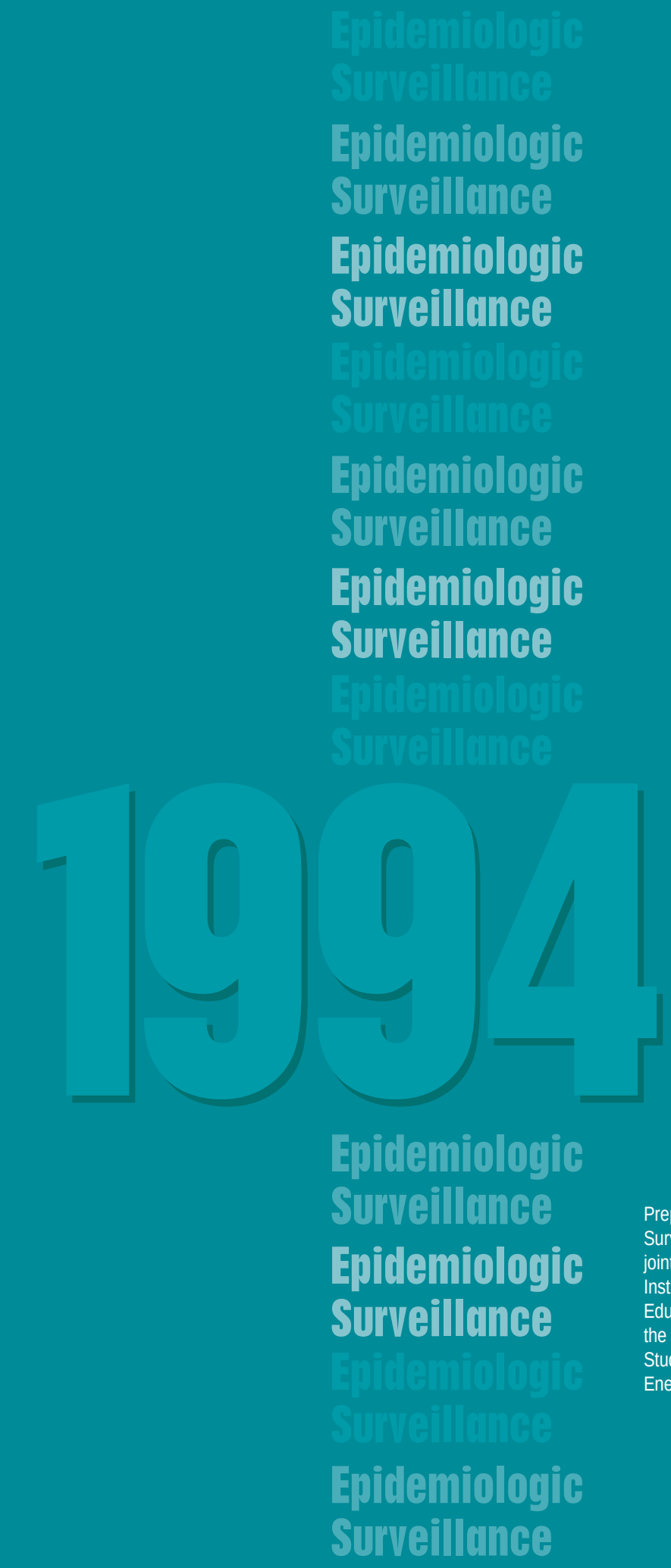
Annual Report for

Idaho National Engineering Laboratory



Prepared by the Epidemiologic Surveillance Data Center, a joint program of the Oak Ridge Institute for Science and Education in conjunction with the Office of Epidemiologic Studies, U.S. Department of Energy

This report was prepared by the staff of the Center for Epidemiologic Research, within the Environmental and Health Sciences Division of the Oak Ridge Institute for Science and Education in conjunction with the Office of Epidemiologic Studies, U.S. Department of Energy.

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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. An 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 illnesses, and deaths among active employees. This annual epidemiologic surveillance report provides the final summary of the 12-month period, January 1, 1994, through December 31, 1994, for the Idaho National Engineering Laboratory (INEL).

Caution is required when comparing this information with 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 INEL. Continuing surveillance and data examination may suggest emerging trends that change the preliminary interpretation of the data. Because of the change in contractors during 1994, comparison of this report with reports for previous years for this site should be done cautiously.

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.

INEL at a Glance: 1994

- INEL underwent a contractor consolidation in 1994 under Lockheed Idaho Technologies Company, resulting in an increase of 3,941 workers tracked by epidemiologic surveillance, a 52% increase from 1993.
- Reported rates of illness and injury declined in the INEL work force by about 50% from 1993, apparently due to the large increase in the number of workers being tracked following contractor consolidation. These workers were added to the roster of active workers tracked by epidemiologic surveillance, but they apparently generated few, if any, return to work clearances through the occupational medicine clinics that collect data for the surveillance program, thus reducing the apparent rates of illness and injury. About 4.4% of the INEL work force reported at least one absence of 5 or more days due to illness or injury.
- Excluding diagnoses related to pregnancy and delivery, the three highest diagnosis rates were once again associated with injuries, diseases of the musculoskeletal system, and respiratory illnesses.
- 1994 marks the first year for which OSHA-recordable injury and illness data were made available for epidemiologic surveillance. Women had a somewhat higher reported rate of OSHA-recordable injuries and illnesses than did men. Service and crafts workers were at highest risk for OSHA-recordable injuries.
- Overall, patterns of illness and injury observed in 1994 did not differ markedly from those seen in 1993 with the exception of a general reduction in reporting rates as noted above.

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 for 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 1994 morbidity data for the Idaho National Engineering Laboratory are summarized. These analyses focus on absences of 5 or more consecutive workdays occurring among workers aged 17-85 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 recordable by the Occupational Safety and Health Administration (OSHA). The analyses of the OSHA data are arranged like those involving absences of 5 or more consecutive workdays. OSHA-recordable events are those that occur on the job or 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 recordable 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 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 INEL is located in two primary areas: a remote 890-square-mile desert site on the Snake River Plain and multiple locations in the city of Idaho Falls. Established in 1949 as the National Reactor Testing Station, it contains the largest concentration of nuclear reactors in the world.

Over the years, 52 reactors have been built at INEL. While the majority were phased out after completion of their research mission, several are currently operating.

In 1994, Lockheed Idaho Technologies Company became the sole contractor for INEL. Through 1993, various contractors for DOE-Idaho operated facilities at INEL's site, as well as administrative, scientific support, and nonnuclear research laboratories in Idaho Falls. Major contractors included EG&G Idaho, Westinghouse Idaho Nuclear Company, and Babcock and Wilcox Idaho. In addition, Westinghouse Electric Corporation operated the Naval Reactors Facility, Argonne National Laboratory-West (ANL-W) operated an experimental breeder reactor and maintained research facilities, MK-Ferguson of Idaho Company provided construction management services, and Protection Technology Idaho provided security services.

Labor Force by Occupational Category and Salary Status, 1994

During 1994, there were 11,527 employees (aged 17-85) identified by INEL as participants in epidemiologic surveillance. Seventy-four percent (8,533 workers) were men, and 26% (2,994 workers) were women. There were 115 employees excluded from this report because date of birth was not reported, and one person was excluded because no gender was reported. In addition, employees listed only on the first quarter roster (2,052 workers) were excluded due to missing job titles. None of these 2,052 workers had an absence of 5 or more consecutive workdays. Information regarding race of employees was not reported for the majority of the work force and, therefore, was not included in this report. Historically, the racial composition of the population was 92% Caucasian and 8% African American, Asian, Hispanic, and Native American combined.

The composition of the labor force by occupational category and salary status is given in Table 1A; the change in labor force by year is depicted in Table 1B. The occupational categories used in these tables are based on the occupation and industry codes created by the Bureau of the Census in 1980. Because workers can change occupational category over the course of a year, workers were counted in the occupational category where they spent most of their time.

Workers with unknown job titles (1,679) comprised a new occupational category not present last year. Because of the contractor change in 1994, only a portion of the employees had job title information available. The remainder were assigned a temporary occupational code. These workers were placed in the unknown occupational group.

Compared with 1993, the labor force in 1994 increased by 52% (3,941 employees). The biggest increase was among workers in the service category with a 185.6% increase. The only decrease was among professional workers whose numbers declined 1.7% over 1993.

Occupational Category	Number of Workers in 1994	Number of Workers in 1993	% Change from Last Year
Administrative	3,018	1,971	+53.1
Professional	2,722	2,769	-1.7
Technical	1,659	1,444	+14.9
Service	1,208	423	+185.6
Crafts and Manual Labor	701	664	+5.6
Nuclear	540	315	+71.4
Unknown	1,679	0	NA
TOTAL	**11,527**	**7,586**	**+52.0**

Table 1A. Labor Force by Occupational Category and Salary Status

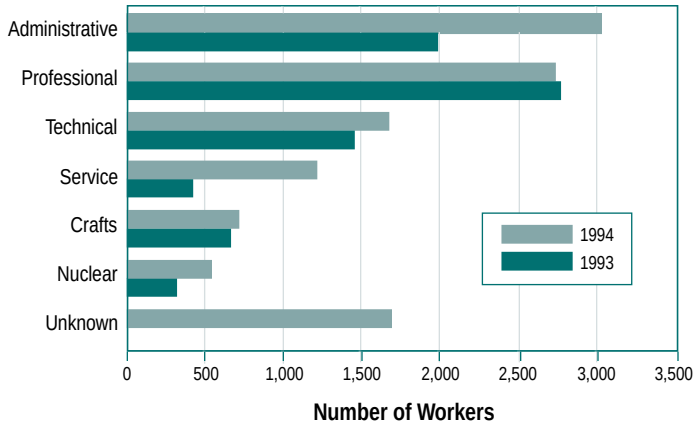

Table 1B. Change in Labor Force by Year

Absences Among Work Force, 1994

Absences per Person. In 1994, 507 INEL employees reported an absence of 5 or more consecutive workdays because of illness or injury. Fifty-six (11%) of these workers had two or more absences. A total of 572 absences were reported by the employees (Table 2A).

Diagnoses per Absence. A total of 720 diagnoses were associated with the 572 absences of 5 or more consecutive workdays. Multiple diagnoses were reported for 112 (20%) absences (Table 2B).

Diagnosis Rates for Absences. In 1994, diagnoses noted for absences of 5 or more consecutive workdays yielded an age-adjusted rate of 63.5 diagnoses per 1,000 persons. The diagnosis rate for women (98.3 per 1,000) was twice the rate for men (48.8 per 1,000) (Table 2C).

Employee Category	Number of Workers in 1994	Number of Absences						Total Persons Absent at Least Once	Total Number of Absences
		0	1	2	3	4	5		
Men	8,533	8,211	292	27	2	0	1	322	357
Women	2,994	2,809	159	23	2	1	0	185	215
TOTAL	**11,527**	**11,020**	**451**	**50**	**4**	**1**	**1**	**507**	**572**

Table 2A. Absences per Person

Employee Category	Number of Diagnoses per Absence				Total Number of Absences	Total Number of Diagnoses†
	1	2	3	4		
Men	291	54	9	3	357	438
Women	169	30	11	5	215	282
TOTAL	**460**	**84**	**20**	**8**	**572**	**720**

Table 2B. Diagnoses per Absence

Employee Category	Number of Workers in 1994	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
Men	8,533	438	51.3	48.8	43.9	54.1
Women	2,994	282	94.2	98.3	86.5	111.7
TOTAL	**11,527**	**720**	**62.5**	**63.5**	**58.6**	**68.8**

Table 2C. Diagnosis Rates for Absences

† 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, 1994

The age-adjusted diagnosis rate for each diagnostic category is given for all workers in Table 3. Tables 4 and 5 show 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 excluding pregnancy and childbirth (Table 3) were injury and poisoning (9.9 per 1,000), diseases of the respiratory system (8.9 per 1,000), and diseases of the musculoskeletal system (8.1 per 1,000). Together these three categories accounted for 45% of all diagnoses.

Men. The diagnostic category with the highest rate among men (Table 4) was injury and poisoning (9.6 per 1,000), with 87 diagnoses reported for 77 men. Within this category, two subcategories had relatively high numbers of diagnoses. Sprains and strains accounted for 28% of these diagnoses with 24 diagnoses among 22 men. Of these diagnoses, 12 were sprains and strains of the back, 6 of the lower extremities, and 6 of the upper extremities. Two men had multiple diagnoses. "Other" injuries accounted for 37% of the injury and poisoning diagnoses, with 32 diagnoses among 32 men. These diagnoses included 14 unspecified injuries; 5 complications of body systems; 4 adverse drug reactions; 3 contusions; 2 late effects of injuries; 1 each for heat stress, post operative infection, a blister on the foot/toe, and a foreign body on the eye.

The second highest rate, accounting for 16% of the total diagnoses, was diseases of the digestive system (7.4 per 1,000), with 68 diagnoses reported among 63 men. Thirty diagnoses were related to hernias; 11 to gall bladder disease; 7 to other diseases of the intestines and peritoneum; 5 to appendicitis; 5 to diseases of the esophagus, stomach, and duodenum; 4 to diseases of the oral cavity, salivary glands, and jaws; 3 to liver disorders; 2 to noninfectious gastroenteritis and colitis; and 1 to chronic pancreatitis. Five men had multiple diagnoses.

Diseases of the musculoskeletal system (6.3 per 1,000) ranked third, with 60 diagnoses reported for 53 men. Twenty-six diagnoses were related to dorsopathies (spinal disorders), 18 to arthritis and joint disorders, 15 to rheumatism (excluding the back), and 1 to a deformity of the toe. Five men had multiple diagnoses.

Fifteen cancer diagnoses were reported among 11 men in 1994. Five men had a total of six diagnoses of prostate cancer. Two men had a total of two diagnoses for bladder cancer; and one man had four diagnoses for multiple myeloma. One man each had a diagnosis for Hodgkin's disease, malignant melanoma of the skin, and pancreatic cancer.

Women. The diagnostic category with the highest rate among women (Table 5) was diseases of the respiratory system (19.4 per 1,000), with 55 diagnoses reported among 47 women. This accounted for 20% of all diagnoses among women. Twenty-three diagnoses were related to upper respiratory diseases, 22 to pneumonia/bronchitis, 9 to chronic respiratory conditions, and 1 to pleurisy. Seven women had multiple diagnoses.

The second highest rate, accounting for 12% of the total diagnoses, was for diseases of the musculoskeletal system (13.5 per 1,000), with 35 diagnoses among 29 women. Of these diagnoses, 13 were related to rheumatism (excluding the back), 9 to dorsopathies (spinal disorders), 8 to arthritis and joint disorders, 2 to bone and cartilage disorders, 2 to acquired toe deformities, and 1 to bone inflammation. Four women had multiple diagnoses.

Injury and poisoning (12.4 per 1,000) ranked third, with 39 diagnoses reported for 34 women. Within this category, "other" injuries accounted for 54% of the injury and poisoning diagnoses, with 21 diagnoses among 20 women. These 21 diagnoses included 8 unspecified injuries, 7 complications of surgical and medical care, 3 contusions, 2 late effects of injuries, and 1 spinal cord injury. One woman had multiple diagnoses.

Three cancer diagnoses were reported for two women in 1994. All three diagnoses were for breast cancer.

Table 3. Diseases and Injuries by Diagnostic Category - Men and Women

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	26	2.4	1.5	3.6
Malignant neoplasms	140-208, 230-234	18	1.7	1.1	2.8
• Digestive organs	150-159	1	0.1	0.0	0.9
• Respiratory system	160-165	0			
• Breast	174-175	3	0.2	0.1	0.7
• Genitourinary	179-189	8	0.8	0.4	1.7
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	5	0.4	0.2	1.1
Benign neoplasms and other	210-229, 235-239	10	0.9	0.4	1.8
Endocrine and metabolic diseases	240-279	13	1.1	0.6	1.9
Blood and blood-forming organs	280-289	1	0.1	0.0	0.4
Mental disorders	290-319	16	1.0	0.6	1.7
• Alcoholism	303	2	0.2	0.0	0.6
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	44	3.8	2.8	5.3
Circulatory system	390-459	47	4.4	3.3	6.0
• Hypertension	401	2	0.2	0.1	0.9
• Acute myocardial infarction	410	6	0.6	0.3	1.4
• Ischemic disease, not M.I.	411-414, 429.2	18	1.7	1.0	2.7
• Cerebrovascular disease	430-438	4	0.3	0.1	0.9
Respiratory system	460-519	103	8.9	7.2	11.0
• Upper respiratory	460-465, 470-478	48	3.9	2.9	5.3
• Pneumonia/bronchitis	466, 480-487	33	3.2	2.2	4.6
• Chronic respiratory conditions	490-496	20	1.8	1.1	2.8
Digestive system	520-579	92	7.9	6.3	9.8
• Hernias	550-553	32	2.8	2.0	4.0
• Gall bladder disease	574-575	20	1.7	1.1	2.7
Genitourinary system	580-629	55	5.2	3.9	7.0
• Benign prostatic hypertrophy	600	5	0.5	0.2	1.2
• Endometriosis	617	3	0.3	0.1	1.1
• Ovarian cysts	620.0-620.2	5	0.7	0.3	1.8
• Female genital pain/bleeding	625-626	4	0.4	0.1	1.1
Pregnancy and childbirth[1]	630-676	30	4.5	3.1	6.6
Skin and subcutaneous tissue	680-709	4	0.3	0.1	0.8
Musculoskeletal system	710-739	95	8.1	6.5	10.0
• Dorsopathies	720-724	35	2.9	2.0	4.1
Congenital anomalies	740-759	1	0.1	0.0	0.4
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	25	2.0	1.3	3.1
Injury and poisoning	800-999	126	9.9	8.2	12.0
• Fractures, all sites	800-829	22	1.9	1.2	3.0
• Dislocations	830-839	11	0.8	0.4	1.4
• Sprains and strains	840-848	30	2.6	1.8	3.8
• Intracranial injuries	850-854	5	0.4	0.1	0.9
• Internal injuries	860-869	2	0.1	0.0	0.5
• Open wounds	870-897	3	0.2	0.1	0.8
• Other injuries	900-999	53	4.0	3.0	5.3
Health status/health service contract	V01-V82	14	1.3	0.7	2.3
• Family history of health problems	V10-V19	2	0.2	0.0	0.6
• Circumstances related to reproduction/development	V20-V28	5	0.6	0.2	1.5
• Specific procedure/aftercare	V50-V59	5	0.4	0.2	1.2
Total minus pregnancies		**690**	**59.0**	**54.4**	**64.0**
TOTAL		**720**	**63.5**	**58.6**	**68.8**

† Includes all diagnoses reported with an absence of 5 or more days.
* Standardized to age distribution of 1970 U.S. population.
[1] Only women aged 18-45 were included in the calculation of the rates for these diagnostic categories.

Table 4. Diseases and Injuries by Diagnostic Category - Men

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	17	2.2	1.2	4.0
Malignant neoplasms	140-208, 230-234	15	1.8	1.1	3.0
• Digestive organs	150-159	1	0.1	0.0	1.0
• Respiratory system	160-165	0			
• Breast	174-175	0			
• Genitourinary	179-189	8	1.0	0.5	2.0
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	5	0.5	0.2	1.3
Benign neoplasms and other	210-229, 235-239	6	0.5	0.2	1.2
Endocrine and metabolic diseases	240-279	9	0.9	0.5	1.8
Blood and blood-forming organs	280-289	0			
Mental disorders	290-319	7	0.6	0.3	1.3
• Alcoholism	303	1	0.1	0.0	0.8
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	26	2.5	1.7	3.7
Circulatory system	390-459	41	5.0	3.6	7.0
• Hypertension	401	2	0.3	0.1	1.0
• Acute myocardial infarction	410	5	0.6	0.3	1.5
• Ischemic disease, not M.I.	411-414, 429.2	16	1.8	1.1	3.0
• Cerebrovascular disease	430-438	4	0.4	0.2	1.1
Respiratory system	460-519	48	5.5	4.0	7.7
• Upper respiratory	460-465, 470-478	25	2.7	1.7	4.3
• Pneumonia/bronchitis	466, 480-487	11	1.4	0.7	2.7
• Chronic respiratory conditions	490-496	11	1.4	0.7	2.7
Digestive system	520-579	68	7.4	5.7	9.5
• Hernias	550-553	30	3.4	2.3	5.0
• Gall bladder disease	574-575	11	1.2	0.6	2.1
Genitourinary system	580-629	26	3.3	2.1	5.0
• Benign prostatic hypertrophy	600	5	0.6	0.2	1.4
• Endometriosis	617	NA			
• Ovarian cysts	620.0-620.2	NA			
• Female genital pain/bleeding	625-626	NA			
Pregnancy and childbirth	630-676	NA			
Skin and subcutaneous tissue	680-709	3	0.2	0.1	0.8
Musculoskeletal system	710-739	60	6.3	4.8	8.3
• Dorsopathies	720-724	26	2.6	1.8	3.9
Congenital anomalies	740-759	1	0.1	0.0	0.6
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	13	1.3	0.8	2.3
Injury and poisoning	800-999	87	9.6	7.5	12.2
• Fractures, all sites	800-829	17	2.3	1.3	4.0
• Dislocations	830-839	7	0.6	0.3	1.4
• Sprains and strains	840-848	24	3.0	1.9	4.9
• Intracranial injuries	850-854	3	0.3	0.1	1.0
• Internal injuries	860-869	1	0.1	0.0	0.6
• Open wounds	870-897	3	0.3	0.1	1.0
• Other injuries	900-999	32	2.9	2.1	4.2
Health status/health service contract	V01-V82	11	1.4	0.7	3.0
• Family history of health problems	V10-V19	2	0.2	0.0	0.8
• Circumstances related to reproduction/development	V20-V28	4	0.6	0.2	1.9
• Specific procedure/aftercare	V50-V59	4	0.6	0.2	1.9
TOTAL		**438**	**48.8**	**43.9**	**54.1**

† Includes all diagnoses reported with an absence of 5 or more days.
* Standardized to age distribution of 1970 U.S. population.

Table 5. Diseases and Injuries by Diagnostic Category - Women

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	9	3.0	1.5	6.0
Malignant neoplasms	140-208, 230-234	3	0.9	0.3	3.1
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	3	0.9	0.3	3.1
• Genitourinary	179-189	0			
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	4	1.4	0.5	3.7
Endocrine and metabolic diseases	240-279	4	1.0	0.4	2.9
Blood and blood-forming organs	280-289	1	0.3	0.0	2.0
Mental disorders	290-319	9	2.4	1.2	4.7
• Alcoholism	303	1	0.2	0.0	1.5
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	18	7.4	4.4	12.3
Circulatory system	390-459	6	2.4	1.0	5.5
• Hypertension	401	0			
• Acute myocardial infarction	410	1	0.5	0.1	3.4
• Ischemic disease, not M.I.	411-414, 429.2	2	1.0	0.2	3.8
• Cerebrovascular disease	430-438	0			
Respiratory system	460-519	55	19.4	14.4	26.1
• Upper respiratory	460-465, 470-478	23	7.9	5.1	12.2
• Pneumonia/bronchitis	466, 480-487	22	8.4	5.1	13.9
• Chronic respiratory conditions	490-496	9	2.8	1.4	5.5
Digestive system	520-579	24	7.9	5.2	11.9
• Hernias	550-553	2	0.7	0.2	3.0
• Gall bladder disease	574-575	9	3.2	1.6	6.3
Genitourinary system	580-629	29	10.2	6.8	15.3
• Benign prostatic hypertrophy	600	NA			
• Endometriosis	617	3	0.9	0.3	2.9
• Ovarian cysts	620.0-620.2	5	1.8	0.7	4.4
• Female genital pain/bleeding	625-626	4	1.2	0.4	3.2
Pregnancy and childbirth[1]	630-676	30	10.8	7.5	15.6
Skin and subcutaneous tissue	680-709	1	0.5	0.1	3.4
Musculoskeletal system	710-739	35	13.5	9.4	19.3
• Dorsopathies	720-724	9	2.6	1.3	5.3
Congenital anomalies	740-759	0			
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	12	4.0	2.2	7.2
Injury and poisoning	800-999	39	12.4	8.7	17.7
• Fractures, all sites	800-829	5	1.7	0.6	4.2
• Dislocations	830-839	4	1.1	0.4	3.2
• Sprains and strains	840-848	6	2.2	0.8	6.5
• Intracranial injuries	850-854	2	0.4	0.1	1.7
• Internal injuries	860-869	1	0.2	0.0	1.5
• Open wounds	870-897	0			
• Other injuries	900-999	21	6.8	4.3	10.6
Health status/health service contract	V01-V82	3	0.9	0.3	2.9
• Family history of health problems	V10-V19	0			
• Circumstances related to reproduction/development	V20-V28	1	0.4	0.1	2.9
• Specific procedure/aftercare	V50-V59	1	0.3	0.0	2.0
Total minus pregnancies		**252**	**87.5**	**76.4**	**100.2**
TOTAL		**282**	**98.3**	**86.5**	**111.7**

† Includes all diagnoses reported with an absence of 5 or more days.
* Standardized to age distribution of 1970 U.S. population.
[1] Only women aged 18-45 were included in the calculation of the rates for these diagnostic categories.

Diagnoses Associated with Pregnancy, Labor, and Delivery

During 1994, 30 pregnancy-related diagnoses were reported among 29 women (Table 6). One woman had multiple diagnoses. There were four diagnoses for complications related to pregnancy; four for complications of labor, delivery, and puerperium; and two for other indications for care in pregnancy, labor, and delivery. Twenty women had normal deliveries.

Diagnoses by Occupational Category, 1994

During 1994, the age-adjusted diagnosis rate for all employees (Table 7) was 63.5 per 1,000 persons. Service workers had the highest diagnosis rate (133.9 per 1,000), with 159 diagnoses reported for 104 workers. Administrative workers had the second highest diagnosis rate (81.0 per 1,000), with 222 diagnoses reported among 148 persons. Technical workers ranked third, with 119 diagnoses reported for 84 workers (72.6 per 1,000). Workers in the unknown category had the lowest rate (7.1 per 1,000 workers), with 13 diagnoses among 9 workers.

Men. The diagnosis rate among men was 48.8 per 1,000. Service workers had the highest rate (109.8 per 1,000), with 105 diagnoses reported for 73 men. The second highest rate was among the nuclear workers (72.9 per 1,000), with 28 diagnoses reported among 23 men. Crafts and manual laborers ranked third, with 43 diagnoses reported among 35 men (67.7 per 1,000). Workers in the unknown category had the lowest rate (1.7 per 1,000), with two diagnoses for two men.

Women. The diagnosis rate among women (Table 9) was 98.3 per 1,000. Service workers had the highest rate (213.1 per 1,000), with 54 diagnoses reported among 31 women. The second highest rate was among the crafts and manual laborers (131.9 per 1,000), with eight diagnoses reported among three women. Administrative workers ranked third, with 146 diagnoses reported among 96 women (119.2 per 1,000). Workers in the unknown category had the lowest rate (21.1 per 1,000), with 11 diagnoses among 7 women. The women had higher diagnosis rates than the men; this suggests 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	0			
Complications Related to Pregnancy	640-648	4	1.5	0.5	4.0
Normal Delivery	650	20	7.1	4.5	11.2
Other Indications for Care in Pregnancy, Labor, and Delivery‡	651-659	2	0.8	0.2	3.3
Complications of Labor, Delivery, and Puerperium	660-676	4	1.5	0.5	4.0
TOTAL		**30**	**10.9**	**7.5**	**15.8**

† Includes all diagnoses reported with an absence of 5 or more days.
* Only women aged 18-45 were included in the calculation of the rates for these diagnostic categories.
‡ Includes delivery by cesarian section and multiple births.

Table 6. Diagnoses Associated with Pregnancy, Labor, and Delivery

Occupational Category	Number of Workers in 1994	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Administrative	3,018	222	81.0	69.5	94.4
Professional	2,722	120	46.0	37.5	56.4
Technical	1,659	119	72.6	59.7	88.5
Service	1,208	159	133.9	112.2	159.9
Crafts and Manual Labor	701	51	68.8	50.2	94.3
Nuclear	540	36	71.3	48.6	104.6
Unknown	1,679	13	7.1	4.1	12.4
TOTAL	**11,527**	**720**	**63.5**	**58.6**	**68.8**

Table 7. Diagnoses by Occupational Category - Men and Women

Occupational Category	Number of Workers in 1994	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Administrative	1,774	76	39.4	29.0	53.4
Professional	2,268	103	41.8	33.5	52.1
Technical	1,252	81	61.4	48.5	77.7
Service	948	105	109.8	87.8	137.3
Crafts and Manual Labor	646	43	67.7	47.6	96.2
Nuclear	460	28	72.9	46.4	114.5
Unknown	1,185	2	1.7	0.4	6.9
TOTAL	**8,533**	**438**	**48.8**	**43.9**	**54.1**

Table 8. Diagnoses by Occupational Category - Men

Occupational Category	Number of Workers in 1994	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Administrative	1,244	146	119.2	99.8	142.4
Professional	454	17	39.4	22.8	68.3
Technical	407	38	91.3	64.7	129.0
Service	260	54	213.1	159.9	284.0
Crafts and Manual Labor	55	8	131.9	64.5	269.7
Nuclear	80	8	78.1	37.7	161.8
Unknown	494	11	21.1	11.3	39.4
TOTAL	**2,994**	**282**	**98.3**	**86.5**	**111.7**

Table 9. Diagnoses by Occupational Category - Women

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

Deaths Among Active Workers, 1994

There were four deaths reported among active workers in 1994. The causes of death were an accident at home, a gunshot wound, a brain aneurysm, and natural causes.

Relative Risk for All Diseases and Injuries by Occupation

In Table 10, the risk of one or more absences associated with selected diagnostic categories for specific occupational categories is compared with all other occupational categories in the INEL work force. This comparison 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 1994. This was done to minimize the problem associated with one person having multiple absences for the same condition.

Throughout this report, various tables and discussions refer to rates of illness or injury. Rates in this report reflect the number of events (e.g., absences, diagnoses) per 1,000 "person-years." A "person-year" is a unit of measurement combining persons and time; it is equivalent to one person followed up for 1 year. When an individual worker remains in the work force for the entire year, she or he contributes one person-year to the calculation of rates of disease and injury presented in the report. Rates of disease and injury are often presented as the number of diagnoses or absences from work per thousand workers per year, or per 1,000 person-years.

The statistical methods used to compare the incidence of absences are the relative risk and the 95% confidence interval.

Disease	Administrative 3,018 Person-Years				Professional 2,722 Person-Years				Technical 1,659 Person-Years				Service 1,208 Person-Years				Crafts Manual 701 Perso		
	Persons with at Least One Event*	Relative Risk**	Confidence Limit Lower 95%	Confidence Limit Upper 95%	Persons with at Least One Event*	Relative Risk**	Confidence Limit Lower 95%	Confidence Limit Upper 95%	Persons with at Least One Event*	Relative Risk**	Confidence Limit Lower 95%	Confidence Limit Upper 95%	Persons with at Least One Event*	Relative Risk**	Confidence Limit Lower 95%	Confidence Limit Upper 95%	Persons wi Least One Even		
All Diseases and Injuries	148	1.0	0.8	1.2	96	0.8	0.6	1.0	84	1.2	1.0	1.5	104	2.3	1.9	2.9			
Infections and Parasitic Diseases	7	1.0	0.4	2.6	2	0.3	0.1	1.3	4	1.1	0.4	3.3	6	2.8	1.1	7.0			
Malignant Neoplasms	5	1.7	0.6	5.0	3	0.8	0.2	3.0	4	2.9	0.9	9.4	1	0.8	0.1	5.7			
Benign Neoplasms	4	1.8	0.4	7.0	2	0.9	0.2	4.0	1	0.7	0.1	5.5	1	1.0	0.1	7.7			
Endocrine and Metabolic Diseases	3	0.8	0.2	3.3	2	0.6	0.1	2.4	1	0.5	0.1	4.0	6	8.7	2.7	28.2			
Mental Disorders	5	1.6	0.4	5.7	3	1.3	0.3	5.1	2	1.2	0.3	5.6	1	0.8	0.1	6.0			
Nervous System and Sense Organs	13	1.0	0.5	2.1	6	0.6	0.3	1.5	7	1.3	0.6	3.0	13	4.1	2.1	7.9			
Circulatory System	7	0.7	0.3	1.6	11	1.2	0.6	2.5	6	1.2	0.5	3.0	8	2.3	1.1	5.1			
Respiratory System	29	1.0	0.6	1.7	16	0.9	0.5	1.6	14	1.2	0.7	2.1	18	2.4	1.4	4.0			
Digestive System	15	0.6	0.3	1.1	17	0.8	0.5	1.4	18	1.8	1.1	3.0	16	2.1	1.2	3.7			
Genitourinary System	24	2.2	1.2	4.1	6	0.5	0.2	1.3	8	1.3	0.6	2.7	4	0.8	0.3	2.4			
Musculoskeletal System	26	1.1	0.7	1.8	14	0.7	0.4	1.3	9	0.8	0.4	1.5	19	2.6	1.5	4.4			
Symptoms, Signs and Ill-Defined Conditions	8	1.3	0.5	3.3	2	0.4	0.1	1.7	2	0.7	0.2	2.8	6	3.5	1.3	9.0			
Injury and Poisoning	26	0.8	0.5	1.3	13	0.4	0.2	0.8	21	1.4	0.9	2.2	31	3.2	2.1	4.8			
Injury and Poisoning: Fractures	4	0.7	0.2	2.2	1	0.2	0.02	1.3	3	1.0	0.3	3.4	8	5.7	2.3	14.2			
Injury and Poisoning: Dislocations	4	1.4	0.4	4.8	1	0.4	0.1	2.2	3	2.3	0.6	8.7	1	0.8	0.1	6.4			
Injury and Poisoning: Sprains and Strains	7	1.0	0.4	2.6	6	0.8	0.3	2.1	5	1.3	0.5	3.3	4	1.3	0.5	3.8			
Injury and Poisoning: "Other" Injuries	11	0.6	0.3	1.2	4	0.3	0.1	0.8	10	1.4	0.7	2.9	18	4.4	2.5	7.9			

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

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.

Service workers (RR=2.3) had a statistically significant increased risk of being absent 5 or more consecutive workdays in 1994 due to disease or injury (Table 11). Workers in the unknown category (RR=0.1) had a statistically significant decreased risk of absence.

Table 10.
Relative Risk for Selected Disease and Injury Categories by Occupation

Crafts and Manual Labor 701 Person-Years					Nuclear 540 Person-Years				Unknown 1,679 Person-Years				Total Number of Persons with at Least One Event
Persons with at Least One Event*	Relative Risk**	Confidence Limit			Persons with at Least One Event*	Relative Risk**	Confidence Limit		Persons with at Least One Event*	Relative Risk**	Confidence Limit		
		Lower 95%	Upper 95%				Lower 95%	Upper 95%			Lower 95%	Upper 95%	
2.9	38	1.4	1.0	2.0	28	1.3	0.9	1.9	9	0.1	0.1	0.2	507
7.0	4	3.4	1.2	10.2	1	0.9	0.1	6.6	1	0.2	0.03	1.6	25
5.7	0				0				0				13
7.7	1	2.1	0.3	17.8	1	2.3	0.3	19.0	0				10
28.2	1	1.4	0.2	11.7	0				0				13
6.0	0				1	2.1	0.3	17.3	0				12
7.9	1	0.4	0.1	3.4	1	0.6	0.1	4.2	0				41
5.1	3	1.3	0.4	4.3	2	1.2	0.3	4.9	0				37
4.0	4	1.0	0.4	2.9	4	1.2	0.4	3.3	2	0.1	0.03	0.5	87
3.7	11	2.5	1.3	4.7	4	1.1	0.4	2.9	0				81
2.4	3	1.5	0.4	4.9	2	1.1	0.3	4.6	1	0.1	0.02	0.8	48
4.4	7	1.6	0.7	3.6	5	1.4	0.6	3.5	2	0.2	0.04	0.6	82
9.0	2	2.3	0.6	9.7	1	1.2	0.2	8.4	0				21
4.8	10	1.6	0.9	3.1	7	1.4	0.7	3.1	3	0.2	0.1	0.5	111
14.2	1	0.8	0.1	6.0	2	2.3	0.5	10.0	1	0.3	0.04	2.1	20
6.4	1	1.8	0.2	14.2	1	2.2	0.3	17.3	0				11
3.8	3	1.8	0.5	6.0	2	1.6	0.4	6.8	1	0.2	0.03	1.5	28
7.9	4	1.6	0.6	4.3	3	1.3	0.4	4.2	2	0.3	0.1	1.1	52

Relative Risk for Selected Disease and Injury Categories by Occupation

Table 10 also presents the relative risks of absences of 5 or more consecutive workdays for selected disease categories among workers by each occupational category.

Administrative workers were significantly more likely to be absent at least once during 1994 for diseases of the genitourinary system (Relative Risk [RR]=2.2). Technical workers were significantly more likely to be absent at least once during 1994 for diseases of the digestive system (RR=1.8). Service workers had a statistically significant increased risk of being absent due to infections and parasitic diseases (RR=2.8); endocrine and metabolic diseases (RR=8.7); diseases of the nervous system and sense organs (RR=4.1); diseases of the circulatory system (RR=2.3); diseases of the respiratory system (RR=2.4); diseases of the digestive system (RR=2.1); diseases of the musculoskeletal system (RR=2.6); symptoms, signs, and ill-defined conditions (RR=3.5); and injury and poisoning (RR=3.2), as a whole, with fractures (RR=5.7) and "other" injuries (RR=4.4), as subcategories of injury and poisoning. Crafts and manual laborers were found to have a statistically significant elevated risk associated with infections and parasitic diseases (RR=3.4) and diseases of the digestive system (RR=2.5).

Professional workers were significantly less likely to be absent at least once during 1994 for injury and poisoning (RR=0.4), as a whole, with "other" injuries (RR=0.3), as a subcategory of injury and poisoning. Workers in the unknown category had a statistically significant decreased risk of diseases of the respiratory system (RR=0.1); diseases of the genitourinary system (RR=0.1); diseases of the musculoskeletal system (RR=0.2); and injury and poisoning (RR=0.2), as a whole.

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.

OSHA-Recordable Events Among INEL Employees, 1994

OSHA-Recordable Events per Person. In 1994, 156 INEL employees had at least one OSHA-recordable event. Fifteen (10%) of these workers had two or more events. There was a total of 173 OSHA-recordable events among all employees (Table 11A.).

Diagnoses per OSHA-Recordable Event. A total of 184 diagnoses were associated with the 173 OSHA events recorded during 1994. Multiple diagnoses were reported for 10 (6%) of the events (Table 11B.).

Diagnosis Rates for OSHA-Recordable Events. In 1994, the diagnoses noted for the OSHA events yielded an age-adjusted rate of 15.5 per 1,000 persons. The age-adjusted diagnosis rate for women (21.0 per 1,000) was higher than the rate for men (14.6 per 1,000) (Table 11C.).

Employee Category	Number of Workers in 1994	Number of OSHA-Recordable Events				Total Persons with at Least One Event	Total Number of Events
		0	1	2	3		
Men	8,533	8,428	95	8	2	105	117
Women	2,994	2,943	46	5	0	51	56
TOTAL	**11,527**	**11,371**	**141**	**13**	**2**	**156**	**173**

Table 11A. OSHA-Recordable Events per Person

Employee Category	Number of Diagnoses per OSHA Event			Total Number of Events	Total Number of Diagnoses
	1	2	3		
Men	116	1	0	117	118
Women	47	8	1	56	66
TOTAL	**163**	**9**	**1**	**173**	**184**

Table 11B. Diagnoses per OSHA-Recordable Event

Employee Category	Number of Workers in 1994	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
Men	8,533	118	13.8	14.6	11.7	18.1
Women	2,994	66	22.0	21.0	16.1	27.3
TOTAL	**11,527**	**184**	**16.0**	**15.5**	**13.2**	**18.2**

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

Table 11C. Diagnosis Rates for OSHA-Recordable Events

OSHA-Recordable Diseases and Injuries by Diagnostic Category, 1994

The age-adjusted diagnosis rate for each diagnostic category is presented for all workers in Table 12. Tables 13 and 14 show diagnosis rates by gender to further describe the disease and injury patterns in the work force.

For all workers (Table 12), the diagnostic category with the highest rate was injury and poisoning (11.9 per 1,000), with 134 diagnoses reported for 122 people, which accounted for 73% of all the diagnoses. Within this category were two subcategories with relatively high rates. Sprains and strains (6.6 per 1,000), with 74 diagnoses among 67 workers; and "other" injuries (2.9 per 1,000), with 36 diagnoses among 35 workers.

Men. The leading diagnostic category among men (Table 13), accounting for 84% of all diagnoses, was injury and poisoning (12.5 per 1,000), with 99 diagnoses among 90 men. Within this category were three subcategories with relatively high rates. Sprains and strains (6.0 per 1,000) accounted for 48% of these diagnoses, with 48 diagnoses among 44 men. Thirty-two diagnoses were sprains and strains of the back, 11 of the upper extremities, 4 of the lower extremities, and 1 of unspecified sites. Four men had multiple diagnoses. "Other" injuries (3.4 per 1,000) accounted for 30% of the injury and poisoning diagnoses, with 30 diagnoses among 29 men. These included 11 diagnoses for contusions; 8 for heat stress; 6 burns of unspecified degree — 3 to the hand, 1 to a finger, and 2 to the lower leg; 3 superficial injuries — 1 to the eye and 2 to unspecified sites; 1 bee sting; and 1 broken dentures. One man had multiple diagnoses. Open wounds (2.6 per 1,000) accounted for 15% of the injury and poisoning diagnoses, with 15 diagnoses among 14 men. Of these diagnoses, 11 were for open wounds of the upper extremities, 2 of the lower extremities, and 2 of the cheek. One man had multiple diagnoses.

Women. The diagnostic category with the highest rate was the same among women as for men (Table 14). Injury and poisoning (12.8 per 1,000) accounted for 53% of all diagnoses, with 35 diagnoses among 32 women. Within this category, sprains and strains (9.2 per 1,000) accounted for 74% of these diagnoses, with 26 diagnoses for 23 women. Of these diagnoses, 11 were sprains and strains of the back, 9 of the upper extremities, and 6 of the lower extremities. Three women had multiple diagnoses. Symptoms, signs, and ill-defined conditions (4.5 per 1,000) had the next highest rate, accounting for 26% of all diagnoses, with 17 diagnoses among 9 women. The 17 diagnoses included 6 diagnoses for headache, 5 for nausea, 2 for a rash, and 1 each for a cough, chest pain, dizziness and giddiness, and sneezing. Seven women had multiple diagnoses.

Table 12. OSHA-Recordable Diseases and Injuries by Diagnostic Category - Men and Women

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	2	0.1	0.0	0.5
Malignant neoplasms	140-208, 230-234	0			
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	0			
• Genitourinary	179-189	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	18	1.4	0.8	2.4
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	3	0.2	0.1	0.7
• 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	0			
• Endometriosis	617	0			
• Ovarian cysts	620.0-620.2	0			
• Female genital pain/bleeding	625-626	0			
Pregnancy and childbirth	630-676	0			
Skin and subcutaneous tissue	680-709	2	0.1	0.0	0.5
Musculoskeletal system	710-739	2	0.1	0.0	0.5
• Dorsopathies	720-724	0			
Congenital anomalies	740-759	0			
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	20	1.4	0.9	2.3
Injury and poisoning	800-999	134	11.9	9.8	14.4
• Fractures, all sites	800-829	6	0.4	0.2	1.0
• Dislocations	830-839	1	0.1	0.0	0.4
• Sprains and strains	840-848	74	6.6	5.1	8.6
• Intracranial injuries	850-854	0			
• Internal injuries	860-869	0			
• Open wounds	870-897	17	1.8	1.1	3.1
• Other injuries	900-999	36	2.9	2.0	4.2
Health status/health service contract	V01-V82	3	0.2	0.1	0.5
• Family history of health problems	V10-V19	0			
• Circumstances related to reproduction/development	V20-V28	0			
• Specific procedure/aftercare	V50-V59	0			
TOTAL		**184**	**15.5**	**13.2**	**18.2**

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

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

Table 13. OSHA-Recordable Diseases and Injuries by Diagnostic Category - Men

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	0.1	0.0	0.6
Malignant neoplasms	140-208, 230-234	0			
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	0			
• Genitourinary	179-189	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	7	0.9	0.3	2.1
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	3	0.3	0.1	0.9
• 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	0			
• Endometriosis	617	NA			
• Ovarian cysts	620.0-620.2	NA			
• Female genital pain/bleeding	625-626	NA			
Pregnancy and childbirth	630-676	NA			
Skin and subcutaneous tissue	680-709	1	0.1	0.0	0.6
Musculoskeletal system	710-739	2	0.2	0.0	0.7
• Dorsopathies	720-724	0			
Congenital anomalies	740-759	0			
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	3	0.5	0.1	2.0
Injury and poisoning	800-999	99	12.5	9.8	15.8
• Fractures, all sites	800-829	5	0.4	0.2	1.1
• Dislocations	830-839	1	0.1	0.0	0.6
• Sprains and strains	840-848	48	6.0	4.2	8.4
• Intracranial injuries	850-854	0			
• Internal injuries	860-869	0			
• Open wounds	870-897	15	2.6	1.4	4.7
• Other injuries	900-999	30	3.4	2.2	5.2
Health status/health service contract	V01-V82	2	0.2	0.0	0.7
• Family history of health problems	V10-V19	0			
• Circumstances related to reproduction/development	V20-V28	0			
• Specific procedure/aftercare	V50-V59	0			
TOTAL		**118**	**14.6**	**11.7**	**18.1**

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

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

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

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	0.3	0.0	2.0
Malignant neoplasms	140-208, 230-234	0			
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	0			
• Genitourinary	179-189	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	11	2.9	1.6	5.5
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			
• Endometriosis	617	0			
• Ovarian cysts	620.0-620.2	0			
• Female genital pain/bleeding	625-626	0			
Pregnancy and childbirth	630-676	0			
Skin and subcutaneous tissue	680-709	1	0.2	0.0	1.5
Musculoskeletal system	710-739	0			
• Dorsopathies	720-724	0			
Congenital anomalies	740-759	0			
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	17	4.5	2.7	7.5
Injury and poisoning	800-999	35	12.8	8.9	18.4
• Fractures, all sites	800-829	1	0.5	0.1	3.4
• Dislocations	830-839	0			
• Sprains and strains	840-848	26	9.2	6.1	13.6
• Intracranial injuries	850-854	0			
• Internal injuries	860-869	0			
• Open wounds	870-897	2	1.3	0.2	7.1
• Other injuries	900-999	6	1.9	0.8	4.3
Health status/health service contract	V01-V82	1	0.2	0.0	1.5
• 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		**66**	**21.0**	**16.1**	**27.3**
TOTAL		**66**	**21.0**	**16.1**	**27.3**

† Includes all diagnoses resulting from an OSHA-Recordable event.
* Standardized to age distribution of 1970 U.S. population.

OSHA-Recordable Diagnoses by Occupational Category, 1994

During 1994, the age-adjusted diagnosis rate among all employees was 15.5 per 1,000 persons (Table 15). Crafts and manual laborers, who comprised 6% of the work force, had the highest diagnosis rate (80.5 per 1,000), with 50 diagnoses reported for 46 persons. The second highest diagnosis rate was among service workers (35.1 per 1,000), with 45 diagnoses for 35 persons. Technical workers (17.6 per 1,000) ranked third, with 30 diagnoses among 28 workers. Workers whose occupation was unknown had the lowest diagnosis rate (2.2 per 1,000 workers), with four diagnoses for two workers.

Men. The diagnosis rate among men (Table 16) was 14.6 per 1,000 men. Crafts and manual laborers had the highest rate (89.1 per 1,000), with 48 diagnoses reported for 44 men. Service workers ranked second (27.1 per 1,000), with 28 diagnoses among 22 men. Nuclear workers followed, with six diagnoses for six men (19.6 per 1,000). The diagnosis rate was the lowest among the workers whose occupation was unknown, with no reported diagnoses.

Women. The diagnosis rate among women (Table 17) was 21.0 per 1,000. The diagnosis rate for workers in the service category (62.8 per 1,000) was the highest, with 17 diagnoses reported among 13 women. Crafts and manual laborers (28.1 per 1,000) ranked second, with two diagnoses for two women. The third highest rate occurred in the category of technical workers (25.8 per 1,000), with 11 diagnoses among 11 women. Workers in the nuclear category had the lowest rate, with no diagnoses reported.

Occupational Category	Number of Workers in 1994	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Administrative	3,018	35	11.2	7.6	16.5
Professional	2,722	14	4.1	2.4	7.0
Technical	1,659	30	17.6	11.8	26.3
Service	1,208	45	35.1	24.8	49.8
Crafts and Manual Labor	701	50	80.5	57.3	113.0
Nuclear	540	6	14.4	5.4	38.2
Unknown	1,679	4	2.2	0.8	6.0
TOTAL	**11,527**	**184**	**15.5**	**13.2**	**18.2**

Table 15. OSHA-Recordable Diagnoses by Occupational Category - Men and Women

Occupational Category	Number of Workers in 1994	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Administrative	1,774	8	6.3	2.1	19.1
Professional	2,268	9	3.2	1.7	6.3
Technical	1,252	19	13.6	8.3	22.5
Service	948	28	27.1	16.9	43.7
Crafts and Manual Labor	646	48	89.1	62.3	127.5
Nuclear	460	6	19.6	7.0	55.0
Unknown	1,185	0			
TOTAL	**8,533**	**118**	**14.6**	**11.7**	**18.1**

Table 16. OSHA-Recordable Diagnoses by Occupational Category - Men

Occupational Category	Number of Workers in 1994	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Administrative	1,244	27	18.6	12.6	27.6
Professional	454	5	5.4	2.3	13.1
Technical	407	11	25.8	13.8	48.4
Service	260	17	62.8	37.8	104.2
Crafts and Manual Labor	55	2	28.1	6.5	121.9
Nuclear	80	0			
Unknown	494	4	8.4	2.8	24.8
TOTAL	2,994	**66**	**21.0**	**16.1**	**27.3**

Table 17. OSHA Diagnoses by Occupational Category - Women

† Includes all diagnoses resulting from an OSHA-recordable event.
* Standardized to age distribution of 1970 U.S. population

OSHA-Recordable Relative Risk for All Diseases and Injuries by Occupation

In Table 18 and Tables 19A through 19F, the risk of one or more OSHA-recordable events associated with selected diagnostic categories for each occupational category is compared with all other occupational categories in the INEL work force. This comparison 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* OSHA-recordable events during 1994. This was done to minimize the problem associated with one person having multiple events for the same condition. Again, the statistical methods used to compare the incidence of events are the relative risk and the 95% confidence interval.

Service workers (RR=2.5) and crafts and manual laborers (RR=7.7) had statistically significant increased risks of an OSHA-recordable event in 1994 (Table 18). Administrative workers (RR=0.6), professional workers (RR=0.3), and workers in the unknown category (RR=0.1) had statistically significant decreased risks of an event.

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

Tables 19A through 19F present the relative risk of an OSHA-recordable event for selected disease categories among workers by each occupational category.

Examination of the tables shows that service workers were significantly more likely to have at least one OSHA event during 1994 for injury and poisoning (RR=2.9), as a whole, with sprains and strains (RR=2.3) and "other" injuries (RR=6.3) as subcategories of injury and poisoning. Crafts and manual laborers were also significantly more likely to have at least one OSHA event during 1994 for injury and poisoning (RR=8.9), as a whole, with sprains and strains (RR=7.8), open wounds (RR=22.6), and "other" injuries (RR=6.0) as subcategories of injury and poisoning. Administrative workers had a statistically significant decreased risk of having an OSHA-recordable event due to injury and poisoning (RR=0.3), as a whole, with "other" injuries (RR=0.1) as a subcategory of injury and poisoning. Professional workers were also at a significantly decreased risk for injury and poisoning (RR=0.2), as a whole, with sprains and strains (RR=0.2) and "other" injuries (RR=0.3) as subcategories of injury and poisoning. Workers in the unknown category were significantly less likely to have an OSHA event due to injury and poisoning (RR=0.05), as a whole, with sprains and strains (RR=0.1) as a subcategory of injury and poisoning.

Occupational Category	Person-Years	Persons with at Least One Event*	Relative Risk**	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Administrative	3,018	28	0.6	0.4	0.9
Professional	2,722	11	0.3	0.1	0.5
Technical	1,659	28	1.3	0.8	1.9
Service	1,208	35	2.5	1.7	3.7
Crafts and Manual Labor	701	46	7.7	5.3	11.1
Nuclear	540	6	0.8	0.4	1.9
Unknown	1,679	2	0.1	0.02	0.3
TOTAL	**11,527**	**156**			

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

Table 18. 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
Administrative	3,018	7	1.3	0.5	3.2
Professional	2,722	3	0.8	0.2	2.8
Technical	1,659	1	0.4	0.05	2.6
Service	1,208	3	2.0	0.6	6.9
Crafts and Manual Labor	701	1	1.3	0.2	8.8
Nuclear	540	2	3.5	0.7	16.1
Unknown	1,679	1	0.3	0.05	2.5
TOTAL	**11,527**	**18**			

Table 19A. Diseases of the Nervous System and Sense Organs

Occupational Category	Person-Years	Persons with at Least One Event*	Relative Risk**	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Administrative	3,018	5	1.4	0.4	4.9
Professional	2,722	3	1.4	0.4	5.2
Technical	1,659	1	0.5	0.1	4.0
Service	1,208	1	0.9	0.1	7.1
Crafts and Manual Labor	701	1	2.6	0.3	22.2
Nuclear	540	0			
Unknown	1,679	1	0.5	0.1	4.0
TOTAL	**11,527**	**12**			

Table 19B. 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
Administrative	3,018	14	0.3	0.2	0.6
Professional	2,722	6	0.2	0.1	0.4
Technical	1,659	25	1.5	1.0	2.3
Service	1,208	31	2.9	1.9	4.4
Crafts and Manual Labor	701	41	8.9	5.9	13.2
Nuclear	540	4	0.7	0.3	1.9
Unknown	1,679	1	0.05	0.01	0.3
TOTAL	**11,527**	**122**			

Table 19C. Injury and Poisoning

Occupational Category	Person-Years	Persons with at Least One Event*	Relative Risk**	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Administrative	3,018	12	0.5	0.3	1.0
Professional	2,722	3	0.2	0.05	0.5
Technical	1,659	14	1.6	0.9	2.8
Service	1,208	14	2.3	1.3	4.1
Crafts and Manual Labor	701	19	7.8	4.4	13.9
Nuclear	540	4	1.3	0.5	3.7
Unknown	1,679	1	0.1	0.01	0.6
TOTAL	**11,527**	**67**			

Table 19D. Injury and Poisoning: Sprains and Strains

* 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
Administrative	3,018	0			
Professional	2,722	0			
Technical	1,659	3	1.2	0.4	4.2
Service	1,208	3	1.9	0.5	7.0
Crafts and Manual Labor	701	10	22.6	8.0	63.4
Nuclear	540	0			
Unknown	1,679	0			
TOTAL	**11,527**	**16**			

Table 19E. Injury and Poisoning: Open Wounds

Occupational Category	Person-Years	Persons with at Least One Event*	Relative Risk**	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Administrative	3,018	1	0.1	0.01	0.7
Professional	2,722	3	0.3	0.1	0.9
Technical	1,659	6	1.2	0.5	2.9
Service	1,208	15	6.3	3.2	12.5
Crafts and Manual Labor	701	10	6.0	2.8	12.8
Nuclear	540	0			
Unknown	1,679	0			
TOTAL	**11,527**	**35**			

Table 19F. Injury and Poisoning: "Other" Injuries

* 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 prostrate, 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, tendinitis, 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.

Person-year - A unit of measurement combining persons and time equivalent to one person followed up for one year. In Epidemiologic Surveillance reports, rates are often expressed as the number of events (e.g., illness absences, injuries) per 1,000 person-years.

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 fromwork.

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.