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 Brookhaven National Laboratory (BNL).

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 BNL. Continuing surveillance and data examination may suggest emerging trends that change the preliminary interpretation of the data.

Caution is also required when comparing information in this report to earlier reports. The methods used to collect and analyze the data in this report are different from those used in previous years.

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.

BNL at a Glance: 1994

- The site experienced a 20.9% increase in the work force included in epidemiologic surveillance in 1994. The 726 additional workers included a 94.7% increase in administrative staff and a 38% increase in service workers. BNL workers classified as nuclear workers decreased by about 55%. A portion of the increase observed may have been due to changes in the methods used to collect roster information for epidemiologic surveillance.

- As in 1993, the highest diagnosis rates were observed for injuries, diseases of the respiratory system, and musculoskeletal diseases. Injuries accounted for 23% of all diagnoses among men. Among women, 35% of the diagnoses involved respiratory diseases.

- The percentage of the work force reporting at least one absence of 5 or more consecutive days in 1994 (6%) remained similar to the 1993 percentage (7%).

- As in 1993, diagnosis rates were about 5 times higher for hourly than for salaried workers. The higher diagnoses rates observed among most hourly occupational groups may reflect underreporting of health events by salaried workers.

- 1994 marked the first year for which Occupational Safety and Health Administration (OSHA) recordable injury and illness data were included in epidemiologic surveillance at BNL. Crafts and service workers reported the highest rates of OSHA-recordable diagnoses; professional staff had the lowest recorded rates. Overall, the rate of OSHA-reportable events was about twice as high for men as for women.

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 BNL are summarized. These analyses focus on absences of 5 or more consecutive workdays occurring among workers aged 16-80 years. They are arranged in five sets of tables that present: 1) the distribution of the labor force by occupational category and salary 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 the 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 reports, 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.

DISCLAIMER

Facility Overview

Located at the center of Long Island, New York, BNL is one of the nation's leading scientific research laboratories. The BNL was established in 1946 on the former site of Camp Upton and is operated by Associated Universities, Inc. (AUI), under contract with DOE.

The AUI is an independent corporation, governed by a board of trustees, whose members are affiliated with both national and international universities, research institutions, and industrial organizations.

The BNL's initial mission, to carry out research on the peaceful aspects of nuclear science, has been considerably broadened to include basic and applied research in many different areas.

The primary objective of BNL has always been to gain a deeper understanding of the laws of nature — the necessary foundation for all technical advances. New knowledge is constantly sought in such fields as physics, chemistry, biology, mathematics, medicine, oceanography, atmospheric science, and energy technology.

Labor Force by Occupational Category and Salary Status, 1994

During 1994, there were 4,206 employees (aged 16-80) identified by BNL as participants in epidemiologic surveillance. Seventy-four percent (3,124 workers) were men and 26% (1,082 workers) were women. Eighty-one percent (3,398 workers) were Caucasian, 8% (336 workers) were African Americans, and 8% (325 workers) were Asians. The remaining 3% (147 workers) included Hispanics and Native Americans.

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 the table 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.

Eighty-five percent of the workers were salaried, whereas 15% were hourly. The occupational categories with the largest number of employees were professional (34.5%) and administrative (31.6%).

The labor force increased by 726 employees, a 20.9% increase, in 1994 compared to 1993. However, it should be noted that an unknown portion of this increase resulted from a change in the way the data were collected. The actual change in the size of the work force is not known. The biggest increase in the number of workers was in the administrative category with a 94.7% increase. The largest decrease in numbers was in the nuclear category with a 54.8% decrease over 1993.

	Occupational Category	Number of Workers in 1994	Number of Workers in 1993	% Change from Last Year
Salaried	Administrative	1,330	683	+94.7
	Professional	1,452	1,424	+2.0
	Technical	796	806	-1.2
	Subtotal	**3,578**	**2,913**	**+22.8**
Hourly	Service	301	218	+38.1
	Crafts and Manual Labor	299	285	+4.9
	Nuclear	28	62	-54.8
	Other	0	2	-100.0
	Subtotal	**628**	**567**	**+10.8**
	TOTAL	**4,206**	**3,480**	**+20.9**

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

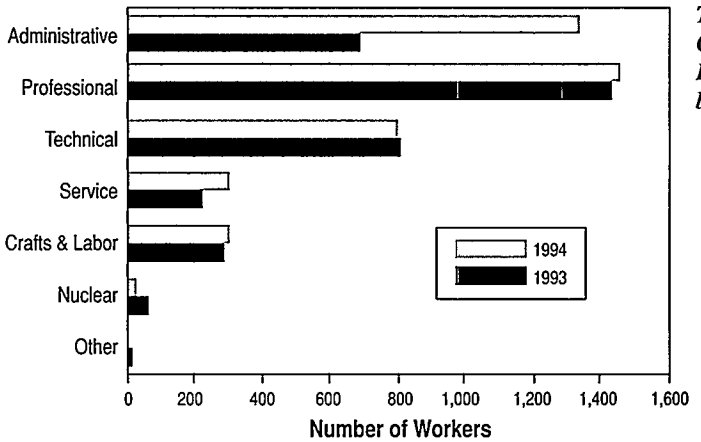

Table 1B. Change in Labor Force by Year

Absences Among Work Force, 1994

Absences per Person. In 1994, 259 BNL employees reported an absence of 5 or more consecutive workdays because of illness or injury. Thirty-seven (14%) of these workers had two or more absences. A total of 308 absences were reported by the employees (Table 2A).

Diagnoses per Absence. A total of 415 diagnoses were associated with the absences of 5 or more consecutive workdays. Multiple diagnoses were reported for 77 (25%) absences (Table 2B).

Diagnosis Rates for Absences. In 1994, the age-adjusted diagnosis rate for absences of 5 or more consecutive workdays was 92.4 diagnoses per 1,000 persons. The diagnosis rate for women (101.4 per 1,000) was higher than the rate for men (88.1 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+		
Men	3,124	2,932	165	19	8	192	229
Women	1,082	1,015	57	8	2	67	79
TOTAL	4,206	3,947	222	27	10	259	308

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	175	38	10	6	229	305
Women	56	17	4	2	79	110
TOTAL	231	55	14	8	308	415

Table 2B. Diagnoses per Absence

Employee Category	Number of Workers in 1994	Total 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	3,124	305	97.6	88.1	77.8	99.8
Women	1,082	110	101.7	101.4	83.6	123.0
TOTAL	4,206	415	98.7	92.4	83.4	102.5

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 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 injury and poisoning (17.6 per 1,000), diseases of the respiratory system (17.0 per 1,000), and diseases of the musculoskeletal system (13.1 per 1,000). Together, these three categories accounted for 55% of all diagnoses.

Men. The diagnostic category with the highest rate among men (Table 4) was injury and poisoning (19.7 per 1,000) with 71 diagnoses among 60 men. This accounted for 23% of all diagnoses among men. Within this category, one subcategory had relatively high numbers of diagnoses. Sprains and strains accounted for 44% of these diagnoses with 31 diagnoses among 30 men. Fourteen diagnoses were sprains and strains of the back, 13 of the lower extremities, and 4 of the upper extremities. One man had multiple diagnoses.

The second highest rate, making up 16% of the total diagnoses, was diseases of the musculoskeletal system (12.8 per 1,000), with 49 diagnoses reported for 41 men. Thirty-two diagnoses were related to dorsopathies (spinal disorders), nine to arthropathies (joint disease), six to rheumatism (excluding the back), and two to disorders of bone. Six men had multiple diagnoses.

Diseases of the respiratory system (11.8 per 1,000) ranked third, with 42 diagnoses reported for 29 men. Twenty-three diagnoses were related to upper respiratory diseases, 11 to chronic respiratory conditions, and 8 to pneumonia/bronchitis. Four men had multiple diagnoses. Four cancer diagnoses were reported among two men in 1994. All were for prostate cancer, three for one man and one for the other.

Women. The diagnostic category with the highest rate among women (Table 5) was diseases of the respiratory system (37.0 per 1,000), with 39 diagnoses reported among 26 women. This accounted for 35% of all diagnoses among women. Twenty-one diagnoses were related to upper respiratory diseases, nine to pneumonia/bronchitis, and nine to chronic respiratory conditions. Seven women had multiple diagnoses.

The second highest rate, making up 13% of the total diagnoses, was for diseases of the musculoskeletal system (13.6 per 1,000), with 14 diagnoses among 10 women. Eight diagnoses were related to dorsopathies (spinal disorders), two to rheumatism (excluding the back), two to disorders of bone and cartilage, one to derangement of the knee, and one to hammer toe. Four women had multiple diagnoses.

Injury and poisoning (10.7 per 1,000) ranked third, with 14 diagnoses reported for 12 women. Within this category, "other" injuries (4.7 per 1,000) had relatively high numbers, accounting for 43% of these diagnoses. Six diagnoses were reported among six women. Three diagnoses were related to contusions, two to unspecified injuries, and one to a superficial injury. The one cancer diagnosis reported in 1994 was a breast cancer.

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	11	2.7	1.4	5.3
Malignant neoplasms	140-208, 230-234	5	1.1	0.5	2.6
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	1	0.2	0.0	1.5
• Genitourinary	179-189	4	0.9	0.3	2.4
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	5	1.0	0.4	2.3
Endocrine and metabolic diseases	240-279	14	2.7	1.6	4.7
Blood and blood-forming organs	280-289	1	0.2	0.0	1.5
Mental disorders	290-319	11	3.1	1.6	6.0
• Alcoholism	303	0			
• Drug abuse	304-305	1	0.2	0.0	1.3
Nervous system and sense organs	320-389	18	5.2	3.1	8.6
Circulatory system	390-459	28	5.6	3.9	8.1
• Hypertension	401	9	1.8	0.9	3.4
• Acute myocardial infarction	410	0			
• Ischemic disease, not M.I.	411-414, 429.2	6	1.2	0.5	2.7
• Cerebrovascular disease	430-438	0			
Respiratory system	460-519	81	17.0	13.5	21.3
• Upper respiratory	460-465, 470-478	44	9.3	6.8	12.7
• Pneumonia/bronchitis	466, 480-487	17	3.5	2.1	5.6
• Chronic respiratory conditions	490-496	20	4.2	2.6	6.6
Digestive system	520-579	29	5.7	4.0	8.3
• Hernias	550-553	7	1.3	0.6	2.8
• Gall bladder disease	574-575	6	1.2	0.5	2.7
Genitourinary system	580-629	17	3.9	2.3	6.6
• 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[1]	630-676	6	7.6	3.4	17.0
Skin and subcutaneous tissue	680-709	10	2.0	1.1	3.7
Musculoskeletal system	710-739	63	13.1	10.2	17.0
• Dorsopathies	720-724	40	8.1	5.9	11.1
Congenital anomalies	740-759	2	1.0	0.3	4.0
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	19	4.7	2.9	7.8
Injury and poisoning	800-999	85	17.6	14.1	22.1
• Fractures, all sites	800-829	11	2.1	1.1	3.7
• Dislocations	830-839	8	1.6	08	3.3
• Sprains and strains	840-848	35	7.9	5.5	11.4
• Intracranial injuries	850-854	0			
• Internal injuries	860-869	0			
• Open wounds	870-897	6	1.2	0.5	2.7
• Other injuries	900-999	25	4.8	3.3	7.2
Health status/health service contract	V01-V82	10	3.0	1.5	5.9
• Family history of health problems	V10-V19	5	1.4	0.5	3.5
• Circumstances related to reproduction/development	V20-V28	3	1.2	0.4	4.0
• Specific procedure/aftercare	V50-V59	1	0.2	0.0	1.5
Total minus pregnancies		**409**	**89.7**	**80.9**	**99.5**
TOTAL		**415**	**92.4**	**83.4**	**102.5**

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

† 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	7	2.5	1.0	5.9
Malignant neoplasms	140-208, 230-234	4	1.1	0.4	3.0
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	0			
• Genitourinary	179-189	4	1.1	0.4	3.0
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	4	1.0	0.4	2.7
Endocrine and metabolic diseases	240-279	10	2.4	1.3	4.5
Blood and blood-forming organs	280-289	1	0.3	0.0	2.0
Mental disorders	290-319	8	2.1	1.1	4.3
• Alcoholism	303	0			
• Drug abuse	304-305	1	0.2	0.0	1.7
Nervous system and sense organs	320-389	12	6.3	3.3	12.1
Circulatory system	390-459	26	6.6	4.5	9.8
• Hypertension	401	8	2.1	1.0	4.1
• Acute myocardial infarction	410	0			
• Ischemic disease, not M.I.	411-414, 429.2	6	1.6	0.7	3.5
• Cerebrovascular disease	430-438	0			
Respiratory system	460-519	42	11.8	8.6	16.3
• Upper respiratory	460-465, 470-478	23	6.8	4.4	10.6
• Pneumonia/bronchitis	466, 480-487	8	2.3	1.1	4.5
• Chronic respiratory conditions	490-496	11	2.7	1.5	5.0
Digestive system	520-579	24	6.3	4.2	9.4
• Hernias	550-553	6	1.5	0.7	3.3
• Gall bladder disease	574-575	3	0.8	0.3	2.5
Genitourinary system	580-629	14	4.1	2.3	7.5
• 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	9	2.2	1.2	4.3
Musculoskeletal system	710-739	49	12.8	9.6	16.9
• Dorsopathies	720-724	32	8.5	6.0	12.0
Congenital anomalies	740-759	1	0.9	0.1	6.3
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	15	5.2	2.9	9.4
Injury and poisoning	800-999	71	19.7	15.2	25.4
• Fractures, all sites	800-829	9	2.2	1.1	4.2
• Dislocations	830-839	8	2.2	1.1	4.4
• Sprains and strains	840-848	31	9.6	6.4	14.5
• Intracranial injuries	850-854	0			
• Internal injuries	860-869	0			
• Open wounds	870-897	4	1.1	0.4	2.9
• Other injuries	900-999	19	4.6	2.9	7.2
Health status/health service contract	V01-V82	8	2.8	1.3	6.3
• Family history of health problems	V10-V19	5	2.0	0.7	5.6
• Circumstances related to reproduction/development	V20-V28	1	0.2	0.0	1.7
• Specific procedure/aftercare	V50-V59	1	0.3	0.0	2.0
TOTAL		305	88.1	77.8	99.8

† 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	4	3.3	1.2	9.1
Malignant neoplasms	140-208, 230-234	1	0.8	0.1	5.6
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	1	0.8	0.1	5.6
• Genitourinary	179-189	0			
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	1	1.1	0.2	8.0
Endocrine and metabolic diseases	240-279	4	3.3	1.2	8.9
Blood and blood-forming organs	280-289	0			
Mental disorders	290-319	3	3.5	1.1	10.9
• Alcoholism	303	0			
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	6	4.8	2.1	10.9
Circulatory system	390-459	2	1.9	0.5	7.8
• Hypertension	401	1	0.8	0.1	5.6
• Acute myocardial infarction	410	0			
• Ischemic disease, not M.I.	411-414, 429.2	0			
• Cerebrovascular disease	430-438	0			
Respiratory system	460-519	39	37.0	26.7	51.3
• Upper respiratory	460-465, 470-478	21	18.9	12.1	29.5
• Pneumonia/bronchitis	466, 480-487	9	8.7	4.4	17.1
• Chronic respiratory conditions	490-496	9	9.4	4.8	18.4
Digestive system	520-579	5	3.9	1.6	9.7
• Hernias	550-553	1	0.7	0.1	4.8
• Gall bladder disease	574-575	3	2.6	0.8	8.2
Genitourinary system	580-629	3	3.0	0.9	9.5
• 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[1]	630-676	6	7.6	3.4	17.0
Skin and subcutaneous tissue	680-709	1	0.8	0.1	5.6
Musculoskeletal system	710-739	14	13.6	7.9	23.2
• Dorsopathies	720-724	8	7.2	3.5	14.6
Congenital anomalies	740-759	1	1.2	0.2	8.4
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	4	3.4	1.3	9.3
Injury and poisoning	800-999	14	10.7	6.3	18.3
• Fractures, all sites	800-829	2	1.4	0.3	5.4
• Dislocations	830-839	0			
• Sprains and strains	840-848	4	3.3	1.2	9.1
• Intracranial injuries	850-854	0			
• Internal injuries	860-869	0			
• Open wounds	870-897	2	1.4	0.3	5.4
• Other injuries	900-999	6	4.7	2.1	10.7
Health status/health service contract	V01-V82	2	2.4	0.6	9.4
• Family history of health problems	V10-V19	0			
• Circumstances related to reproduction/development	V20-V28	2	2.4	0.6	9.4
• Specific procedure/aftercare	V50-V59	0			
Total minus pregnancies		104	94.7	77.7	115.5
TOTAL		110	101.4	83.6	123.0

Table 5. Diseases and Injuries by Diagnostic Category - Women

† 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, six pregnancy related diagnoses were reported among five women (Table 6). There was one diagnosis for ectopic and molar pregnancy/abortive outcomes; one for other indications for care in pregnancy, labor, and delivery; and two diagnoses for complications occurring in the course of labor and delivery. Two women had normal deliveries. One woman had multiple diagnoses.

Diagnoses by Occupational Category, 1994

During 1994, the age-adjusted diagnosis rate for all employees (Table 7) was 5.5 times higher among hourly workers than salaried workers (303.0 versus 54.6 per 1,000 persons). Crafts and manual laborers, who comprised 7% of the work force, had the highest diagnosis rate (532.7 per 1,000),with 122 diagnoses reported for 67 workers. Service workers had the second highest diagnosis rate (243.4 per 1,000), with 74 diagnoses reported among 55 persons. Technical workers ranked third, with 86 diagnoses reported for 55 workers (98.3 per 1,000). Professional workers had the lowest rate (13.5 per 1,000 workers), with 25 diagnoses for 15 workers.

Men. The diagnosis rate among men (Table 8) was more than 6.8 times higher for hourly workers (289.6 per 1,000) than for salaried workers (42.3 per 1,000). Crafts and manual laborers had the highest rate (534.6 per 1,000), with 121 diagnoses reported for 66 men. The second highest rate was among the service workers (213.5 per 1,000), with 53 diagnoses reported among 41 men. Technical workers ranked third, with 80 diagnoses reported among 50 men (101.8 per 1,000). Professional workers had the lowest rate (13.1 per 1,000) with 21 diagnoses reported for 13 men.

Women. The diagnosis rate among women (Table 9) was 4 times higher for hourly workers (335.9 per 1,000) than for salaried workers (84.8 per 1,000). Service workers had the highest rate (341.6 per 1,000), with 21 diagnoses reported for 14 women. The second highest rate was among the administrative workers (106.3 per 1,000), with 78 diagnoses reported among 45 women. Crafts and manual laborers ranked third, with one diagnosis reported for one woman (99.3 per 1,000). Excluding nuclear workers because there was only one woman in this category, professional workers had the lowest rate (25.6 per 1,000), with four diagnoses for two 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
Ectopic and Molar Pregnancy/Abortive Outcome	630-639	1	1.2	0.2	8.9
Complications Related to Pregnancy	640-648	0			
Normal Delivery	650	2	2.5	0.6	10.0
Other Indications for Care in Pregnancy, Labor, and Delivery‡	651-659	1	1.2	0.2	8.9
Complications of Labor, Delivery, and Puerperium	660-676	2	2.6	0.7	10.5
TOTAL		6	7.6	3.4	17.0

† 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
Salaried	Administrative	1,330	104	73.7	60.4	89.8
	Professional	1,452	25	13.5	9.1	20.1
	Technical	796	86	98.3	79.0	122.3
	Subtotal	**3,578**	**215**	**54.6**	**47.3**	**63.1**
Hourly	Service	301	74	243.4	190.3	311.1
	Crafts and Manual Labor	299	122	532.7	373.0	760.6
	Nuclear	28	4	65.3	24.5	174.0
	Subtotal	**628**	**200**	**303.0**	**262.1**	**350.4**
	TOTAL	**4,206**	**415**	**92.4**	**83.4**	**102.5**

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
Salaried	Administrative	614	26	34.1	23.1	50.2
	Professional	1,247	21	13.1	8.5	20.2
	Technical	702	80	101.8	80.8	128.3
	Subtotal	**2,563**	**127**	**42.3**	**34.9**	**51.3**
Hourly	Service	239	53	213.5	159.3	286.1
	Crafts and Manual Labor	295	121	534.6	374.8	762.6
	Nuclear	27	4	70.8	26.6	188.5
	Subtotal	**561**	**178**	**289.6**	**248.0**	**338.1**
	TOTAL	**3,124**	**305**	**88.1**	**77.8**	**99.8**

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
Salaried	Administrative	716	78	106.3	84.6	133.4
	Professional	205	4	25.6	9.6	68.2
	Technical	94	6	74.5	29.6	187.5
	Subtotal	**1,015**	**88**	**84.8**	**68.3**	**105.2**
Hourly	Service	62	21	341.6	212.1	550.2
	Crafts and Manual Labor	4	1	99.3	14.0	704.6
	Nuclear	1	0			
	Subtotal	**67**	**22**	**335.9**	**215.2**	**524.5**
	TOTAL	**1,082**	**110**	**101.4**	**83.6**	**123.0**

Table 9. Diagnoses by Occupational Category - Women

Deaths Among Active Workers, 1994

There were eight deaths reported among active workers during 1994. Three deaths were due to cardiovascular disease, two to cancer (lung, stomach), one to pneumonia, one to liver disease, and one with no cause listed. The death due to pneumonia also listed bone cancer as a cause of death.

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 BNL 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 (RR) and the 95% confidence interval. The relative risk is the rate of absence in one group

Disease	Administrative 1,330 Person-Years				Professional 1,452 Person-Years				Technical 796 Person-Years				Ser 301 Pers
	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
All Diseases and Injuries	63	0.6	0.4	0.9	15	0.1	0.1	0.2	55	1.2	0.9	1.6	
Infections and Parasitic Diseases	4	1.1	0.2	4.9	0				3	1.8	0.4	8.0	
Endocrine and Metabolic Diseases	3	0.7	0.1	3.2	1	0.1	0.01	1.4	2	1.2	0.2	5.7	
Mental Disorders	1	0.4	0.02	10.4	1	0.3	0.03	3.2	3	3.6	0.7	17.9	
Nervous System and Sense Organs	4	0.6	0.2	2.8	1	0.2	0.02	1.4	2	0.7	0.1	3.5	
Circulatory System	3	0.4	0.1	1.9	4	0.3	0.1	0.9	3	0.7	0.2	2.2	
Respiratory System	21	0.8	0.4	1.5	2	0.1	0.02	0.3	8	1.0	0.5	2.1	
Digestive System	4	0.5	0.2	1.7	2	0.1	0.03	0.6	7	1.6	0.7	3.8	
Genitourinary System	3	0.7	0.2	3.1	0				4	2.1	0.6	7.3	
Skin and Subcutaneous Tissue	1	0.2	0.004	8.5	1	0.2	0.03	1.8	2	1.4	0.3	7.1	
Musculoskeletal System	13	0.8	0.4	1.7	4	0.2	0.1	0.4	13	1.5	0.8	2.9	
Symptoms, Signs and Ill-Defined Conditions	3	0.4	0.1	2.5	0				2	0.7	0.2	3.3	
Injury and Poisoning	10	0.3	0.1	0.8	1	0.02	0.003	0.2	15	1.1	0.6	1.9	
Injury and Poisoning: Fractures	1	0.3	0.1	2.0	1	0.2	0.02	1.3	6	5.7	1.8	17.8	
Injury and Poisoning: Sprains and Strains	4	0.4	0.1	1.2	0				2	0.2	0.05	0.9	
Injury and Poisoning: "Other" Injuries	5	0.4	0.1	2.0	0				6	1.8	0.7	4.9	

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

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 to 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 .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=3.9) and crafts and manual labor workers (RR=4.8) had statistically significant increased risks of being absent 5 or more consecutive workdays in 1994 due to disease or injury. Administrative workers (RR=0.6) and professional workers (RR=0.1) had a statistically significant decreased risk of an absence.

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

Crafts and Manual Labor 299 Person-Years					Nuclear 28 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		
		Lower 95%	Upper 95%				Lower 95%	Upper 95%	
67	4.8	3.6	6.5		4	2.4	0.9	6.4	259
1	1.7	0.2	14.0		0				11
4	8.2	2.0	33.3		0				11
0					0				6
3	4.2	1.1	15.4		0				14
9	7.1	2.9	17.1		0				22
12	5.7	2.8	11.8		1	3.9	0.5	29.1	55
10	7.3	3.1	17.1		0				25
2	3.0	0.6	14.7		1	13.6	1.6	115.5	12
3	7.3	1.5	36.4		0				8
13	4.1	2.1	8.0		1	3.0	0.4	22.4	51
5	9.2	2.6	32.5		0				14
24	6.3	3.7	10.6		1	1.8	0.2	13.2	72
1	1.3	0.1	11.6		0				10
15	10.6	5.0	22.3		1	3.3	0.4	24.2	34
5	3.6	1.3	10.4		0				23

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.

A table for malignant neoplasms is not presented because only three workers reported diagnoses in this disease category in 1994. One was an administrative worker, and two were technical workers.

Technical workers were significantly more likely to be absent at least once during 1994 for fractures (RR=5.7), as a sub-category of the injury and poisoning category. Service workers were at an increased risk because of infections and parasitic diseases (RR=4.0); diseases of the nervous system and sense organs (RR=4.1); diseases of the respiratory system (RR=4.2); diseases of the musculoskeletal system (RR=2.5); symptoms, signs, and ill-defined conditions (RR=5.1); and injury and poisoning (RR=5.9), as a whole; with sprains and strains (RR=6.6), and "other" injuries (RR=8.2), as subcategories of injury and poisoning.

Crafts and manual laborers were significantly more likely to be absent at least once during 1994 for endocrine and metabolic diseases (RR=8.2); diseases of the nervous system and sense organs (RR=4.2); diseases of the circulatory system (RR=7.1); diseases of the respiratory system (RR=5.7); diseases of the digestive system (RR=7.3); diseases of the skin and subcutaneous tissue (RR=7.3); diseases of the musculoskeletal system (RR=4.1); symptoms, signs, and ill-defined conditions (RR=9.2); and injury and poisoning (RR=6.3), as a whole; with sprains and strains (RR=10.6), and "other" injuries (RR=3.6), as subcategories of injury and poisoning.

Nuclear workers were found to have a statistically significant increased risk associated with diseases of the genitourinary system (RR=13.6).

Administrative workers were significantly less likely to be absent at least once during 1994 for injury and poisoning (RR=0.3), as a whole. Professional workers had a statistically significant decreased risk of diseases of the circulatory system (RR=0.3), diseases of the respiratory system (RR=0.1), diseases of the digestive system (RR=0.1), diseases of the musculoskeletal system (RR=0.2), and injury and poisoning, as a whole (RR=0.02). Technical workers were also significantly less likely to be absent because of sprains and strains (RR=0.2), as a subcategory of the injury and poisoning category.

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 differences across various diagnostic categories suggests that compliance with reporting back to work through an occupational physician varies among the occupational categories.

OSHA-Recordable Events Among BNL Employees, 1994

OSHA-Recordable Events per Person. In 1994, 160 BNL employees had at least one OSHA-recordable event. Thirteen (8%) 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 234 diagnoses were associated with the OSHA events reported during 1994. Multiple diagnoses were reported for 57 (33%) of the total number of events (173) (Table 11B).

Diagnosis Rates for OSHA-Recordable Events. In 1994, the age-adjusted diagnosis rate for OSHA events was 52.2 per 1,000 persons. The age-adjusted diagnosis rate for men (60.4 per 1,000) was almost twice the rate for women (30.9 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		
Men	3,124	2,990	121	13	134	147
Women	1,082	1,056	26	0	26	26
TOTAL	4,206	4,046	147	13	160	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	97	47	3	147	200
Women	19	6	1	26	34
TOTAL	116	53	4	173	234

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	3,124	200	64.0	60.4	51.6	70.6
Women	1,082	34	31.4	30.9	21.9	43.7
TOTAL	4,206	234	55.6	52.2	45.5	59.9

* 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 combined in Table 12. Tables 13 and 14 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 (Table 12) was injury and poisoning (39.4 per 1,000), with 175 diagnoses reported for 137 people, which accounted for 75% of all the diagnoses. Within this category were three subcategories with relatively high rates. These were sprains and strains (15.5 per 1,000), with 72 diagnoses among 63 workers; "other" injuries (13.7 per 1,000), with 57 diagnoses among 49 workers; and open wounds (8.8 per 1,000), with 39 diagnoses among 36 workers.

Men. The leading diagnostic category among men (Table 13), accounting for 74% of all diagnoses, was injury and poisoning (45.7 per 1,000), with 148 diagnoses among 115 men. Within this category were three subcategories with relatively high rates. "Other" injuries (16.4 per 1,000) accounted for 33% of the injury and poisoning diagnoses, with 49 diagnoses among 43 men. These included 19 diagnoses for contusions; 8 of other injuries; 7 for foreign bodies in the eye; 5 for abrasion/friction burns; 4 for second degree burns to the upper limb; 3 to toxic effects of fumes or vapors; 2 to tick bites; and 1 to a crushing injury to the toes. Six men had multiple diagnoses. Sprains and strains (16.1 per 1,000) accounted for 39% of the injury and poisoning diagnoses, with 58 diagnoses among 50 men. Thirty diagnoses were sprains and strains of the back, 15 of the lower extremities, 10 of the upper extremities, and 3 of unspecified sites. Five men had multiple diagnoses. Open wounds (11.2 per 1,000) accounted for 23% of the injury and poisoning diagnoses, with 34 diagnoses among 31 men. Twenty-four diagnoses were for open wounds of the upper limb; eight of the head, neck, and trunk; and two of the lower limb. Three men had multiple diagnoses. The second highest rate, accounting for 13% of all diagnoses, was for diseases of the musculoskeletal system (6.5 per 1,000), with 25 diagnoses among 22 men. Eleven diagnoses were related to dorsopathies (back disorders), ten to rheumatism (excluding the back), and four to arthropathies (joint disease).

Women. The diagnostic category with the highest rate was the same among women as for men (Table 14). Injury and poisoning (24.0 per 1,000) accounted for 79% of all diagnoses, with 27 diagnoses among 22 women. Within this category, two subcategories had relatively high rates. Sprains and strains (12.6 per 1,000) accounted for 52% of these diagnoses, with 14 diagnoses for 13 women. Nine of these were sprains and strains of the back, four of the upper extremities, and one of an unspecified site. One woman had multiple diagnoses. "Other" injuries (7.7 per 1,000) accounted for 30% of the injury and poisoning diagnoses, with eight diagnoses among six women. These included four diagnoses for contusions, one for a first degree burn to the head, one for an abrasion, one for an insect sting, and one for an unspecified ankle injury. One woman had multiple diagnoses. Diseases of the musculoskeletal system followed with six diagnoses among five women (5.8 per 1,000). Five diagnoses were due to rheumatism (excluding the back), and one was due to joint pain. One woman 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	1.5
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	2	0.4	0.1	1.6
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	6	1.5	0.6	3.5
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	4	0.8	0.3	2.1
• Hernias	550-553	4	0.8	0.3	2.1
• Gall bladder disease	574-575	0			
Genitourinary system	580-629	1	0.2	0.0	1.3
• 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	5	1.0	0.4	2.4
Musculoskeletal system	710-739	31	6.4	4.5	9.3
• Dorsopathies	720-724	11	2.2	1.2	4.0
Congenital anomalies	740-759	0			
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	7	1.7	0.7	3.8
Injury and poisoning	800-999	175	39.4	33.6	46.2
• Fractures, all sites	800-829	6	1.3	0.6	2.9
• Dislocations	830-839	0			
• Sprains and strains	840-848	72	15.5	12.1	19.7
• Intracranial injuries	850-854	1	0.2	0.0	1.3
• Internal injuries	860-869	0			
• Open wounds	870-897	39	8.8	6.3	12.4
• Other injuries	900-999	57	13.7	10.3	18.2
Health status/health service contract	V01-V82	2	0.7	0.2	3.2
• Family history of health problems	V10-V19	0			
• Circumstances related to reproduction/development	V20-V28	1	0.5	0.1	3.6
• Specific procedure/aftercare	V50-V59	0			
Total minus pregnancies		**234**	**52.2**	**45.5**	**59.9**
TOTAL		**234**	**52.2**	**45.5**	**59.9**

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

† Includes all diagnoses reported with an absence of 5 or more days.
• 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	0.3	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	2	0.5	0.1	2.1
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	6	2.2	0.8	5.6
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	4	1.0	0.4	2.7
• Hernias	550-553	4	1.0	0.4	2.7
• Gall bladder disease	574-575	0			
Genitourinary system	580-629	1	0.2	0.0	1.7
• 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	5	1.3	0.6	3.2
Musculoskeletal system	710-739	25	6.5	4.4	9.6
• Dorsopathies	720-724	11	3.0	1.6	5.3
Congenital anomalies	740-759	0			
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	7	2.3	1.0	5.7
Injury and poisoning	800-999	148	45.7	38.0	54.9
• Fractures, all sites	800-829	6	1.6	0.7	3.6
• Dislocations	830-839	0			
• Sprains and strains	840-848	58	16.1	12.2	21.3
• Intracranial injuries	850-854	1	0.2	0.0	1.7
• Internal injuries	860-869	0			
• Open wounds	870-897	34	11.2	7.5	16.6
• Other injuries	900-999	49	16.4	11.8	22.8
Health status/health service contract	V01-V82	1	0.3	0.0	2.0
• Family history of health problems	V10-V19	0			
• Circumstances related to reproduction/development	V20-V28	0			
• Specific procedure/aftercare	V50-V59	0			
TOTAL		200	60.4	51.6	70.6

† 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	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	0			
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	0			
Musculoskeletal system	710-739	6	5.8	2.6	13.0
• Dorsopathies	720-724	0			
Congenital anomalies	740-759	0			
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	0			
Injury and poisoning	800-999	27	24.0	16.3	35.3
• Fractures, all sites	800-829	0			
• Dislocations	830-839	0			
• Sprains and strains	840-848	14	12.6	7.4	21.6
• Intracranial injuries	850-854	0			
• Internal injuries	860-869	0			
• Open wounds	870-897	5	3.6	1.5	8.7
• Other injuries	900-999	8	7.7	3.8	15.8
Health status/health service contract	V01-V82	1	1.2	0.2	8.4
• Family history of health problems	V10-V19	0			
• Circumstances related to reproduction/development	V20-V28	1	1.2	0.2	8.4
• Specific procedure/aftercare	V50-V59	0			
Total minus pregnancies		34	30.9	21.9	43.7
TOTAL		34	30.9	21.9	43.7

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

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

OSHA-Recordable Diagnoses by Occupational Category, 1994

During 1994, the age-adjusted diagnosis rate for all employees (Table 15) was more than 7 times higher among hourly workers than salaried workers (192.8 versus 26.6 per 1,000 persons). Crafts and manual laborers, who comprised 7% of the work force, had the highest diagnosis rate (410.6 per 1,000), with 86 diagnoses reported for 55 persons. The second highest diagnosis rate was among service workers (136.1 per 1,000), with 40 diagnoses reported for 30 persons. Nuclear workers (127.0 per 1,000) ranked third, with six diagnoses reported among three workers. The diagnosis rate for workers in the professional category was lower than all other occupational categories (7.1 per 1,000 workers), with 13 diagnoses for 10 workers.

Men. The diagnosis rate among men (Table 16) was 7 times higher for hourly workers (197.5 per 1,000) than for salaried workers (28.4 per 1,000). Crafts and manual laborers had the highest rate (413.3 per 1,000), with 86 diagnoses reported for 55 men. Service workers ranked second (134.9 per 1,000), with 30 diagnoses reported among 22 men. Nuclear workers followed, with six diagnoses reported for three men (133.8 per 1,000). As seen with the combined groups, professional workers had the lowest rate (5.8 per 1,000) with nine diagnoses reported for seven men.

Women. The diagnosis rate among women (Table 17) was more than 4.5 times higher for the hourly workers (112.4 per 1,000) than for the salaried workers (23.8 per 1,000). The diagnosis rate for workers in the service category (119.5 per 1,000) was the highest with ten diagnoses reported among eight women. Technical workers (37.6 per 1,000) ranked second with three diagnoses reported for two women. The third highest rate occurred among professional workers (24.0 per 1,000), with four diagnoses reported among three women. The diagnosis rate was the lowest among the crafts and manual laborers and the nuclear workers, neither group having any 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
Salaried	Administrative	1,330	34	24.8	17.5	35.3
	Professional	1,452	13	7.1	4.1	12.2
	Technical	796	55	62.3	47.4	81.8
	Subtotal	**3,578**	**102**	**26.6**	**21.6**	**32.8**
Hourly	Service	301	40	136.1	97.8	189.6
	Crafts and Manual Labor	299	86	410.6	268.6	627.9
	Nuclear	28	6	127.0	51.7	312.1
	Subtotal	**628**	**132**	**192.8**	**161.2**	**230.7**
	TOTAL	**4,206**	**234**	**52.2**	**45.5**	**59.9**

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
Salaried	Administrative	614	17	28.3	16.8	47.6
	Professional	1,247	9	5.8	3.0	11.2
	Technical	702	52	65.6	49.2	87.4
	Subtotal	**2,563**	**78**	**28.4**	**22.0**	**36.8**
Hourly	Service	239	30	134.9	92.6	196.5
	Crafts and Manual Labor	295	86	413.3	271.0	630.5
	Nuclear	27	6	133.8	55.4	323.2
	Subtotal	**561**	**122**	**197.5**	**163.5**	**238.6**
	TOTAL	**3,124**	**200**	**60.4**	**51.6**	**70.6**

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
Salaried	Administrative	716	17	23.1	14.2	37.7
	Professional	205	4	24.0	8.9	64.1
	Technical	94	3	37.6	11.9	118.9
	Subtotal	**1,015**	**24**	**23.8**	**15.8**	**35.9**
Hourly	Service	62	10	119.5	63.7	224.1
	Crafts and Manual Labor	4	0			
	Nuclear	1	0			
	Subtotal	**67**	**10**	**112.4**	**59.8**	**211.4**
	TOTAL	**1,082**	**34**	**30.9**	**21.9**	**43.7**

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 19D, 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 BNL 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=3.0) and crafts and manual laborers (RR=6.4) had statistically significant increased risks of an OSHA recordable event in 1994 (Table 18). Administrative workers (RR=0.4) and professional workers (RR=0.1) had a statistically significant decreased risk of an event.

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

Tables 19A through 19D 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=3.5), as a whole; with sprains and strains (RR=4.8), and "other" injuries (RR=2.9), 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=5.7), as a whole; with sprains and strains (RR=7.1), open wounds (RR=4.7), and "other" injuries (RR=5.7), as subcategories of injury and poisoning. Administrative workers were significantly less likely to have an OSHA event due to injury and poisoning (RR=0.4), as a whole; with sprains and strains (RR=0.2), as a subcategory of injury and poisoning.

Professional workers were also at significantly less risk for injury and poisoning (RR=0.1), as a whole; with sprains and strains (RR=0.1), open wounds (RR=0.2), and "other" injuries (RR=0.04), as subcategories 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	1,330	24	0.4	0.2	0.7
Professional	1,452	10	0.1	0.1	0.2
Technical	796	38	1.2	0.9	1.8
Service	301	30	3.0	2.0	4.5
Crafts and Manual Labor	299	55	6.4	4.6	9.1
Nuclear	28	3	2.5	0.8	7.8
TOTAL	4,206	160			

* Persons with multiple events 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	1,330	20	0.4	0.2	0.7
Professional	1,452	8	0.1	0.1	0.2
Technical	796	34	1.3	0.9	1.9
Service	301	29	3.5	2.3	5.2
Crafts and Manual Labor.	299	44	5.7	3.9	8.4
Nuclear	28	2	1.9	0.5	7.8
TOTAL	4,206	137			

Table 19A. Injury and Poisoning

Occupational Category	Person-Years	Persons with at Least One Event*	Relative Risk**	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Administrative	1,330	6	0.2	0.1	0.5
Professional	1,452	4	0.1	0.1	0.3
Technical	796	14	1.2	0.7	2.3
Service	301	16	4.8	2.7	8.5
Crafts and Manual Labor	299	22	7.1	4.0	12.6
Nuclear	28	1	2.3	0.3	16.9
TOTAL	4,206	63			

Table 19B. Injury and Poisoning: Sprains and Strains

Occupational Category	Person-Years	Persons with at Least One Event*	Relative Risk**	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Administrative	1,330	9	1.0	0.4	2.2
Professional	1,452	3	0.2	0.05	0.5
Technical	796	8	1.1	0.5	2.4
Service	301	5	1.9	0.7	4.8
Crafts and Manual Labor	299	10	4.7	2.2	9.8
Nuclear	28	1	3.4	0.5	25.0
TOTAL	4,206	36			

Table 19C. 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	1,330	8	0.6	0.2	1.3
Professional	1,452	1	0.04	0.005	0.2
Technical	796	13	1.3	0.7	2.4
Service	301	10	2.9	1.5	5.9
Crafts and Manual Labor	299	16	5.7	3.1	10.4
Nuclear	28	1	2.5	0.3	18.3
TOTAL	4,206	49			

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

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