among 69 men; 27% of these were due to hernias. Forty-six cancers were reported for 22 men in 1993. There were nine prostate cancers, four digestive system cancers, two lung cancers, two kidney cancers, one bladder cancer, one thyroid cancer, one cancer of the mediastinum (chest tissues), one cancer of the abdominal wall connective tissues, and one melanoma of the skin. Four men had multiple diagnoses. For five men, the cancer spread from the site of origin (metastasized) resulting in cancer formation in one or more secondary sites.

The diagnostic category with the highest rate among women was diseases of the respiratory system (52.6 per 1,000), with 130 diagnoses reported among 84 women. This accounted for 18% of all diagnoses among women. Of these diagnoses, 62 were related to upper respiratory disorders, 42 to chronic respiratory conditions, and 25 to pneumonia/bronchitis. The category with the second highest rate was pregnancy and childbirth (34.5 per 1,000), with 83 diagnoses among 65 women, 32% of which were due to normal deliveries. The category of musculoskeletal disorders (31.9 per 1,000) ranked third, with 79 diagnoses reported for 55 women. Twenty-three percent of these diagnoses were due to dorsopathies (spinal disorders). Diseases of the genitourinary system (23.9 per 1,000) ranked fourth, with 67 diagnoses reported for 50 women. Injury and poisoning (20.3 per 1,000) followed with 56 diagnoses among 45 women. Other less common diagnostic categories included the nervous system and sense organs (17.2 per 1,000) and the digestive system (16.0 per 1,000). Twelve cancers were reported for eight women in 1993. There were three breast cancers, two ovarian cancers, one thyroid cancer, one cancer of the connective tissues, and one in situ carcinoma of the cervix. Three women had multiple diagnoses.

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Infections and parasitic diseases	001-139	52	5.6	4.2	7.6
Malignant neoplasms	140-208, 230-234	58	6.8	5.2	8.8
• Digestive organs	150-159	5	0.6	0.3	1.6
• Respiratory system	160-165	3	0.4	0.1	1.3
• Breast	174-175	6	0.6	0.2	1.2
• Genitourinary	179-185	12	1.4	0.8	2.5
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	27	2.8	1.9	4.1
Endocrine and metabolic diseases	240-279	28	3.1	2.1	4.6
Blood and blood-forming organs	280-289	8	0.8	0.4	1.6
Mental disorders	290-319	54	5.8	4.4	7.7
• Alcoholism	303	4	0.3	0.1	0.9
• Drug abuse	304-305	1	0.1	0.0	0.8
Nervous system and sense organs	320-389	98	10.8	8.8	13.3
Circulatory system	390-459	76	9.2	7.3	11.6
• Hypertension	401	7	0.8	0.4	1.7
• Acute myocardial infarction	410	8	1.0	0.5	2.0
• Ischemic disease, not M.I.	411-414, 429.2	17	2.1	1.3	3.4
• Cerebrovascular disease	430-438	1	0.2	0.0	1.1
Respiratory system	460-519	298	33.4	29.6	37.7
• Upper respiratory	460-465, 470-478	140	15.5	13.0	18.5
• Pneumonia/bronchitis	466, 480-487	65	7.4	5.7	9.6
• Chronic respiratory conditions	490-496	82	9.4	7.5	11.8
Digestive system	520-579	124	12.9	10.8	15.5
• Hernias	550-553	24	2.5	1.7	3.7
• Gall bladder disease	574-575	12	1.3	0.7	2.4
Genitourinary system	580-629	96	10.3	8.4	12.7
• Benign prostatic hypertrophy	600	3	0.4	0.1	1.2
• Endometriosis	617	10	0.9	0.5	1.7
• Ovarian cysts	620.0-620.2	3	0.3	0.1	0.9
• Female genital pain/bleeding	625-626	24	2.3	1.6	3.5
Pregnancy and childbirth <sup>1</sup>	630-676	83	34.5	27.3	43.5
Skin and subcutaneous tissue	680-709	22	2.0	1.3	3.1
Musculoskeletal	710-739	188	21.5	18.4	25.0
• Dorsopathies system	720-724	67	7.6	5.9	9.9
Congenital anomalies	740-759	4	0.5	0.2	1.3
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	77	8.7	6.8	11.0
Injury and poisoning	800-999	186	19.7	16.9	22.9
• Fractures, all sites	800-829	49	5.0	3.7	6.6
• Dislocations	830-839	25	2.8	1.8	4.3
• Sprains and strains	840-848	63	6.7	5.1	8.7
• Intracranial injuries	850-854	2	0.2	0.1	0.8
• Internal Injuries	860-869	1	0.1	0.0	0.7
• Open wounds	870-897	2	0.2	0.0	0.8
• Other injuries	900-999	44	4.7	3.5	6.4
Health status/health service contact	V01-V82	85	11.1	8.7	14.2
• Family history of health problems	V10-V19	6	0.7	0.3	1.5
• Circumstances reproduction/development	V20-V28	65	9.0	6.7	11.9
• Specific procedure/aftercare	V50-V59	12	1.3	0.7	2.2
<b>Total minus pregnancies</b>		<b>1,481</b>	<b>165.1</b>	<b>156.4</b>	<b>174.3</b>
<b>TOTAL</b>		<b>1,564</b>	<b>176.8</b>	<b>167.6</b>	<b>186.4</b>

**Table 3.**  
**Diseases and Injuries by Diagnostic Category - Males and Females**

† Includes all diagnoses reported with an absence of 5 or more days.

\* Standardized to age distribution of 1970 U.S. population.

<sup>1</sup> Only women age 18-45 years were included in the calculation of the rate for this diagnostic category.

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Infections and parasitic diseases	001-139	28	4.0	2.6	6.0
Malignant neoplasms	140-208, 230-234	46	7.4	5.5	10.0
• Digestive organs	150-159	5	0.8	0.3	2.0
• Respiratory system	160-165	3	0.5	0.2	1.7
• Breast	174-175	0			
• Genitourinary	179-185	10	1.5	0.8	2.9
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	4	0.9	0.3	2.9
Endocrine and metabolic diseases	240-279	17	2.5	1.6	4.1
Blood and blood-forming organs	280-289	3	0.4	0.1	1.3
Mental disorders	290-319	32	5.0	3.4	7.5
• Alcoholism	303	4	0.5	0.2	1.3
• Drug abuse	304-305	1	0.1	0.0	1.0
Nervous system and sense organs	320-389	54	8.4	6.4	11.2
Circulatory system	390-459	60	9.5	7.4	12.3
• Hypertension	401	4	0.6	0.2	1.5
• Acute myocardial infarction	410	6	0.9	0.4	2.0
• Ischemic disease, not M.I.	411-414, 429.2	15	2.4	1.4	3.9
• Cerebrovascular disease	430-438	1	0.2	0.0	1.4
Respiratory system	460-519	168	25.5	21.7	30.0
• Upper respiratory	460-465, 470-478	78	11.6	9.2	14.8
• Pneumonia/bronchitis	466, 480-487	40	6.2	4.4	8.6
• Chronic respiratory conditions	490-496	40	6.4	4.6	8.8
Digestive system	520-579	84	11.9	9.6	14.8
• Hernias	550-553	23	3.2	2.1	4.9
• Gall bladder disease	574-575	4	0.7	0.2	1.8
Genitourinary system	580-629	29	4.5	3.1	6.5
• Benign prostatic hypertrophy	600	3	0.5	0.2	1.5
• Endometriosis	617	NA	NA	NA	NA
• Ovarian cysts	620.0-620.2	NA	NA	NA	NA
• Female genital pain/bleeding	625-626	NA	NA	NA	NA
Pregnancy and childbirth	630-676	NA	NA	NA	NA
Skin and subcutaneous tissue	680-709	11	1.5	0.8	2.7
Musculoskeletal	710-739	109	16.8	13.7	20.5
• Dorsopathies system	720-724	49	6.9	5.2	9.2
Congenital anomalies	740-759	3	0.4	0.1	1.4
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	50	7.5	5.6	10.1
Injury and poisoning	800-999	130	19.0	15.8	22.7
• Fractures, all sites	800-829	37	5.2	3.8	7.3
• Dislocations	830-839	12	1.7	1.0	3.1
• Sprains and strains	840-848	49	7.3	5.3	9.9
• Intracranial injuries	850-854	1	0.1	0.0	1.0
• Internal Injuries	860-869	1	0.1	0.0	1.0
• Open wounds	870-897	1	0.1	0.0	1.0
• Other injuries	900-999	29	4.3	2.9	6.2
Health status/health service contact	V01-V82	13	1.9	1.1	3.3
• Family history of health problems	V10-V19	4	0.6	0.2	1.7
• Circumstances reproduction/development	V20-V28	1	0.1	0.0	1.0
• Specific procedure/aftercare	V50-V59	8	1.2	0.6	2.3
<b>TOTAL</b>		<b>841</b>	<b>127.3</b>	<b>118.5</b>	<b>136.7</b>

**Table 4.**  
**Diseases and**  
**Injuries**  
**by Diagnostic**  
**Category - Males**

† Includes all diagnoses reported with an absence of 5 or more days.

\*Standardized to age distribution of 1970 U.S. population.

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Infections and parasitic diseases	001-139	24	9.7	6.3	14.8
Malignant neoplasms	140-208, 230-234	12	4.2	2.3	7.5
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	6	2.1	0.9	4.7
• Genitourinary	179-185	2	0.8	0.2	3.3
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	23	7.8	5.1	11.9
Endocrine and metabolic diseases	240-279	11	5.4	2.8	10.4
Blood and blood-forming organs	280-289	5	1.8	0.7	4.3
Mental disorders	290-319	22	8.8	5.6	13.9
• Alcoholism	303	0			
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	44	17.2	12.6	23.5
Circulatory system	390-459	16	8.0	4.7	13.7
• Hypertension	401	3	1.8	0.6	5.9
• Acute myocardial infarction	410	2	1.3	0.3	5.7
• Ischemic disease, not M.I.	411-414, 429.2	2	1.3	0.3	5.7
• Cerebrovascular disease	430-438	0			
Respiratory system	460-519	130	52.6	43.6	63.4
• Upper respiratory	460-465, 470-478	62	24.3	18.5	31.8
• Pneumonia/bronchitis	466, 480-487	25	10.1	6.6	15.4
• Chronic respiratory conditions	490-496	42	17.8	12.8	24.7
Digestive system	520-579	40	16.0	11.4	22.3
• Hernias	550-553	1	0.3	0.0	2.3
• Gall bladder disease	574-575	8	3.2	1.5	7.0
Genitourinary system	580-629	67	23.9	18.7	30.6
• Benign prostatic hypertrophy	600	NA	NA	NA	NA
• Endometriosis	617	10	3.2	1.7	6.0
• Ovarian cysts	620.0-620.2	3	1.1	0.3	3.4
• Female genital pain/bleeding	625-626	24	8.3	5.5	12.6
Pregnancy and childbirth <sup>1</sup>	630-676	83	34.5	27.3	43.5
Skin and subcutaneous tissue	680-709	11	3.4	1.9	6.3
Musculoskeletal	710-739	79	31.9	25.2	40.4
• Dorsopathies system	720-724	18	8.4	5.1	14.0
Congenital anomalies	740-759	1	0.5	0.1	3.4
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	27	10.3	6.9	15.4
Injury and poisoning	800-999	56	20.3	15.3	26.8
• Fractures, all sites	800-829	12	4.5	2.4	8.3
• Dislocations	830-839	13	4.5	2.5	7.9
• Sprains and strains	840-848	14	4.7	2.8	8.1
• Intracranial injuries	850-854	1	0.5	0.1	3.4
• Internal Injuries	860-869	0			
• Open wounds	870-897	1	0.3	0.0	2.3
• Other injuries	900-999	15	5.8	3.4	10.0
Health status/health service contact	V01-V82	72	26.2	20.5	33.5
• Family history of health problems	V10-V19	2	0.7	0.2	3.1
• Circumstances reproduction/development	V20-V28	64	23.3	18.0	30.3
• Specific procedure/aftercare	V50-V59	4	1.5	0.5	4.1
<b>Total minus pregnancies</b>		<b>640</b>	<b>248.0</b>	<b>228.2</b>	<b>269.5</b>
<b>TOTAL</b>		<b>723</b>	<b>278.6</b>	<b>257.6</b>	<b>301.2</b>

**Table 5.**  
**Diseases and Injuries by Diagnostic Category - Females**

† Includes all diagnoses reported with an absence of 5 or more days.

\* Standardized to age distribution of 1970 U.S. population.

<sup>1</sup> Only women age 18-45 years were included in the calculation of the rate for this diagnostic category.

## Diagnoses Associated with Pregnancy, Labor, and Delivery

During 1993, 83 pregnancy-related diagnoses were reported among 65 women (Table 6). Twenty-six women had 32 diagnoses associated with pregnancy complications, 11 with miscarriages, and 26 had normal deliveries.

## Diagnoses by Occupational Category, 1993

During 1993, the age-adjusted diagnosis rate for all employees was more than two-and-a-half times higher among hourly workers than salaried workers (432.0 versus 154.3 per 1,000 persons) (Table 7). Clerical workers, who comprised 8% of the work force, had the highest diagnosis rate (438.3 per 1,000), with 277 diagnoses reported for 120 workers. Security workers had the second highest diagnosis rate (385.0 per 1,000), with 47 diagnoses reported among 24 persons.

Craftsmen and manual laborers ranked third, with 264 diagnoses reported for 138 workers (342.2 per 1,000). Non-regular workers had the lowest rate (2.3 per 1,000 workers), with five diagnoses among four workers.

Among men, the diagnosis rate was three times higher for hourly workers (344.1 per 1,000) than for salaried workers (102.4 per 1,000) (Table 8). Clerical workers had the highest rate (366.5 per 1,000), with 53 diagnoses reported for 19 men. The second highest rate was among the security workers (286.6 per 1,000), with 33 diagnoses reported among 20 men. Craftsmen and manual laborers ranked third, with 202 diagnoses reported among 108 men (262.3 per 1,000). Non-regular workers had the lowest rate (0.9 per 1,000), with one diagnosis for one man.

The diagnosis rate among women was higher for hourly workers (494.0 per 1,000) than for salaried workers (272.7 per 1,000) (Table 9). Security workers had the highest rate (797.1 per 1,000), with 14 diagnoses reported among four women. The second highest rate was among women in the craftsmen and manual laborers category (716.1 per 1,000), with 62 diagnoses reported among 30 women. Clerical workers ranked third, with 224 diagnoses reported among 101 women (419.7 per 1,000). Non-regular workers had the lowest rate (3.7 per 1,000), with four diagnoses among three women. The women had higher diagnosis rates than the men, suggesting a greater tendency among women to report injury or illness.

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Ectopic and Molar Pregnancy/Abortive Outcome	630-639	14	6.2	3.5	10.8
Complications of Pregnancy	640-648	32	12.8	8.8	18.7
Normal Delivery	650	26	10.7	7.0	16.2
Other Indications for Care in Pregnancy, Labor, and Delivery‡	651-659	11	4.8	2.6	9.0
Complications of Labor, Delivery and Puerperium	660-676	0			
<b>TOTAL</b>		<b>83</b>	<b>34.5</b>	<b>27.3</b>	<b>43.5</b>

**Table 6.**  
*Diagnoses Associated with Pregnancy and Delivery*

†Includes all diagnoses with an absence of 5 or more days.

\*Only women age 18-45 years were included in the calculation of the rates for these diagnostic categories.

‡Includes delivery by cesarian section and multiple births.

	Occupational Category	Number of Workers	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Salaried	Professional Staff	4,247	523	127.8	114.2	143.1
	Support Staff	1,999	448	218.4	196.1	243.3
	<b>Subtotal</b>	<b>6,246</b>	<b>971</b>	<b>154.3</b>	<b>142.6</b>	<b>166.9</b>
Hourly	Clerical	666	277	438.3	376.9	509.8
	Craftsmen and Manual Laborers	670	264	342.2	275.3	425.3
	Security	146	47	385.0	280.6	528.3
	<b>Subtotal</b>	<b>1,482</b>	<b>588</b>	<b>432.0</b>	<b>385.8</b>	<b>483.8</b>
	Non-Regular	744	5	2.3	1.0	5.6
	<b>TOTAL</b>	<b>8,472</b>	<b>1,564</b>	<b>176.8</b>	<b>167.6</b>	<b>186.4</b>

**Table 7.**  
*Diagnoses by Occupational Category - Males and Females*

	Occupational Category	Number of Workers	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Salaried	Professional Staff	3,481	312	78.8	68.9	90.0
	Support Staff	1,267	240	181.9	158.9	208.2
	<b>Subtotal</b>	<b>4,748</b>	<b>552</b>	<b>102.4</b>	<b>93.2</b>	<b>112.6</b>
Hourly	Clerical	90	53	366.5	277.5	483.9
	Craftsmen and Manual Laborers	585	202	262.3	227.9	301.8
	Security	132	33	286.6	196.0	419.2
	<b>Subtotal</b>	<b>807</b>	<b>288</b>	<b>344.1</b>	<b>289.2</b>	<b>409.5</b>
	Non-Regular	379	1	0.9	0.1	6.7
	<b>TOTAL</b>	<b>5,934</b>	<b>841</b>	<b>127.3</b>	<b>118.5</b>	<b>136.7</b>

**Table 8.**  
*Diagnoses by Occupational Category - Males*

	Occupational Category	Number of Workers	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Salaried	Professional Staff	766	211	262.4	220.8	311.8
	Support Staff	732	208	264.1	222.8	313.1
	<b>Subtotal</b>	<b>1,498</b>	<b>419</b>	<b>272.7</b>	<b>242.5</b>	<b>306.7</b>
Hourly	Clerical	576	224	419.7	357.0	493.5
	Craftsmen and Manual Laborers	85	62	716.1	475.6	1,078.0
	Security	14	14	797.1	456.0	1,393.6
	<b>Subtotal</b>	<b>675</b>	<b>300</b>	<b>494.0</b>	<b>428.4</b>	<b>569.5</b>
	Non-Regular	365	4	3.7	1.4	9.9
	<b>TOTAL</b>	<b>2,538</b>	<b>723</b>	<b>278.6</b>	<b>257.6</b>	<b>301.2</b>

**Table 9.**  
*Diagnoses by Occupational Category - Females*

†Includes all diagnoses with an absence of 5 or more days, including absences for pregnancy and delivery.

\*Standardized to age distribution of 1970 U.S. population.

## Relative Risk for All Diseases and Injuries by Occupation

In Table 10, the risk of one or more absences associated with all diagnoses for specific occupational categories is compared with all other occupational categories in the Sandia work force. This comparison also takes into account the possible confounding effects of age and gender. In contrast to the previous series of tables, these analyses examine the risk of a worker having one or more absences for 5 or more consecutive workdays during 1993. This was done to minimize the problem associated with one person having multiple absences for the same condition.

The statistical methods used to compare the incidence of absences are the relative risk (RR) and the 95% confidence interval. The relative risk is the rate of absence in one group divided by the rate in a reference (comparison) group.

The reference group is all workers other than the occupational category of primary interest. A relative risk of 1.0 indicates that both groups have the same risk of absence. A relative risk *greater than 1.0* indicates that workers in a selected occupational category have a higher risk of absence than workers in all other occupational categories combined. A relative risk *less than 1.0* implies that the selected occupational group has a lower risk of absence compared with all other occupational categories combined.

The confidence interval is a statistical measure of the precision of the risk estimate. A 95% confidence interval indicates the range in which one would expect the relative risk to fall 95% of the time. If the confidence interval includes the value 1.0, then the rate of absence is likely to have occurred by chance; in other words, the relative risk is not statistically significant at the 95% confidence level.

For example, a relative risk of 2.0 with a confidence interval of 0.9 to 2.1 would not be considered statistically significant, whereas a relative risk of 1.4 with a confidence interval of 1.2 to 1.7 would be considered statistically significant. The width of the confidence interval indicates the amount of uncertainty in the risk estimate and is affected by sample size and the number of events in the diagnostic category.

Craftsmen and manual laborers (RR=2.8), security workers (RR=2.6), and clerical workers (RR=1.4) had a statistically significant, increased risk of being absent 5 or more consecutive workdays in 1993 due to disease or injury. Professional workers (RR=0.6) and non-regular workers (RR=0.04) had a statistically significant, decreased risk of absence.

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	276	0.6	0.5	0.7
Support Staff	1,999	221	1.1	1.0	1.3
Clerical	666	120	1.4	1.1	1.7
Craftsmen and Manual Laborers	670	138	2.8	2.3	3.4
Security	146	24	2.6	1.7	3.9
Non-Regular	744	4	0.04	0.01	0.1
<b>Total</b>	<b>8,472</b>	<b>783</b>			

**Table 10.**  
*All Diseases and Injuries by Occupational Categories*

† Persons with multiple absences during the time period were counted only once.  
\* Adjusted for age and gender - compared with all occupational categories.

## Relative Risk for Selected Disease and Injury Categories by Occupation

Tables 11.A through 11.M present the relative risks of absences of 5 or more consecutive workdays for selected disease categories among workers by each occupational category. These show that clerical workers were significantly more likely to be absent at least once during 1993 for diseases of the respiratory system (RR=1.7); diseases of the digestive system (RR=1.9); and symptoms, signs, and ill-defined conditions (RR=2.6).

Craftsmen and manual laborers were significantly more likely to be absent at least once during 1993 for mental disorders (RR=3.2); diseases of the nervous system and sense organs (RR=3.0); diseases of the circulatory system (RR=2.3); diseases of the respiratory system (RR=3.7); diseases of the digestive system (RR=2.7); diseases of the skin and subcutaneous tissues (RR=10.7); diseases of the

musculoskeletal system (RR=3.2); symptoms, signs, and ill-defined conditions (RR=2.3); and injury and poisoning (RR=3.5). Security workers were found to have a statistically significant, elevated risk associated with diseases of the nervous system and sense organs (RR=7.2); diseases of the respiratory system (RR=3.2); diseases of the musculoskeletal system (RR=3.1); and symptoms, signs, and ill-defined conditions (RR=5.2).

The lower overall diagnosis rates observed among professional workers were apparent in the relative risk analyses. Professional staff workers were significantly less likely to be absent at least once during 1993 for diseases of the nervous system and sense organs (RR=0.4); diseases of the respiratory system (RR=0.4); diseases of the digestive system (RR=0.4); diseases of the skin and subcutaneous tissue (RR=0.2); diseases of the musculoskeletal system (RR=0.5); symptoms, signs, and ill-defined conditions (RR=0.5); and injury and poisoning (RR=0.5). Non-regular workers had a statistically

significant, decreased risk of diseases of the musculoskeletal system (RR=0.1).

The reasons for the large differences in overall diagnosis rates and relative risks for particular diagnostic categories among different occupational categories may be due to small numbers. However, the consistency of the differences across broad diagnostic categories suggests that compliance with reporting back to work through an occupational physician varies among occupational categories.

## Deaths Among Active Workers, 1993

There were six reported deaths among active employees in 1993. Four workers died of complications related to cancer, and two died from cardiovascular conditions.

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	15	0.5	0.3	1.0
Support Staff	1,999	16	1.3	0.7	2.5
Clerical	666	11	2.1	1.0	4.5
Craftsmen and Manual Laborers	670	6	1.9	0.8	4.6
Security	146	1	1.5	0.2	11.3
Non-Regular	744	0			
<b>Total</b>	<b>8,472</b>	<b>49</b>			

**Table 11.A.**  
***Infections and Parasitic Diseases***

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	17	1.0	0.5	2.1
Support Staff	1,999	8	1.2	0.5	2.9
Clerical	666	4	1.6	0.6	4.5
Craftsmen and Manual Laborers	670	1	0.4	0.1	2.7
Security	146	0			
Non-Regular	744	0			
<b>Total</b>	<b>8,472</b>	<b>30</b>			

**Table 11.B.**  
***Malignant Neoplasms***

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	11	1.5	0.6	3.4
Support Staff	1,999	7	0.8	0.3	2.0
Clerical	666	6	1.1	0.4	2.7
Craftsmen and Manual Laborers	670	1	1.0	0.1	6.8
Security	146	0			
Non-Regular	744	0			
<b>Total</b>	<b>8,472</b>	<b>25</b>			

**Table 11.C.**  
***Benign Neoplasms***

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	10	0.4	0.2	1.0
Support Staff	1,999	11	1.4	0.7	2.8
Clerical	666	3	0.6	0.1	2.3
Craftsmen and Manual Laborers	670	7	3.2	1.5	7.2
Security	146	1	2.3	0.3	17.7
Non-Regular	744	1	0.5	0.03	7.3
<b>Total</b>	<b>8,472</b>	<b>33</b>			

**Table 11.D.**  
***Mental Disorders***

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	20	0.4	0.2	0.6
Support Staff	1,999	24	1.2	0.7	1.9
Clerical	666	13	1.3	0.7	2.4
Craftsmen and Manual Laborers	670	15	3.0	1.7	5.4
Security	146	6	7.2	3.0	17.3
Non-Regular	744	1	0.2	0.01	4.3
<b>Total</b>	<b>8,472</b>	<b>79</b>			

**Table 11.E.**  
***Diseases of the Nervous System and Sense Organs***

† Persons with multiple absences during the time period were counted only once.

\* Adjusted for age and gender - compared with all occupational categories.

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	23	0.6	0.3	1.0
Support Staff	1,999	12	1.1	0.6	2.0
Clerical	666	6	1.5	0.5	4.0
Craftsmen and Manual Laborers	670	10	2.3	1.1	4.5
Security	146	1	1.8	0.3	13.2
Non-Regular	744	0			
<b>Total</b>	<b>8,472</b>	<b>52</b>			

**Table II.F.**  
**Diseases of the Circulatory System**

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	53	0.4	0.3	0.5
Support Staff	1,999	56	1.2	0.9	1.6
Clerical	666	35	1.7	1.1	2.6
Craftsmen and Manual Laborers	670	46	3.7	2.7	5.3
Security	146	8	3.2	1.6	6.7
Non-Regular	744	0			
<b>Total</b>	<b>8,472</b>	<b>198</b>			

**Table II.G.**  
**Diseases of the Respiratory System**

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	35	0.4	0.3	0.6
Support Staff	1,999	30	1.1	0.7	1.8
Clerical	666	19	1.9	1.1	3.3
Craftsmen and Manual Laborers	670	21	2.7	1.7	4.5
Security	146	1	0.7	0.1	5.5
Non-Regular	744	0			
<b>Total</b>	<b>8,472</b>	<b>106</b>			

**Table II.H.**  
**Diseases of the Digestive System**

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	32	1.0	0.6	1.5
Support Staff	1,999	25	1.2	0.8	2.0
Clerical	666	9	0.6	0.3	1.3
Craftsmen and Manual Laborers	670	8	1.9	0.9	4.0
Security	146	2	3.3	0.8	13.3
Non-Regular	744	0			
<b>Total</b>	<b>8,472</b>	<b>76</b>			

**Table II.I.**  
**Diseases of the Genitourinary System**

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	4	0.2	0.1	0.7
Support Staff	1,999	1	0.1	0.02	1.0
Clerical	666	5	3.3	1.0	11.5
Craftsmen and Manual Laborers	670	9	10.7	4.3	26.9
Security	146	1	3.8	0.5	30.9
Non-Regular	744	0			
<b>Total</b>	<b>8,472</b>	<b>20</b>			

**Table II.J.**  
**Diseases of the Skin and Subcutaneous Tissue**

† Persons with multiple absences during the time period were counted only once.  
\* Adjusted for age and gender - compared with all occupational categories.

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	40	0.5	0.3	0.7
Support Staff	1,999	36	1.1	0.8	1.7
Clerical	666	21	1.5	0.9	2.5
Craftsmen and Manual Laborers	670	26	3.2	2.1	5.0
Security	146	5	3.1	1.3	7.6
Non-Regular	744	1	0.1	0.01	0.7
<b>Total</b>	<b>8,472</b>	<b>129</b>			

**Table 11.K.**  
**Diseases of the Musculoskeletal System**

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	21	0.5	0.3	0.9
Support Staff	1,999	13	0.8	0.5	1.5
Clerical	666	13	2.6	1.4	5.0
Craftsmen and Manual Laborers	670	10	2.3	1.2	4.5
Security	146	4	5.2	1.9	14.8
Non-Regular	744	0			
<b>Total</b>	<b>8,472</b>	<b>61</b>			

**Table 11.L.**  
**Symptoms, Signs, and Ill-Defined Conditions**

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	51	0.5	0.3	0.7
Support Staff	1,999	36	1.0	0.7	1.5
Clerical	666	18	1.5	0.9	2.6
Craftsmen and Manual Laborers	670	35	3.5	2.4	5.2
Security	146	5	2.4	1.0	5.8
Non-Regular	744	0			
<b>Total</b>	<b>8,472</b>	<b>145</b>			

**Table 11.M.**  
**Injury and Poisoning**

† Persons with multiple absences during the time period were counted only once.  
\* Adjusted for age and gender - compared with all occupational categories.

## OSHA-Recordable Events Among Sandia Employees, 1993

*Events per Person.* In 1993, 241 Sandia employees had an OSHA-reportable event. Eight (0.1%) of these workers had two or more events. There was a total of 252 OSHA-recordable events among all employees (Table 12.A).

*Diagnoses per Event.* A total of 273 diagnoses were associated with the 252 OSHA-recordable events reported during 1993. Multiple diagnoses were reported for 22 (9%) of the events (Table 12.B).

*Diagnoses Rates.* In 1993, the 273 diagnoses noted for the

OSHA-recordable events yielded an age-adjusted rate of 29.7 per 1,000 persons. The age-adjusted diagnosis rate for women (32.8 per 1,000) was higher than the rate for men (28.6 per 1,000) (Table 12.C).

Employee Category	Number of Workers	Number of OSHA-Recordable Events					Total Persons with at Least One Event	Total Number of Events
		0	1	2	3	4		
Male	5,934	5,771	155	6	1	1	163	174
Female	2,538	2,460	78	0	0	0	78	78
<b>TOTAL</b>	<b>8,472</b>	<b>8,231</b>	<b>233</b>	<b>6</b>	<b>1</b>	<b>1</b>	<b>241</b>	<b>252</b>

**Table 12.A.**  
*OSHA-Recordable Events per Person*

	Number of Diagnoses per OSHA Event			Total Number of Events	Total Number of Diagnoses
	1	2	3		
Male	161	11	2	174	189
Female	72	6	0	78	84
<b>TOTAL</b>	<b>233</b>	<b>17</b>	<b>2</b>	<b>252</b>	<b>273</b>

**Table 12.B.**  
*Diagnoses per OSHA-Recordable Event*

Employee Category	Number of Workers	Number of Diagnoses	Crude Rate per 1,000	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Male	5,934	189	32.2	28.6	24.3	33.5
Female	2,538	84	33.5	32.8	26.0	41.3
<b>TOTAL</b>	<b>8,472</b>	<b>273</b>	<b>32.6</b>	<b>29.7</b>	<b>26.1</b>	<b>33.7</b>

**Table 12.C.**  
*Diagnosis Rates for OSHA-Recordable Events*

\*Standardized to age distribution of 1970 U.S. population.

## **OSHA-Recordable Diseases and Injuries by Diagnostic Category, 1993**

The age-adjusted diagnosis rate for each diagnostic category is presented for all workers combined in Table 13. Because the patterns of diagnoses reported by men and women may differ, Tables 14 and 15 show the diagnosis rates by gender to further describe the disease and injury patterns in the work force.

For all workers, the diagnostic category with the highest rate was injury and poisoning (20.5 per 1,000), with 192 diagnoses reported for 179 people, which accounted for 70% of all the diagnoses. In this category, sprains and strains accounted for 43% of the diagnoses.

The leading diagnostic category among men, accounting for 70% of all diagnoses, was injury and poisoning (19.8 per 1,000), with 133 diagnoses reported among 124 men.

Forty-nine men had sprains and strains: 14 to the back, 13 to the lower body, 7 to the upper body, and 20 to unspecified sites. Four of these men had multiple diagnoses.

Twenty-eight men had open wounds: 14 to the upper extremities, including 1 finger amputation; 6 to the head; 3 to the lower body; and 5 to unspecified sites. Thirty-nine men had "other" injuries. Fourteen of the "other" injuries were contusions to the extremities, and one contusion was to the abdominal wall. Eleven of the "other" injuries were unspecified injuries (five to the upper body and two each to the leg, face, and unspecified site), four were abrasion/friction burns, three were superficial injuries (two to the cornea and one unspecified site), two were foreign bodies on the eye, and two were toxic effects to unspecified gases, fumes, or vapors. In addition, there was one splinter, one allergy, one mercury poisoning, one heat exhaustion, and one burn of unspecified degree and site. Three of these men had multiple diagnoses.

The diagnostic category with the highest rate was the same for the women as for men. Injury and poisoning (23.5 per 1,000), with 59 diagnoses reported among 55 women, accounted for 70% of all diagnoses. Twenty-six women had sprains and strains: eight to the lower body, five to the upper body, four to the back, and nine to unspecified sites. Three of these women had multiple diagnoses. Nineteen women had "other" injuries: eight were contusions (four to the upper limb, two to the lower limb, and one each to the face and eyeball), five were unspecified injuries (three to the lower limb and two to unspecified sites), three were abrasions/friction burns, two were superficial injuries to the eye, and two were toxic effects to unspecified gases, fumes, or vapors. One of these women had multiple diagnoses.

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Infections and parasitic diseases	001-139	1	0.2	0.0	1.1
Malignant neoplasms	140-208, 230-234	0			
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	0			
• Genitourinary	179-185	0			
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	0			
Endocrine and metabolic diseases	240-279	0			
Blood and blood-forming organs	280-289	0			
Mental disorders	290-319	0			
• Alcoholism	303	0			
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	2	0.2	0.0	0.7
Circulatory system	390-459	1	0.1	0.0	0.7
• Hypertension	401	0			
• Acute myocardial infarction	410	0			
• Ischemic disease, not M.I.	411-414, 429.2	0			
• Cerebrovascular disease	430-438	0			
Respiratory system	460-519	2	0.2	0.0	0.8
• Upper respiratory	460-465, 470-478	1	0.1	0.0	0.7
• Pneumonia/bronchitis	466, 480-487	0			
• Chronic respiratory conditions	490-496	0			
Digestive system	520-579	2	0.2	0.0	0.8
• Hernias	550-553	2	0.2	0.0	0.8
• Gall bladder disease	574-575	0			
Genitourinary system	580-629	1	0.1	0.0	0.7
• Benign prostatic hypertrophy	600	0			
• Endometriosis	617	0			
• Ovarian cysts	620.0-620.2	0			
• Female genital pain/bleeding	625-626	0			
Pregnancy and childbirth <sup>1</sup>	630-676	0			
Skin and subcutaneous tissue	680-709	4	0.5	0.2	1.6
Musculoskeletal	710-739	61	7.0	5.3	9.2
• Dorsopathies	720-724	21	2.3	1.5	3.7
Congenital anomalies	740-759	0			
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	7	0.7	0.3	1.4
Injury and poisoning	800-999	192	20.5	17.6	23.9
• Fractures, all sites	800-829	8	1.0	0.5	2.0
• Dislocations	830-839	5	0.8	0.3	2.1
• Sprains and strains	840-848	83	9.3	7.3	11.7
• Intracranial injuries	850-854	0			
• Internal injuries	860-869	0			
• Open wounds	870-897	34	3.5	2.4	5.0
• Other injuries	900-999	62	6.1	4.7	7.9
Health status/health service contact	V01-V82	0			
• Family history of health problems	V10-V19	0			
• Circumstances related to reproduction/development	V20-V28	0			
• Specific procedure/aftercare	V50-V59	0			
Total minus pregnancies		273	29.7	26.1	33.7
<b>TOTAL</b>		<b>273</b>	<b>29.7</b>	<b>26.1</b>	<b>33.7</b>

**Table 13.**  
**OSHA-**  
**Recordable**  
**Diseases and**  
**Injuries by**  
**Diagnostic**  
**Category - Males**  
**and Females**

† Includes all diagnoses resulting from an OSHA-recordable event.

\* Standardized to age distribution of 1970 U.S. population.

<sup>1</sup> Only women age 18-45 years were included in the calculation of the rate for this diagnostic category.

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Infections and parasitic diseases	001-139	1	0.2	0.0	1.4
Malignant neoplasms	140-208, 230-234	0			
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	0			
• Genitourinary	179-185	0			
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	0			
Endocrine and metabolic diseases	240-279	0			
Blood and blood-forming organs	280-289	0			
Mental disorders	290-319	0			
• Alcoholism	303	0			
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	0			
Circulatory system	390-459	1	0.1	0.0	1.0
• Hypertension	401	0			
• Acute myocardial infarction	410	0			
• Ischemic disease, not M.I.	411-414, 429.2	0			
• Cerebrovascular disease	430-438	0			
Respiratory system	460-519	2	0.3	0.1	1.1
• Upper respiratory	460-465, 470-478	1	0.1	0.0	1.0
• Pneumonia/bronchitis	466, 480-487	0			
• Chronic respiratory conditions	490-496	0			
Digestive system	520-579	2	0.3	0.1	1.0
• Hernias	550-553	2	0.3	0.1	1.0
• Gall bladder disease	574-575	0			
Genitourinary system	580-629	1	0.1	0.0	1.0
• Benign prostatic hypertrophy	600	0			
• Endometriosis	617	NA	NA	NA	NA
• Ovarian cysts	620.0-620.2	NA	NA	NA	NA
• Female genital pain/bleeding	625-626	NA	NA	NA	NA
Pregnancy and childbirth	630-676	NA	NA	NA	NA
Skin and subcutaneous tissue	680-709	3	0.8	0.2	2.8
Musculoskeletal	710-739	40	6.2	4.4	8.7
• Dorsopathies	720-724	16	2.8	1.6	5.0
Congenital anomalies	740-759	0			
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	6	0.8	0.4	1.9
Injury and poisoning	800-999	133	19.8	16.4	24.0
• Fractures, all sites	800-829	5	1.0	0.4	2.9
• Dislocations	830-839	4	1.2	0.4	3.7
• Sprains and strains	840-848	54	7.9	5.9	10.6
• Intracranial injuries	850-854	0			
• Internal injuries	860-869	0			
• Open wounds	870-897	28	3.8	2.5	5.7
• Other injuries	900-999	42	5.9	4.2	8.1
Health status/health service contact	V01-V82	0			
• Family history of health problems	V10-V19	0			
• Circumstances related to reproduction/development	V20-V28	0			
• Specific procedure/aftercare	V50-V59	0			
<b>TOTAL</b>		<b>189</b>	<b>28.6</b>	<b>24.3</b>	<b>33.5</b>

**Table 14.**  
**OSHA-Recordable**  
**Diseases and**  
**Injuries by**  
**Diagnostic**  
**Category - Males**

† Includes all diagnoses resulting from an OSHA-recordable event.

\* Standardized to age distribution of 1970 U.S. population.

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Infections and parasitic diseases	001-139	0			
Malignant neoplasms	140-208, 230-234	0			
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	0			
• Genitourinary	179-185	0			
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	0			
Endocrine and metabolic diseases	240-279	0			
Blood and blood-forming organs	280-289	0			
Mental disorders	290-319	0			
• Alcoholism	303	0			
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	2	0.6	0.1	2.3
Circulatory system	390-459	0			
• Hypertension	401	0			
• Acute myocardial infarction	410	0			
• Ischemic disease, not M.I.	411-414, 429.2	0			
• Cerebrovascular disease	430-438	0			
Respiratory system	460-519	0			
• Upper respiratory	460-465, 470-478	0			
• Pneumonia/bronchitis	466, 480-487	0			
• Chronic respiratory conditions	490-496	0			
Digestive system	520-579	0			
• Hernias	550-553	0			
• Gall bladder disease	574-575	0			
Genitourinary system	580-629	0			
• Benign prostatic hypertrophy	600	NA	NA	NA	NA
• Endometriosis	617	0			
• Ovarian cysts	620.0-620.2	0			
• Female genital pain/bleeding	625-626	0			
Pregnancy and childbirth <sup>1</sup>	630-676	0			
Skin and subcutaneous tissue	680-709	1	0.3	0.0	1.9
Musculoskeletal	710-739	21	8.2	5.2	13.0
• Dorsopathies	720-724	5	1.6	0.7	4.0
Congenital anomalies	740-759	0			
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	1	0.3	0.0	1.9
Injury and poisoning	800-999	59	23.5	17.8	30.9
• Fractures, all sites	800-829	3	1.1	0.3	3.4
• Dislocations	830-839	1	0.3	0.0	1.9
• Sprains and strains	840-848	29	11.6	7.9	17.1
• Intracranial injuries	850-854	0			
• Internal injuries	860-869	0			
• Open wounds	870-897	6	3.1	1.3	7.6
• Other injuries	900-999	20	7.4	4.6	11.8
Health status/health service contact	V01-V82	0			
• Family history of health problems	V10-V19	0			
• Circumstances related to reproduction/development	V20-V28	0			
• Specific procedure/aftercare	V50-V59	0			
<b>Total minus pregnancies</b>		<b>84</b>	<b>32.8</b>	<b>26.0</b>	<b>41.3</b>
<b>TOTAL</b>		<b>84</b>	<b>32.8</b>	<b>26.0</b>	<b>41.3</b>

**Table 15.**  
**OSHA-**  
**Recordable**  
**Diseases and**  
**Injuries by**  
**Diagnostic**  
**Category-Females**

† Includes all diagnoses resulting from an OSHA-recordable event.

\* Standardized to age distribution of 1970 U.S. population.

<sup>1</sup> Only women age 18-45 years were included in the calculation of the rate for this diagnostic category.

### **OSHA-Recordable Diagnoses by Occupational Category, 1993**

During 1993, the age-adjusted diagnosis rate for hourly workers was more than six times higher than salaried workers (106.9 versus 15.7 per 1,000 persons) (Table 16). Security workers, who comprised 2% of the work force, had the highest diagnosis rate (131.9 per 1,000), with 19 diagnoses reported for 16 persons. The second highest diagnosis rate was among craftsmen and manual laborers (124.4 per 1,000), with 95 diagnoses reported for 82 persons. Clerical workers (77.4 per 1,000) ranked third, with 44 diagnoses reported among 37 workers. The diagnosis rate for workers in the category of non-regular workers was substantially lower than all other occupational categories (2.8 per 1,000 workers), with six diagnoses for five workers.

The diagnosis rate among men (Table 17) was more than eight times higher for hourly workers (122.3 per 1,000) than for salaried workers (15.1 per 1,000). Security workers had the highest rate (127.8 per 1,000), with 16 diagnoses reported for 13 men. Craftsmen and manual laborers ranked second (99.8 per 1,000), with 81 diagnoses reported among 68 men. Clerical workers followed, with ten diagnoses reported for seven men (75.3 per 1,000). As seen with the combined groups, non-regular workers had the lowest rate (3.8 per 1,000), with four diagnoses among three men.

The diagnosis rate among women (Table 18) was more than four times

higher for the hourly workers (85.0 per 1,000) than for the salaried workers (20.7 per 1,000). The diagnosis rate for workers in the security category (274.1 per 1,000) was the highest, with three diagnoses reported among three women. The category of craftsmen and manual laborers (202.9 per 1,000) ranked second, with 14 diagnoses reported for 14 women. The third highest rate occurred in the category of clerical workers (71.7 per 1,000), with 34 diagnoses reported for 30 women. The diagnosis rate was the lowest among non-regular workers (1.8 per 1,000), with two diagnoses reported for two women.

	Occupational Category	Number of Workers	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Salaried	Professional Staff	4,247	55	12.9	9.2	18.2
	Support Staff	1,999	54	21.9	16.1	29.7
	<b>Subtotal</b>	<b>6,246</b>	<b>109</b>	<b>15.7</b>	<b>12.5</b>	<b>19.8</b>
Hourly	Clerical	666	44	77.4	52.5	114.0
	Craftsmen and Manual Laborers	670	95	124.4	83.0	186.5
	Security	146	19	131.9	78.6	221.6
	<b>Subtotal</b>	<b>1,482</b>	<b>158</b>	<b>106.9</b>	<b>86.0</b>	<b>132.8</b>
	Non-Regular	744	6	2.8	1.3	6.3
	<b>TOTAL</b>	<b>8,472</b>	<b>273</b>	<b>29.7</b>	<b>26.1</b>	<b>33.7</b>

**Table 16.**  
**OSHA-Recordable Diagnoses by Occupational Category - Males and Females**

	Occupational Category	Number of Workers	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Salaried	Professional Staff	3,481	41	13.0	8.3	20.4
	Support Staff	1,267	37	21.9	15.7	30.7
	<b>Subtotal</b>	<b>4,748</b>	<b>78</b>	<b>15.1</b>	<b>11.2</b>	<b>20.2</b>
Hourly	Clerical	90	10	75.3	39.1	145.0
	Craftsmen and Manual Laborers	585	81	99.8	80.0	124.5
	Security	132	16	127.8	73.1	223.3
	<b>Subtotal</b>	<b>807</b>	<b>107</b>	<b>122.3</b>	<b>41.2</b>	<b>164.2</b>
	Non-Regular	379	4	3.8	1.4	10.1
	<b>TOTAL</b>	<b>5,934</b>	<b>189</b>	<b>28.6</b>	<b>24.3</b>	<b>33.5</b>

**Table 17.**  
**OSHA-Recordable Diagnoses by Occupational Category - Males**

	Occupational Category	Number of Workers	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Salaried	Professional Staff	766	14	28.0	12.0	65.2
	Support Staff	732	17	20.9	11.6	37.8
	<b>Subtotal</b>	<b>1,498</b>	<b>31</b>	<b>20.7</b>	<b>13.4</b>	<b>32.2</b>
Hourly	Clerical	576	34	71.7	46.9	109.7
	Craftsmen and Manual Laborers	85	14	202.9	78.2	526.1
	Security	14	3	274.1	53.2	1,413.4
	<b>Subtotal</b>	<b>675</b>	<b>51</b>	<b>85.0</b>	<b>60.0</b>	<b>120.5</b>
	Non-Regular	365	2	1.8	0.5	7.4
	<b>TOTAL</b>	<b>2,538</b>	<b>84</b>	<b>32.8</b>	<b>26.0</b>	<b>41.3</b>

**Table 18.**  
**OSHA-Recordable Diagnoses by Occupational Category - Females**

† Includes all diagnoses resulting from an OSHA-recordable event.

\* Standardized to age distribution of 1970 U.S. population.

### **Relative Risk for All OSHA-Reportable Diseases and Injuries by Occupation**

In Table 19, the risk of one or more absences associated with all OSHA-recordable diagnoses for specific occupational categories is compared with all other occupational categories in the Sandia work force. The statistical methods used to compare the incidence of events are the relative risk (RR) and the 95% confidence interval (explained on page 11).

Craftsmen and manual laborers (RR=6.3), security workers (RR=4.4), and clerical workers (RR=2.0) had statistically significant increased risks of an OSHA-recordable event in 1993. Professional workers (RR=0.2) and non-regular workers (RR=0.2) had a statistically significant, decreased risk of an event.

### **Relative Risk for Selected OSHA-Recordable Disease and Injury Categories by Occupation**

Tables 20.A and 20.B present the relative risk of an OSHA-reportable event for diseases of the musculoskeletal system and for injury and poisoning among workers by each occupational category. These specific disease categories were the only two with enough events to calculate relative risks.

Clerical workers were significantly more likely to have at least one OSHA-recordable event during 1993 for diseases of the musculoskeletal system (RR=3.5) and injury and poisoning (RR=1.8). Craftsmen and manual laborers were also significantly more likely to have at least one OSHA-recordable event during

1993 for diseases of the musculoskeletal system (RR=3.6) and injury and poisoning (RR=7.2). Security workers were significantly more likely to have at least one OSHA-recordable event during 1993 for injury and poisoning (RR=5.2).

Professional staff workers were statistically significantly less likely to be absent due to diseases of the musculoskeletal system (RR=0.5) and injury and poisoning (RR=0.2). Non-regular workers were also at a significantly less risk for injury and poisoning (RR=0.2).

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	48	0.2	0.2	0.3
Support Staff	1,999	52	0.8	0.6	1.1
Clerical	666	37	2.0	1.4	3.0
Craftsmen and Manual Laborers	670	82	6.3	4.7	8.3
Security	146	16	4.4	2.6	7.3
Non-Regular	744	5	0.2	0.1	0.7
<b>Total</b>	<b>8,472</b>	<b>240</b>			

**Table 19.**  
**All OSHA-Recordable Diseases and Injuries by Occupational Categories**

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	19	0.5	0.3	0.8
Support Staff	1,999	9	0.6	0.3	1.2
Clerical	666	12	3.5	1.6	7.4
Craftsmen and Manual Laborers	670	13	3.6	1.9	6.9
Security	146	2	2.5	0.6	10.3
Non-Regular	744	2	0.3	0.05	1.6
<b>Total</b>	<b>8,472</b>	<b>57</b>			

**Table 20.A.**  
**Musculoskeletal Disorders**

Occupational Category	Person-Years	Persons with at Least One Event†	Relative Risk*	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional Staff	4,247	24	0.2	0.1	0.3
Support Staff	1,999	42	1.0	0.7	1.4
Clerical	666	24	1.8	1.1	2.8
Craftsmen and Manual Laborers	670	63	7.2	5.2	9.9
Security	146	14	5.2	3.0	9.1
Non-Regular	744	3	0.2	0.05	0.9
<b>Total</b>	<b>8,472</b>	<b>170</b>			

**Table 20.B.**  
**Injury and Poisoning**

† Persons with multiple absences during the time period were counted only once.

\* Adjusted for age and gender - compared with all occupational categories.

## DIAGNOSTIC CATEGORIES

Category of Diagnoses	ICD-9-CM Code	Types of Illness in Category
All conditions	001-V82	All reported health events.
Infectious and parasitic diseases	001-139	Diseases caused by bacteria, viruses, and parasites.
Malignant neoplasms	140-208, 230-234	All cancers, regardless of the part of the body affected.
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature	210-229, 235-239	Tumors that are not cancerous or that do not exhibit clearly malignant behavior, regardless of the part of the body affected.
Endocrine, nutritional and metabolic diseases, and disorders of the immune system	240-279	Diseases and conditions affecting the hormone secreting glands and organs; nutritional disorders, such as vitamin deficiency; metabolic diseases, such as diabetes and gout; and problems affecting the antibody producing system.
Diseases of the blood and blood-forming organs	280-289	Includes anemia and hemophilia, but excludes leukemia.
Mental disorders	290-319	Psychiatric diagnoses, such as dementia, schizophrenia, depression, and anxiety disorders; alcoholism; drug dependence; and eating disorders, such as bulimia.
Diseases of the nervous system and sense organs	320-389	Diseases affecting the brain, spinal cord, and peripheral nerves. Examples include meningitis; encephalitis; hereditary diseases, such as Huntington's chorea; Alzheimer's and Parkinson's disease; epilepsy; multiple sclerosis; migraine; diseases of the eye, such as cataract and glaucoma; and diseases of the ear, such as conductive hearing loss and otitis.
Diseases of the circulatory system	390-459	Diseases involving the heart, arteries, veins, and lymphatic system. Examples include rheumatic fever, heart murmurs, heart attacks, angina, hardening of the arteries, varicose veins, hemorrhoids, and phlebitis.
Diseases of the respiratory system	460-519	Includes colds, sinusitis, laryngitis, pneumonia and influenza, chronic bronchitis, asthma, and emphysema.
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 genitourinary system	580-629	Diseases affecting the kidneys, the prostate and testes; benign breast diseases; infertility (male and female); pelvic inflammatory disease; diseases of the ovary; and menstrual disorders.
Complications of pregnancy, childbirth, and puerperium	630-676	Includes miscarriage; complications of pregnancy, such as hemorrhage; pregnancy-related high blood pressure; pre-eclampsia; premature labor or other complications of labor.
Diseases of the skin and subcutaneous tissue	680-709	Includes acne, cellulitis, sunburn, psoriasis, and seborrhea.
Diseases of the musculoskeletal system and connective tissue	710-739	Includes arthritis, systemic lupus erythematosus, ankylosing spondylitis, herniated intervertebral disc ("slipped disc"), lumbago, sciatica, rheumatism, tendonitis, and osteoporosis.
Congenital anomalies	740-759	Abnormal anatomical development present at birth. Includes spina bifida, cleft palate, harelip, and various chromosomal anomalies, such as Klinefelter's syndrome.
Certain conditions originating in the perinatal period	760-779	Conditions or diseases of the mother that can produce perinatal illness or death of the fetus or newborn. Examples include maternal high blood pressure, maternal malnutrition, ectopic pregnancy, and breech birth. Also includes other conditions originating in the perinatal period, such as fetal malnutrition or slow growth, injuries related to birth trauma, and perinatal jaundice.
Symptoms, signs, and ill-defined conditions	780-799	Symptoms, signs, abnormal results of laboratory or other tests, and conditions for which no specific diagnosis has been made. Examples include blackout, chills, dizziness, fatigue, pallor, abnormal weight loss, undiagnosed chest pain, and heartburn.
Injury and poisoning	800-999	Dislocation of joints; sprains and strains of joints and associated muscles; concussions; bruises; cuts; internal injuries due to crushing, puncture, tearing, or blunt impact; burns; blisters; poisoning; frostbite; heat stroke; 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 include injuries to muscle from overexertion or from stretching the muscle beyond its normal limit. Sprains include injuries involving tearing or overextending the ligaments of a joint.
Intracranial injuries excluding those with skull fractures	850-854	Includes concussions, internal bruises, and hemorrhages within the skull without a fracture of the bones of the skull.
Internal injuries of the chest, abdomen, and pelvis	860-869	Includes internal injuries to the chest, abdomen, and pelvis and the organs within these areas of the body that do not involve an open wound.
Open wounds	870-897	Includes animal bites, cuts, lacerations, punctures, and amputations, excluding the arteries and veins.
Other injuries and 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, heat stroke, electrocution, and altitude sickness.
Motor vehicle traffic accidents	E810-E819	Includes accidents involving motor vehicles alone or with other motor vehicles, pedestrians, or vehicles operated by pedals.
Other accidents	E916-E928	Includes accidents involving falling objects or machinery; accidents related to explosions; and those related to electrical current, radiation, hot or corrosive substances, noise, and overexertion.
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	Includes 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	Includes 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.

## GLOSSARY

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

**Epidemiologic Surveillance** - The regular and systematic collection of data and interpretation of the distribution of illness, injury, and death in the DOE labor force over time.

**ICD-9-CM** - The ICD-9-CM (International Classification of Diseases-9th Revision-Clinical Modification) is based on the ICD-9 originally published by the World Health Organization and widely accepted as a standard for the coding of cause of death. The ICD-9-CM is required for the reporting of morbidity to all U.S. Public Health Service programs.

**Diagnoses Rate** - The number of new, reported health events observed among DOE workers per thousand DOE workers at risk during a given period of time.

## STATISTICAL NOTE

The age-adjusted rate was calculated using the 1970 U.S. population. The age-adjusted rate represents the hypothetical rate that would have been observed if the 1993 group had the same age distribution as the 1970 U.S. population. The age-adjusted rate is used to compare populations that differ in age. The 1970 U.S. population was selected because it is the standard most used for published morbidity data.

The illness and injury absence rate is defined as an absence due to illness or injury of 5 or more consecutive work days, divided by the total number of workers. OSHA-recordable events may or may not involve an absence from work.

The 95% confidence interval is based on the normal approximation to the binomial distribution where the calculated illness and injury absence rate falls within the interval. The true rate lies within this interval 95% of the time.